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Editorial**Fitness and Ramadan****Mohsin Masud Jan**

Editor

Ramadan Kareem. Now that the Holy month has finally rolled around, for quite a lot of us, it presents a dilemma, to try and lose weight and in the end actually gain a few pounds when Eid rolls around. Ramadan is a time for self-reflection and turning one's focus inwards. The act of fasting is to remind yourself how others live and humble yourself. It's also the time of year that your training is most likely to suffer if you're fasting and all the gains you've made this year will be lost. But it doesn't have to be.

There's a lot to consider and a number of things you need to adjust in order to continue training while fasting; however it doesn't mean that your training has to stop. Rather than focus on what you can't do, focus on some of the known benefits that come from fasting and centre your training around those new goals.

Most of us, we end up binge eating at Iftar and Sehar, which in the end even leads to gaining a few pounds during Ramadan instead of losing a few. Now, Ramadan has a lot of potential to allow us to lose weight, the proof being the latest research between Intermittent Fasting and losing weight. I'll weigh in on that here; fasting has been gaining ground as a technique not just used to lose weight but can actually add years to your life. In fact Intermittent Fasting (IF) has trainers and dieticians around the world changing their long-held beliefs of 6 small meals a day. IF involves fasting for 16-20 hours and consuming all your daily calories and nutrients within a 4-6 hour window, which is pretty much what you do when you're fasting during Ramadan.

Therefore it only makes sense to continue exercising during Ramadan in order to take full advantage of some incredible health benefits such as:

- Restoring insulin sensitivity and nutrient partitioning, especially in those of us prone to snack on sugary foods throughout the day.

- Producing a calorie deficit which is ideal for those looking to reduce their body fat percentage (which is all of us right?)
- An increase in growth hormones which is great news for those of us looking to increase muscle mass and build strength (which is all of us right?)
- Lowering blood pressure, oxidative stress and even the risk of developing some cancers.
- Finally, it requires discipline and mental strength, something we can always use more of.

Now what we need to do is change up our training regimen, there being a few options, one to workout right before Iftar, which means you won't be able to workout at your max, but something is always better than nothing. The Second time to workout is right after Iftar, if you can manage to keep your Iftar light, you can actually consume water, preferable lemon water to replenish electrolytes during the workout. Third would be after Taraweeh, around 3 hours after Iftar, which, if allowed by your timetable, could be the best time, because it would allow you to workout at your maximum because of the nutrients consumed during Iftar. And finally, the fourth option is right before Sehar, which is possible only if allowed by your daily routine and your gym timings.

I would advise against working out during the day itself, as that would place too much strain on the body specifically during these long, extremely hot days.

Now, coming to nutrition, Fasting for a good 17 hours is no excuse to slack on your nutrition. You still need to nourish and provide your body with high quality nutrition during Ramadan. Admittedly, a pakora here and a samosa there won't really do much damage, but a proper healthy and balanced diet needs to be maintained for a major part of the month to see good results by the end.

Effects of Caffeinated Carbonated Soft Drinks on the Testicular Anatomy in Wistar Albino Rat Model

Shoukat Ali Memon¹, Sajjad Ali Almani¹ and Aftab Ahmed Shaikh²

ABSTRACT

Objective: To investigate the effects of caffeinated and non-caffeinated carbonated soft drinks on the testicular anatomy and histology in Wistar albino rat model.

Study Design: Experimental study

Place and Duration of Study: This study was conducted at the Department of Anatomy, Faculty of Medicine and Allied Medical Sciences, Isra University Hyderabad from July 2014 to February 2015.

Materials and Methods: Twenty rats of Wistar albino strain were divided randomly in two groups. Group A were control rats and group B were experimental rats. Caffeinated carbonated soft drinks were given freely to the group B experimental rats. The animals were sacrificed and testes were retrieved for histological examination. The software SPSS 22.0 analyzed the data at P-value ≤ 0.05 .

Results: Size and weight of rat testes were decreased in caffeinated soft drunk rats ($P=0.0006$) while body weight was increased. Histological examination shows testicular tissue damage in form of necrotic and edematous tissue, hyalinization, tubular luminal defects, and pyknotic nuclei. Seminiferous tubules showed gross microscopic defects.

Conclusion: The caffeinated carbonated soft drinks exerts toxic effects on the body weight, testicular size, testicular weight, GSI, seminiferous tubule epithelial cell layers and seminiferous tubular diameter an in-vivo rat model.

Key Words: Testes, Carbonated Soft Drinks, Caffeine Rat

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INTRODUCTION

Caffeine is a potent brain stimulant agent. It is a methylated xanthine compound. It is being used in the soft drinks for more than a century. Caffeine is a commonly used psychoactive agent. It is used in the manufacturing of drugs by pharmaceutical industry, but also used in chocolates, energizers, milk coffees and soft drink beverages.¹ Being xanthine; it belongs to purine class of compounds which are involved in the biosynthesis of nucleic acids. Caffeine is derived from the seeds of Coffea plants which is rich source. Caffeinated carbonated soft drinks are used for taste, and for the vigor and vitality. These soft drinks have become part of social cultures throughout the World. These soft drinks increase the physical performance and decrease the drowsiness. A symbol of social status and taste, these soft drinks are consumed by 90% of Americans daily, hence the most popular drink ever used.^{2,3} These caffeinated soft drinks contain many agents including sugar, which is in large concentrations.

Hence these soft drinks increase the body weight. Increased body weight is termed as obesity which is a major threat to the public health through its predisposition to cardiovascular diseases. There use has been linked to the obesity and infertility.⁴ The recipe of caffeinated soft drinks is serious secret of the soft drink industry which is not known. However, the ingredients mentioned on the labels of the soft drinks show they contain colorants, odorants, flavoring agents, bicarbonate, phosphoric acid, caffeine and sugar.⁵ Use of these soft drinks has been prohibited by law in the many states of the America. Its use in School and University students is not allowed by law in the Philadelphia, Los-Angeles and Miami. Soft drinks were banned by California government through a resolution in 2016 declaring as they are harmful for health.⁶ Caffeine is inhibitor of Phosphodiesterase (PDE) enzyme which regulates the intracellular c-AMP levels. The c-AMP mediates cellular responses which result in awakening, vigor, vitality, nerve stimulation and physical activity⁷⁻⁹. The Gonadosomatic index, (GSI) is a calculated index of percentage of testicular (gonad) weight and the body weight. GSI is a reliable marker of identifying the fertility behavior.^{10,11} Recent studies reported the GSI is a reliable indicator of gonadal maturity and fertility in fish model.^{11,12} Keeping in view the health hazards of caffeinated carbonated soft drinks and literature review as above, created an interesting concept of conducting on the topic which is current and of public health importance. As the effects of

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caffeinated carbonated soft drinks on the testicular may results in fertility problems, hence it was worth to conduct an experimental in-vivo study in Wistar male rats at our animal house to prove the harmful effects scientifically. The present study was conducted to analyze the effects of caffeinated carbonated soft drinks on the testicular size, testicular weight, GSI, seminiferous tubule epithelial cell layers and seminiferous tubular diameter.

MATERIALS AND METHODS

The present experimental rat study took place at the Department of Anatomy Isra University Hyderabad and Animal house, Sindh Agriculture University, Tando Jam, Sindh. Twenty rats were selected randomly. Rats of body weight 200 grams and age eight to twelve weeks was included. The animal house is well equipped and well ventilated for housing of animals. The Guidelines for Care and Use of Laboratory Animals as per NIH (National Institutes of Health) were followed. Rats were housed in stainless steel cages. Stainless steel vessels are used for feeding of chow. Cages are equipped with "plastic drinkers with nozzles" for the water drinking. Pure clean water was available 24 hours. Access to the chow was limitless. Chow was put in the stainless steel containers which were cleansed and changed daily basis. Healthy environment was ensured by free ventilation, maintenance of hygiene and temperature maintained at 22- 25°C. Light and dark cycles of 12/12 hours were maintained for the animals. Experiment took six months. Twenty rats were divided into 2 groups. Group A – comprised of ten rats and used as control rats. Experimental group B – comprises of 10 rats used for the research purpose. These were drunk on caffeinated carbonated soft drinks. Written research proposal was submitted to the ethical review committee for the animal research and got written permission. GSI (Gonadosomatic index) was estimated as $[\text{Testis Weight} / \text{Somatic Weight}] \times 100$.¹² Electronic weighing scale was used for recording body weight measurement at baseline and at the end of experiment period. Caffeinated carbonated soft drinks were given to experimental group B for thirty days. After 30 days, the rats were killed by cervical dislocation. Body cavity was dissected after midline abdominal incision. Testes were traced by blunt and fine dissection as per need. Testes were weighed in electronic balance, and examined grossly. Testes were preserved in formalin container. Microtome was used for cutting 3-5 μ thick tissue sections. Hematoxylin and Eosin (H & E) staining was used for tissue staining for microscopic examination. SPSS version 22.0 (IBM, incorporation, USA) for windows was used for the analysis of data variables. Continuous variables (analyzed by Student t-test) were presented as mean \pm SD. All data analysis was performed at 95% confidence interval (P-value \leq 0.05).

RESULTS

Body weight of controls and experimental rats show statistically significant differences in experimental rats only ($p=0.0380$) as shown in Table -1. The control rats showed no body weight difference at baseline and at the end of experimental period ($p=0.0910$). The testicular size, testicular weight, GSI, seminiferous tubule epithelial cell layers and seminiferous tubular diameter are shown in the table 2-6. The Experimental group rats receiving caffeinated soft drinks showed detrimental effects on the testicular size, testicular weight, GSI, seminiferous tubule epithelial cell layers and seminiferous tubular diameter ($p<0.05$). All of testicular gross anatomical features and histological features were disturbed in the experimental rats drunk caffeinated carbonated soft drinks. Seminiferous tubule epithelial cells layers were decreased in experimental rats along with reduction in GSH, Testicular size and weight and seminiferous tubule diameter. Seminiferous tubules showed loss of tissue architecture, necrosis and Low sperm in the experimental group (Photomicrograph 2). Few layers of germinal epithelium, maturation arrest of spermatogonia and BM is thin with few sperms with edematous interstitial tissue (Photomicrograph 3). Seminiferous tubule hyalinization, decreased germinal layer, edematous and narrowing of lumen were observed in the experimental group (Photomicrograph 4).

Table No.1: Body weight of Albino rats (grams)

Groups	Baseline	Final	t-value	P-value
Group A. control rats	218.80	226.40	3.19	0.0910
Group B. Experimental rats	221.20	236.90	5.01	0.0380

Table No.2: Size of the testes in control and Experimental groups

Groups	Mean	S.D	t-value	P-value
Group A. control rats	1.85	0.04	17.2	0.0006
Group B. Experimental rats	1.75	0.07		

Table No.3: Weight of the testes in control and experimental groups in grams

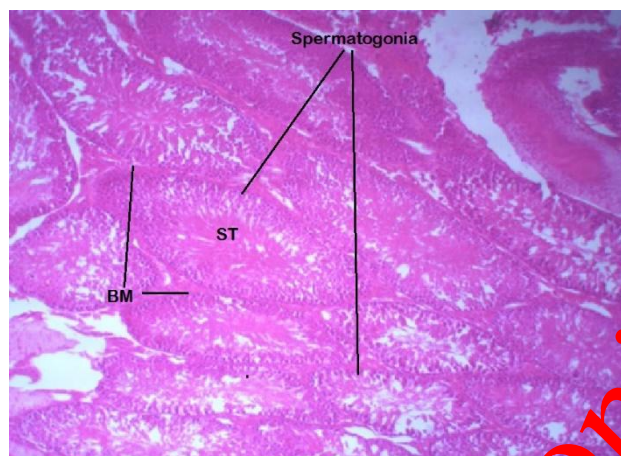
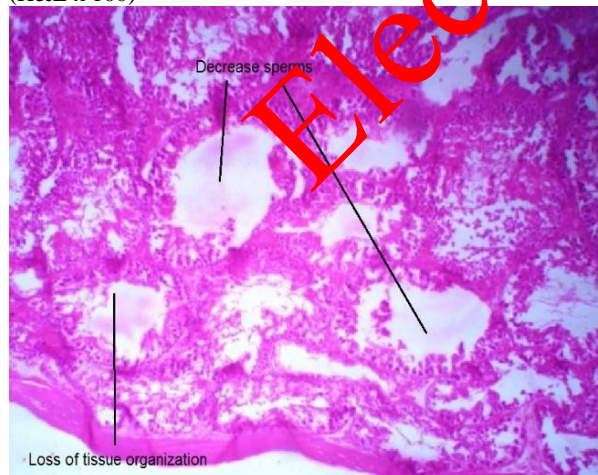
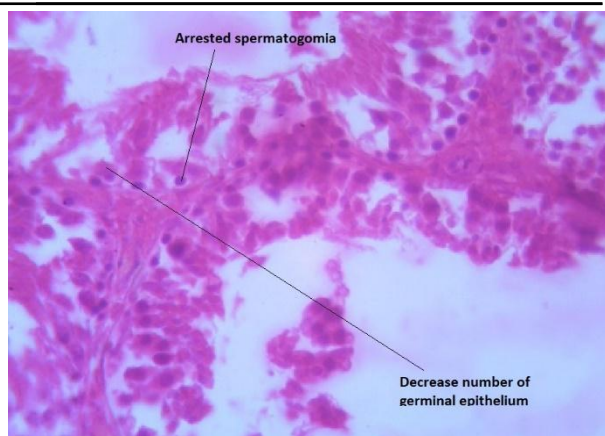
Groups	Mean	S.D	t-value	P-value
Group A. control rats	1.07	0.03	92.8	0.0001
Group B. Experimental rats	0.86	0.06		

Table No.4: Gonadosomatic index (GSI)

Groups	Mean	S.D	t-value	P-value
Group A. control rats	0.47	0.02	74.7	0.0001
Group B. Experimental rats	0.37	0.04		

Table No.5: Seminiferous tubule epithelial cell layers

Groups	Mean	S.D	t-value	P-value
Group A. control rats	5.20	0.63	73.2	0.0001
Group B. Experimental rats	2.90	0.57		

**Photograph-1:** Cross section of seminiferous tubule (ST) of control group shows normal Dark staining nuclei of spermatogonia. Basement membrane (BM) and spermatids are present in luminal surface. Lumens are filled with sperms. (H&E x 100)**Photograph-2:** Seminiferous tubules show loss of tissue architecture, necrosis and Low sperm counts in the experimental group (Caffeinated soft drinks). (H&E x 100)**Photograph-3:** Seminiferous tubule shows few layers of germinal epithelium and maturation arrest of spermatogonia. BM is thin with few sperms. Edema is present. (Experimental Group) (Caffeinated soft drinks) (H&E x 400)**Photograph-4:** Cross section of seminiferous tubule shows hyalinization and maturation arrest of spermatogonia. BM is thin with decreased germinal layer. Edematous and narrowing of lumen were observed in the experimental group (Caffeinated soft drinks). (H&E x 400)**Table No.6: Seminiferous tubules diameter (STD) of rat testes (µm)**

Groups	Mean	S.D	t-value	P-value
Group A. control rats	259.80	4.01	49.1	0.0001
Group B. Experimental rats	257.20	3.97		

DISCUSSION

The present is the original research study being reported from Department of Anatomy, Isra University. The present experimental study aimed to detect the effects of caffeinated carbonated soft drinks on the body weight, testicular size, testicular weight, GSI, seminiferous tubule epithelial cell layers and seminiferous tubular diameter an in-vivo rat model.

Caffeinated soft drink drunk experimental rats showed negative effects on the body weight, testicular size and weight, GSI, Tubule epithelial cell layers and diameter seminiferous tubules. The null hypothesis was rejected ($P < 0.05$) and alternative hypothesis was proved and research proves the caffeinated carbonated soft drinks adversely affect the testicular anatomy. Decrease testicular weight and size with impaired spermatogenesis are indicative of lethal effects of caffeinated carbonated soft drinks in the experimental rat's *in-vivo*. The experimental rats showed tendency of obesity induced by soft drinks intake as they increase the appetite and obesity is produced by the sugar content of the drinks. Caffeine may have deleterious effects on the spermatogenesis as proved in the present study. Soft drinks increase the appetite. Obesity and low sperm count may be considered as risk factors for the cardiovascular disease and infertility, yet this is to be proved in the human beings. Experimental rats drinking caffeinated soft drinks showed reduction of testicular weight and size, this proves the caffeinated carbonated soft drinks exerts toxicity on the testicular structures. Decrease in the testicular size was statistically significant ($p < 0.05$) as shown in table 2 and 3. The present study postulates the caffeinated carbonated soft drinks exert toxic effects on the testicular micro anatomy and spermatogenesis. All these findings of present study point towards the toxic effects of caffeinated carbonated soft drinks in *in-vivo* experimental rat model. The findings of present studies are supported by previous studies.¹³⁻¹⁷ Previous studies showed toxic effects of caffeinated carbonated soft drinks on the different organs such as the liver,¹³ renal tissue¹⁴, brain tissue¹⁵, cerebellum¹⁶ and geniculate body.¹⁷ A previous study reported deleterious effects of caffeinated carbonated soft drinks on the kidney. They reported the fructose content of soft drinks induces metabolic syndrome and glomerular hypertension. Aspartame is carcinogenic which might decrease the semen quality of neonates in pregnant women using soft drink.¹⁸ The GSI is reported as an indicator of gonadal maturation,¹⁹ which was decreased in the present study as shown in table 2 ($p = 0.0001$). A previous study¹⁹ proved that the GSI is a biomarker of gonadogenesis and oogenesis in the fish. The findings support the present study. Our findings are also supported by the previous study of Ebbeiling et al.²⁰ This previous study reported adverse effects of cola soft drinks on the somatic growth and weight in rats. Another previous study²¹ proved bad effects of soft drinks on the brain tissue and body. The findings of this previous study are in full agreement with the present study. Purkinje cells of cerebellum were shrunken in rats fed on soft drinks was reported by a previous study.²² The findings of present study are supported by different previous studies.²³⁻²⁵ The present study concludes the caffeinated carbonated soft drinks are not

good for health as they predispose to the obesity, metabolic syndrome, coronary artery disease and infertility.

CONCLUSION

The caffeinated carbonated soft drinks exerts toxic effects on the on the body weight, testicular size, testicular weight, GSI, seminiferous tubule epithelial cell layers and seminiferous tubular diameter an *in-vivo* rat model. Both gross and microscopic anatomy of testes was disturbed in the experimental rats.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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A Comparison of 24 Hours Expectant Management Versus Induction of Labour in Pre-Labour Rupture of Membranes at Term

Kanwal Bashir¹, Sarwat Navid² and Azra Saeed Awan¹

ABSTRACT

Objective: To compare the outcome of 24 hours expectant management with early induction in prelabour rupture of membranes at term.

Study Design: Quasi-Experimental Study

Place and Duration of Study: This study was conducted at the Obstet and Gynae, Fauji Foundation Hospital, Rawalpindi from January 2016 to December 2016.

Materials and Methods: This study was conducted on 120 patients with 37-41 weeks gestation, parity upto 5, having a single cephalic fetus presenting within 8 hours of uncomplicated PROM. Patients were divided into two groups, 60 each. Group A was managed expectantly for 24 hours while group B was induced with prostaglandin E₂ vaginal pessary or oxytocin. Patients in both groups were monitored for signs and symptoms of chorioamnionitis. Fetal monitoring was done with fetoscope and CTG. Both the groups were observed for fetal distress, mode of delivery, postnatal complications like postpartum pyrexia, endometritis and for hospital stay. Neonatal outcome was assessed in terms of admission to Intensive care unit for > 24 hours and clinical signs of sepsis.

Results: In immediate induction group, 44(77.3%) patients delivered vaginally, 19(16.6%) had caesarian section and 6(10%) had instrumental vaginal delivery as compared to 40 (66.6%), 11(20%) and 8(13.3%) respectively in the expectant management group. Postpartum pyrexia was noted in 8(13.3%) in the immediate induction group as compared to 10(30%) in the other group. No significant difference was seen in fetal distress and neonatal infection rates between both the groups.

Conclusion: Immediate induction after term PROM is a safe and effective option with no adverse maternal and neonatal outcome when compared with expectant management. Immediate induction did not appear to increase cesarean section and instrumental vaginal delivery rates and was associated with decreased post natal pyrexia and conferred the benefit of reduced financial burden on patient as well as hospital by reducing the hospital stay.

Key Words: Expectant Management, Pre-Labour Rupture, Membranes at Term

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INTRODUCTION

Prelabour rupture of membranes (PROM) complicates approximately 8% of all pregnancies at term.¹ It is classically defined as rupture of integrity of fetal membranes before the onset of labour and resulting in leakage of amniotic fluid. PROM exposes the mother and fetus to increased risk of morbidity due to ascending infection from cervix and vagina. Maternal risks include chorioamnionitis before delivery and postpartum hemorrhage and endometritis after delivery especially with prolonged rupture of

membranes.⁶ Risk to the fetus is fetal distress and neonatal sepsis later on.

Management is either expectant or planned early birth by induction of labour. However there is a controversy about whether it is best to induce labour or to wait for spontaneous onset of labour if there is no evidence of fetal or maternal compromise.⁷ Conservative approach has been favored by some studies due to the fact that 80% of the patients go into spontaneous labour within 24 hours and also that the rate of caesarean section and instrumental delivery is less without a significant increase in the risk of infection.⁸ Others believe that early induction is preferable due to decreased risk of maternal and fetal sepsis, short delivery interval and hospital stay with no significant increase in the number of operative deliveries.⁹ Some studies support both options equally. Keeping in view this controversial background, we decided to conduct this study in our unit. The aim of our study was to compare the outcomes 24 hours expectant management with those of early induction in PROM at term. This analysis of clinical sequel of both management options will help us

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to formulate guidelines for a uniform labour ward protocol for management of term PROM in our setup.

MATERIALS AND METHODS

This Quasi experimental study was conducted at Fauji Foundation Medical College from Jan 2016-Dec 2016. Total 120 patients meeting our inclusion criteria were selected and group was allocated by randomization. Patients were divided into 2 groups of 60 each. Group A was managed expectantly for 24 hours while group B was induced with prostaglandin E₂ vaginal pessary or oxytocin. Data was collected through a proforma. Detailed history and examination was performed and baseline investigations were sent. Both groups A & B started on prophylactic antibiotics. Patients in both were monitored for signs and symptoms of chorioamnionitis. Fetal monitoring was done with fetoscope and CTG. If labour failed to start after 24 hours in patients of groups B, they were induced according to the same protocol as for active management group.

Both the groups were observed for fetal distress, mode of delivery, postnatal complications like postpartum pyrexia, endometritis and for hospital stay. Neonatal outcome was assessed in terms of admission to Intensive care unit >24 hours and clinical signs of sepsis.

Data Analysis: Data was entered in SPSS version 19. Student T-test was applied to compare these variables between groups. Mode of delivery, postnatal complications and neonatal outcome was presented as numbers and percentages. Chi-square test was applied to compare these variables between groups. P value of <0.05 was considered significant.

Inclusion Criteria: All booked patients upto 34 weeks with singleton pregnancy and cephalic presentation reporting within 8 hours of onset of leaking were included in this study.

Exclusion Criteria: Previous LSCS, Malpresentations, IUD, Grand multiparas, Chorioamnionitis, Women presenting in already established labour, Gestational age < 37 & > 41 Weeks, Multiple pregnancy, Pregnancy with medical disorders

RESULTS

This study extended over a period of one year from Jan to Dec 2016. Mode of delivery was analyzed as in 60 patients of immediate induction group. Most of patients n=44(73.3%) had normal vaginal delivery, n=10(16.6%) had cesarean section while n=6(10%) had instrumental delivery. Whereas in 60 patients of expectant management group, most of the patients, n=40(66%) had normal vaginal delivery followed by n=12(20%) who had cesarean section and n=8(13.3%) had instrumental delivery. (As shown in table No.1)

Maternal outcome was analysed as in 60 patients of Immediate Induction Gp, Postpartum pyrexia was found in n=8(13.8%) patients and none of them developed endometritis, whereas in 60 patients of expectant management group, postpartum pyrexia was found in n= 18(30%) and only 2 patients had endometritis (3.33%) with P=0.000 (as shown in Table no 2)

Table No. 1: Mode of Delivery n= 60 in each group

Mode of Delivery	Immediate Induction (Gp B) n (%)	Expectant Management (Gp A) n (%)	Significant Value
Vaginal delivery	n=44 (73.3%)	n=40 (66%)	P=0.848
Caesarian section	n=10 (16.6%)	n=12(20%)	
Instrumental delivery	n=6 (10%)	n=8 (13.3%)	
Total	n=60	n=60	

Table No. 2: Maternal Outcome, n=60 in each group

Outcome Measures	Immediate Induction (Gp B) n (%)	Expectant Management (Gp A) n (%)	Statistical Significance
Postpartum Pyrexia	n=8 (13.3%)	n=18 (66%)	P=0.000
Endometritis	n=0	n=2(3.33%)	P=0.117

Table No. 3: Mean Hospital Stay in Hours n= 60 in each group

Outcome Measures	Immediate Induction (Gp B)	Expectant Management (Gp A)	Statistical Significance
Mean hospital stay in Hours	24.7 ± 8.44	36.3 ± 11.34	P=0.582

Table No. 4: Neonatal Outcome, n= 60 in each group

Neonatal Outcome Measure	Immediate Induction (Gp B)	Expectant Management (Gp A)	Significant Value
Fetal Distress	n=10 (16.6%)	n=12(20%)	P=0.000
Stay in ICU for 24 Hours	n=6 (10%)	n=18(13.3%)	
Neonatal Infection	n=6 (10%)	n=6 (10%)	

In immediate induction group n=10(16.6%) cases developed fetal distress, n=6(10%) neonates required admission in NICU for more than 24 hours and n=6(10%) neonates developed neonatal infection as compared to n=12(20%), n=8(13.3%) and n=6(10%) respectively in expectant management group (as shown in table no 4).

DISCUSSION

Much of the debate surrounding PROM at term has centered on whether immediate induction is better than the expectant management. This study compared immediate induction of labour after PROM with expectant management in order to establish better management options for this group of women.

In this study the rate of normal vaginal deliveries in Group B is 73.3% Vs 66% in Group A. This is consistent with study of Farhat Karim¹. Some studies reported rate of 80% with expectant management. Caesarean section rate in our study was comparable in both groups being 16.6% in group B and 20% in group A with $P=0.848$ which is statistically insignificant. Datta Mamta reported that rate of 16.7% vs 18%, Rizwana Chaudhri reported 10% Vs 12% in immediate induction and expectant management groups respectively.^{10,11} Tan BP also found no significant difference in Caesarean section rate in both both groups. Local studies conducted by Tasnim and Samia Malik reported high caesarean section rate in active management as compared to expectant management group i.e. 29% vs 10% and 17.8% vs 9% respectively^{12,13}. Suneela K in her study showed that there were 88.3% vaginal deliveries in expectant group and 85% in active management group i.e. 11.7% LSCS rate in expectant group and 15% in induction group. This is in contrast to our study results which showed better vaginal delivery rates i.e. 73.3% in active management group and 66% in expectant group. A study by Shanti K et al stated LSCS rate as 5.7% in expectant group as compared to 12% in active group, which is contrary to our study results.¹⁴ Rate of instrumental delivery in our study was 16% in active management group and 13.3% in the expectant management group with a P value of 0.848 which is statistically not significant. Rizwana Chaudri gave 13.3% rate of instrumental delivery in active management group and 8% in expectant management group which are comparable to our study.¹⁰

In our study, less number of women developed postnatal pyrexia in the immediate induction group (13.3% as compared to 30.3% in expectant management group). This is consistent with observations of Mozurkwich and FM Wolf.¹⁵ One patient developed endometritis in expectant management group as compared with none in immediate induction group. Other studies have also reported increased maternal infectious morbidity with expectant approach.¹ Surprisingly in our study the number of women experiencing postnatal pyrexia was quite high i.e 13.3% and 30.36% in induction group and expectant group respectively. A study conducted by Suneela K reported Pyrexia of 3.3% and 5% in induction group and expectant group respectively.² Sumera Y conducted study in Peshawar which reported

postpartum pyrexia of 2.4% in induced group and 16% in expectant group.¹⁶

No significant difference was found in fetal outcome of both groups in our study in terms of neonatal infection and NICU admission rate which were 10% vs 13.3% and 10% vs 10% in immediate induction group and expectant management group respectively. Comparable neonatal outcome has been reported by studies conducted but Rizwana Chaudhri, Farhat Karim and Chaudry Sunehamay.^{1,10} Suneela K et al reported severe birth asphyxia requiring ventilation in 6.6% cases and neonatal sepsis was reported in 11.7% of expectant group.²

In this study women in the immediate induction group had a considerable shorter mean hospital stay i.e. 24.7 ± 8.44 hours as compared to 36.3 ± 11.34 hours in the other groups. This finding is similar to the observation of Hartling.⁹ Another study also showed results consistent with our study, as they concluded that active management reduced latent period with shorter hospital stay and better maternal satisfaction.

CONCLUSION

We concluded that immediate induction after term PROM is a safe and effective option with no adverse maternal and neonatal outcome when compared with expectant management. Immediate induction did not appear to increase cesarean section and instrumental vaginal delivery rates. It is appeared to be associated with a decreased rate of postnatal pyrexia and endometritis. Immediate induction also confers the benefit of reduced financial burden not only on patient but also on health facilities by decreasing the hospital stay. We recommend that choice of immediate induction should be offered to all patients presenting with PROM at term.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Efficacy of Bevacizumab for Uveitis Induced Cystoid Macular Oedema in Southern Punjab

Muhammad Afzal Bodla and Ali Afzal Bodla

ABSTRACT

Objective: To determine the presenting with cystoid macular oedema from non-infectious uveitis.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at the OPD of Multan Medical and Dental, College Multan. Time of recruitment was from January 2015 till Feb 2016.

Materials and Methods: Seven eyes of seven patients were included in the study. They were followed over a period of twelve months with a loading dose of bevacizumab on the day of recruitment. Patients had an OCT of macula at four weekly intervals. Injections were repeated only if they had no reduction in cystoid changes, new cyst formation or increase in macular thickness. Primary outcome was measured in the form of improvement in visual acuity. Secondary outcome was reduction in central macular thickness on OCT.

Results: A total of twenty four injections were administered in seven eyes of seven patients over a period of twelve months. Main outcome was increase in visual acuity which was 9.9 ETDRS letters at the end of twelve months period. Improvement in visual acuity was found to be statistically significant ($P=0.003$). The mean central macular thickness decreased by 39.1% over a period of twelve months ($P=0.002$). Two patients had recurrence of uveitis while one developed glaucoma afterwards.

Conclusion: There was significant improvement in visual acuity as well as reduction in central macular thickness.

Key Words: Bevacizumab, Uveitis, Cystoid Macular Oedema, Central Macular Thickness

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INTRODUCTION

Cystoid macular oedema has always been considered as the main limiting factor in reduction of visual acuity post intraocular inflammation.^{1,2} Common management involves use of topical and systemic steroids. Local application of triamcinolone has gained popularity in the form of subtenon, orbital floor and intravitreal injections.^{1,3} Nevertheless which ever form of steroids is used, it carries a serious spectrum of side effects. Intravitreal triamcinolone carries a very high incidence of cataract and glaucoma.^{3,4} Similarly use of oral glucocorticoids bring with them a lot of adverse effects. Use of glucocorticoid with steroid sparing agents as methotrexate, azathioprine etc can provide an effective management option to control uveitis; however it apparently carries a limited role in resolution of cystoid macular oedema. Similar finding is observed with the use of other immunosuppressant as cyclophosphamide and mycophenolate.^{4,6}

In recent years anti vascular endothelial growth factor (anti-VEGF) has gained a vital role in the world of ophthalmology.^{1,5}

It is to do with its significant anti angiogenic and anti-inflammatory characteristics while bearing relatively lesser side effects. Vascular endothelial growth factor is known to induce IL-1B and IL-6.⁷ This leads to compromised vascular integrity which is of pivotal role in formation of cystoid macular oedema. These interleukins were found to be in higher concentration in aqueous of uveitic patients. Since bevacizumab (anti-VEGF) holds the capacity to antagonize the effects of mentioned interleukins, hence can prove useful in resolution of cystoid macular oedema. This has been shown by several studies so far though the limitations are sample size and relatively short duration of follow up.^{6,8}

This is a prospective, non-comparative, interventional study to determine the efficacy of bevacizumab for regression of cystoid macular oedema. Sample was of well controlled, non-infectious uveitis with controlled inflammation.

MATERIALS AND METHODS

A total of seven patients were recruited from the OPD of Multan Medical and Dental, College Multan. Time of recruitment was from January 2015 till Feb 2016. A detailed informed consent was obtained from the patients. Inclusion criteria were as described below: (1) Eye with noninfectious uveitis as confirmed following detailed serology and chest x-ray. (2) Vision of 6/9 or worse in the recruited eye. (3) Proven cystoid macular

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oedema on OCT with central macular thickness greater than 250 microns.

In case of similar status in both eyes only one eye was recruited for the study. Exclusion criteria included previous intravitreal triamcinolone injection in the same eye, previous history for glaucoma, vitreomacular traction and active inflammation with associated vitreous haemorrhage. Patients who had any anti-VEGF injections in the same eye for past three months prior to enrollment were also excluded from the study. In systemic evaluation, exclusion was applied to patients with uncontrolled systemic hypertension.

A detailed informed consent was taken from the patients. Patients had their first injection on day one and were given subsequent four weekly appointments for next twelve months. Patient had an OCT done on every visit. Bevacizumab was repeated only if they were unresponsive to first injection. Other indication for reinjection were persistent or recurrence of macular oedema on OCT or an increase in central macular thickness of at least 50 microns from previous injection. Patients had a clinic visit on day 1 and day 7 post injections. On each clinic visit they had their visual acuity tested, intraocular pressure measurement using Goldmann applanation tonometry. A detailed anterior and posterior segment slit lamp examination was performed to evaluate the extent of inflammation.

Injections were administered under sterile conditions in operating theatre. Surgeon used mask, sterile gloves, theatre gowns and had surgical scrub prior to the procedure. Patients had topical anaesthetic drops preoperatively for local anaesthesia. Injections were administered using standard prefilled insulin syringes with 30 gauge needles on them. All patients had a thorough cleaning of periocular tissue and lids using 5-10% povidone iodine. Same drops were instilled in the eyes to be operated for two to three minutes in order to achieve the maximum possible sterility. Patients had a self-adhesive surgical drape covering periocular tissue, nose and part of face prior to the procedure. Patients had a sterile speculum inserted followed by the intravitreal injection. Injections were performed in the infero temporal quadrant. Needle was inserted 3.5mm from the limbus for phakic and 3.5mm for pseudophakic and aphakic patients. Following the procedure, speculum was removed and patients had a single drop of ofloxacin eye drops combined with a single drop of povidone iodine solution. All patients had a sterile eye pad and were instructed to remove it 2-3 hours post procedure. No topical antibiotics were used preoperatively. All patients were prescribed with topical ofloxacin eye drops. Clear written instructions in native language were provided to them for the use of topical antibiotic drops to be used four times a day for five days.

OCT scans were obtained on each monthly visit. Scans had a careful examination by the investigators. Central

macular thickness maps were obtained along with detail cross sectional images to look for changes in retinal architecture in the form of retinal cysts. Scans were obtained on Avanti, Optovue OCT machine.

Paired t-test was used to evaluate the difference in visual acuity at base line and end of study that is 12 months. $P < 0.05$ was considered to be statistically significant. Changes in central macular thickness again were analyzed in a similar way.

RESULTS

A total of nine patients were enrolled for the study but two lost to follow up, hence results were based on the remaining seven patients who completed twelve months of follow up as per study protocol. All patients had no active inflammation at the time of recruitment. The diagnosis was of sarcoidosis in one, VKH in two while remaining four had idiopathic autoimmune uveitis. Mean change in visual acuity was found to be 9.9 ETDRS letters from the base line. None of the patient had loss of visual acuity from base line. Central macular thickness was measured at baseline, month 3, 6, 9 and 12. A significant decrease, as expected was seen post first injection. A mean decrease of 49.7% was noticed following first injection. However there was a gradual increase in retinal thickness with a final mean reduction of 39.1% at the end of study $p=0.002$, which was statistically significant.

Adverse effects included development of glaucoma in one patient, while two had recurrence of inflammation by the end of study. These patients were required to be commenced on oral prednisolone. A single patient had flare up of uveitis in contralateral eye which was treated with topical prednisolone acetate eye drops.

DISCUSSION

Results of this study shows that Bevacizumab appears to have significant results on improvement in visual acuity as well as reduction in central mean macula thickness. Macular oedema is considered as to be the main limiting factor in reducing visual acuity.⁹ The pathogenesis of cystoid macular oedema in uveitic patients is poorly understood. The main mechanism is considered to be disruption of blood aqueous barrier as well as increased vascular permeability.^{11,12} Several interleukins especially IL-1B and IL-6 have considered as the main culprit in this mechanism. It has already been demonstrated that VEG-F concentration is higher in the aqueous of uveitic patients with CMO as compared to patients without CMO.^{10,11} Corticosteroids have been long use for the treatment of cystoid macular oedema but we all are aware of the significant spectrum of side effects, to name a few glaucoma and cataract formation.¹² The patients who are refractory to steroids can be considered for steroid sparing immune suppression but that carries a further increase in the extent of side effects.

It has been nearly a decade since VEGF is used for the treatment of uveitis related cystoid macular oedema.¹³ It has shown to reduce foveal thickness and improve visual acuity in short term. There have been variable results quoted in different studies since then, with some showing improvement while in other visual acuity has remain unchanged or has slightly declined following Bevacizumab injections.¹⁴ Majority of studies are based on a single loading dose of anti-VEGF with three to six months of follow up. Acharya et al have published a study looking at the effect of Ranizumab on uveitic macular oedema. In their study, they have reported a significant increase in visual acuity (an average increase of 13 ETDRS letters) and a significant decrease in central macular thickness, very similar to what we have noted with Bevacizumab in our study.¹⁰

Reddy et al published a similar study using Ranibizumab as their choice of anti-VEGF but with extended follow up i.e. twelve months.¹⁵ In their study again they have found similar results in terms of improvement in visual acuity as well as reduction in central macular thickness. Reddy et al have also published a very interested finding, i.e. need for injections gradually reduces with time as patients required an average of 4.6 injections in first six and 1.8 in the next six months.¹⁵ We do agree with their findings as we have noticed a comparable frequency of injections but interestingly with Bevacizumab.

Improvement in visual acuity during our trial was found to be statistically significant i.e. $p=0.003$. We found that visual acuity continues to improve steadily, though maximum improvement is seen in the first month post injection. Since recurrence of uveitis was not noticed in our patient group, hence that can be excluded as a confounding factor, which otherwise potentially can mask the useful effect of Bevacizumab. If we follow the MUST study guidelines, decrease in central macular thickness was very much noticeable with our patients. According to MUST study a 20% decrease in retinal thickness is considered to be significant.^{1,16} In our study a decrease of 39.1%, almost twice was noticed, hence making it to be a very significant value.

In our study we used Bevacizumab as anti-VEGF of choice. Authors consider this intervention as to be of vital importance. Due to financial restrains and Pakistan being a developing country Ranibizumab is used at a very limited level. Hence it is important to publish our national data incorporating available treatment modalities i.e. Bevacizumab in this case. Moreover this study provides an insight on the demographics of uveitic macular oedema in Southern Punjab. More than 50% of our patients were found to carry idiopathic noninfectious uveitis. Intervention was well tolerated by all patients enrolled in the study. No serious side effects as retinal detachment or endophthalmitis was found in any patient post injection.^{17,18} However some

patients noticed minor problems as floaters and occasional discomfort. One of our patient developed glaucoma by the end of study. It was not clear whether this was secondary to uveitis as apparently this patient was not found to have recurrence of inflammation during the study time. His intraocular pressures were controlled with topical IOP lowering medication. Authors believe gain in visual acuity was a direct translation of improvement in retinal architecture.¹⁹

Sample size was considered to be the main limitation of this study. Authors believe that the time for follow up was appropriate and at par with similar international studies done on the same subject. It is important to conduct a similar study with larger sample size and a comparative arm. It will be extremely useful to have similar study comparing effect of Bevacizumab, Ranibizumab and intravitreal steroids. Anterior uveitis itself has been described as one of the side effects of Bevacizumab, though this finding was not observed in our study.²⁰

CONCLUSION

Authors believe this study helps us to understand our local Southern Punjab cohort, clinical practice patterns, patient demographics and effect of Bevacizumab on uveitic cystoid macular oedema.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Accuracy of Ultrasound in Predication of Birth Weight

Afshan Ahmad, Samina and Ruqia Fida

ABSTRACT

Objective: To find the accuracy of ultrasound in the predication of birth weight.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Obstetrics, & Gynecology Department, the Lady Reading Hospital Peshawar & Jinnah Medical College Peshawar from 1.7.2012 to 31.12.2012.

Materials and Methods: All singleton pregnancies at term (37-42 weeks) with age group 15 to 45 years, attended OPD were enrolled in the study. Informed consent was taken from those participants who meets the inclusion criteria. After detailed history and clinical examination of all pregnant patients were subjected to standard obstetric ultrasound to predict fetal weight. Ultrasound EFW was obtained of all registered pregnant women's. Had lock reference tables was used for calculating diameter, abdominal circumference and femur length. Birth weight of the neonate was measured with a standard weighing machine to confirm the accuracy of the ultrasound findings. Accuracy of Ultrasound (US) was determined in terms of birth weight of the neonate. The US was considered accurate if the birth weight of the baby lies within ± 200 grams of the estimated fetal weight on US.

Results: A total of 159 of women with singleton pregnancies at term (diagnosed by ultrasound), participated in this study. Mean age of patients was 29.70 ± 5.680 SD years. Mean period of gestation at the presentation was 38 weeks with ± 0.887 SD. Fetal weight calculated by ultrasound ranged from 2.50 to 4.30 gram while mean fetal weight was 3.40 gram ± 0.401 SD. Actual birth weight ranged from 2.20 to 4.50 gram with mean birth weight of 3.21 ± 0.427 SD.

In the study Ultrasound EFW was accurate only in 59 (37.1%) cases i.e. only in 59 cases (37.1%) The estimate weight was ± 200 gram of actual weight. while 100 out of 159 estimates (62.9%) were more than ± 200 gram from the actual weight. The over-estimated birth weight was found in 44% (70) by 307grams. Fetal ultrasound underestimated the birth weight in 18.9% (30) of the cases. Fetal ultrasound underestimated the birth weight by 195 grams. The mean error in the estimation of birth weight was 251 grams.

Conclusion: A significant error in EFW was found that is ± 250 grams of actual weight. Therefore depending on only ultrasound for EFW may lead obstetrical interventions.

Key Words: Sonography, Birth Weight, Fetal Weight Estimation.

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INTRODUCTION

The Prenatal weight that is estimation of fetal weights (EFW) in labour and late pregnancy is very important in the labour management and delivery for making decisions by the obstetrician about the instrumental vaginal delivery, trial of labour after caesarean delivery and electric caesarean section for those patients having a macrosomia fetus^{1,2}. Macrosomia has immense attention to increase the enhances of perinatal morbidity and mortality which may result of genital tract trauma and postpartum bleeding².

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Some researchers has found the evidence that those patients born macrosomic fetus having future health risks³. The importance of correct EFW values are in case of intrauterine growth is restricted and in premature labour¹.

The estimation of fetal weight (EFW), two methods are used for predicting birth weight i) ultrasonic measurement of fetal skeletal parts ii) abdominal palpation of fetal parts and calculation based on uterine height⁴. Ashraf et al 2010 – reported the use of ultrasound for fetal weight estimation the clinical use of this method is more than thirty years. Now a days Sonography is very popular and most widely, accepted method for EFW. Many studies have been conducted the usefulness of this method for monitoring normal fetal growth, intrauterine growth retardation, macrosomic and isoimmunization.^{5 6 12 13}

The ultrasound based fetal weight estimation takes in account of different measurements of the fetal body integrated into different formulae. The formula based on hand- Abdomen – femur measurement showed the lowest percentage error⁷.

The sensitivity and specifically of birth weight prediction by ultrasound method was 92.1% and by palpation was 99.6%.⁸ In one study, The accuracy of ultrasound for estimation of fetal weight has been reported to be 72.2%.⁹

The aim of this research work was to find out the accuracy of ultrasound in the determination of normal fetal weight similar to production any birth weight of the body. The finding of this results will providing and the anthropological variation with no population can change the predicted equation for sonographic fetal weight estimation. Moreover, estimated fatal weight is an important non invasive and cheap parameter to decide in mode of delivery which is easily available before delivery. It will help to avoid unnecessary caesarean deliveries especially for obstetrician anxiety in case of good size bay. On the other hand, estimating fetal weight beforehand can predict difficult delivery and complication like shoulder dystocia, in which cases caesarean delivery can be planned.

MATERIALS AND METHODS

The study was conducted at the department of obstetrics and Gynaecology, The Lady Reading Hospital Peshawar, and Jinnah Teaching Hospital Peshawar. The duration of study was six months from the date of approval. The sample size 159 keeping 72.2% of proportion of accuracy of ultrasound in EFW. The Margin of error as WHO sample size calculation. Non probability consecutive sampling techniques was used.

Sample Selection:

- All singleton pregnancies at term (37-42 weeks)
- Age group 15 to 45 years.
- BMI < 25.

Exclusion Criteria:

- BMI > 25
- Preterm pregnancies (< 37 weeks)
- Any congenital malformation, including hydrops fetalis, sacrococcygeal teratoma
- Any liquor abnormality, i-e polyhydramnios or oligohydramnios
- Multiple pregnancies

Data Collection: The study was started after approval of ethical committee of Jinnah Medical College. All pregnant women were attended the OPD were included the benefits of this study was explained and a consent form was obtained. The detail history and clinical examination followed by standard obstetric ultrasound to predict fetal weight. The Ultrasound examination was conducted signal experienced radiologist. All the women were followed over till delivery. Ultrasound was repeated after 7 days for calculating fetal weight if patient did not deliver within a week of ultrasound. Birth weight of the neonate was obtained using a

standard weighting machine to confirm the accuracy of the ultrasound.

Strict exclusion criteria was adopted to control confounders and bias in the study results.

Data Analysis: The collected data was analyzed in SPSS version 15. Mean \pm SD was calculated for numerical variables like age, fetal weight on ultrasound and birth weight of the neonate. Frequencies and percentages were calculated for categorical variables like accuracy. Accuracy was stratified among age to see the effect modifications.

RESULTS

A total of 159 of women with singleton pregnancies at term (diagnosed by Ultrasound) participated in this study. Age of the population ranged from 15 to 40 years, with mean age of 29.70 ± 5.680 SD years. Most common age group was 20-30 years.

All patients included in the study were in their third trimester. Period of gestation ranged from 37 to 40 weeks. Mean period of gestation at the presentation was 38 weeks with ± 0.887 SD.

Regarding obstetrical history of the study population, most patients presented with gravida 3 and para 1. The highest gravida was 13 and highest para was 12 while the lowest gravid was 1 i.e. primigravida.

Most of the patients belonged to the district Peshawar and only few patients were from other districts. Most patients included in this study were from Peshawar (53), Nowshehra (23), Mardan (21), Charsadda (17) and district Sawabi (10) respectively of 159 patients 6 (3.8%) were also from Afghanistan.

Ultrasound EFW was obtained for all women using standard Hadlock reference tables that used biparietal diameter, abdominal circumference and femur length for calculating fetal weight. Estimated Fetal weight ranged from 2.50 to 4.30 gram. Mean weight was $3.40 \text{ gram} \pm 0.401$ SD. Birth weight was measured immediately after birth using a standard weighing machine in grams.

Actual birth weight ranged from 2.20 to 4.50 gram. Mean birth weight was 3.21 ± 0.427 SD (Table 01).

Accuracy of Ultrasound was determined in term of birth weight of the neonate. The US was considered accurate if the birth weight of the baby lied within ± 200 grams of the estimated fetal weight on US. In this study EFW by ultrasound was accurate in 59 patients (37.1%) while in 100 patients (62.9%) it was not accurate in predicting birth weight (Table 2).

Table 3 indicating error found in estimation of birth weight in 44% (70) of the patients or predicted birth weight finding by ultrasound studies were 307grams. 18.9% (30) cases showed underpredicted birth weight by an average of 195grams. Thus in our study the mean error in the prediction of birth weight was 251 gram. In

this study, only 59 patients (37.1%) estimates were within ± 200 grams off from the actual weight.

Area / District wise Distribution of Patients (N=159)

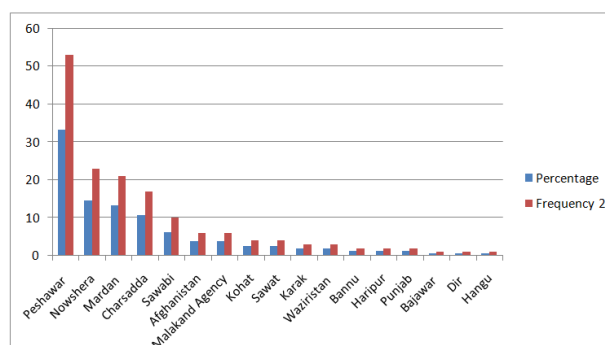


Figure No.1: Area / District wise Distribution of Patients. Frequency & Percentage (N=159)

We also stratified the accuracy of fetal ultrasound for weight estimation with age of the patient and duration of gestation effect modification. Chi-square test was applied to see whether the effect of these factors on the accuracy of ultrasound was significant or not. However

the effect of both the parameters on the accuracy of ultrasound was statistically not significant (p -value < 0.05) (Table 4 and 5).

Table No.1: Fetal Weight as Measured by Ultrasound and Weight Machine after birth (N=159)

	Minimum	Maximum	Mean	S.D
Fetal Weight on U/S (Kg)	2.50	4.30	3.40	0.428
Neonate's Birth	2.20	4.50	3.21	0.427

Table No.2: Accuracy of Ultrasound in the estimation of Fetal Weight (N=159)

Accuracy of ultrasound	Frequency	Percent
Yes	59	37.1
No	100	62.9
Total	159	100.0

Table 3: Error Estimation of Ultrasound (N=159)

Estimation	Frequency	Percent	Minimum	Maximum	Mean	S.D	Std. Error of Mean
Accurate	59	37.1	2.50	4.30	3.303	.42547	.05539
Over predicted	70	44.0	2.70	4.20	3.610	.33252	.03974
Under predicted	30	18.9	2.70	3.90	3.105	.39955	.07295
Total	159	100	2.50	4.30	3.401	.42887	.03401

Table No.4: Stratification of accuracy of Ultrasound Against different Age groups (N=159)

Accuracy of Ultrasound	Age Groups (years)			
	<20	20-30	31-45	>45
Yes	5	32	22	2
No	6	51	47	100
	11	83	69	159

P-value 0.705

Table No.5: Stratification of Accuracy of Ultrasound Against different Gestational Ages (N=159)

Accuracy	Gestational Age				Total
	40 weeks	37 Weeks	38 Weeks	39 Weeks	
Yes	8	18	17	16	59
No	7	36	34	23	100
	15	54	51	39	159

P-value: 0.450

DISCUSSION

In the management of pregnancy the fetal weight estimation is very important. It helps to predict fetal outcome, and helps the mode of delivery. Accurate EFW has been reduces the preinatal morbidity and morality associated with high risks pregnancy such as intrauterine growth retardation macrosomia and prematurity. EFW was done with ultrasonography most

commonly using hadlock's formula.⁷ weight determination line range of 10% of actual birth weight is considered acceptable accuracy in most of studies⁸ is about 75% results'. In this study (37%) estimates were in 10% range. Overpredicted birth weight found by ultrasound in 44% of cases was 307 grams similarly under predicted fetal weight in 19% cases by 165 grams, the results of our study showed that ultrasonography an error 251 grams in predicting the birth weight which was reported by other studies¹⁰. High estimation errors ws found by ultrasound. The fetal ultrasound may lead to unnecessary stress, anxiety and some time unnecessary obstetrical interventions. Contrary to some studies we reported a high percentage of error in the estimation of the fetal weight by ultrasound. The difference may be due to multiple factors including genetic, environmental and even inter and intra operator variation. More over the accuracy of a given formula decreases as the model deviates from the population from which it is derived, therefore, population specific measurements should be done since anthropological variations may change the various coefficients.

Although in this study birth weight was measured immediately after birth using a standard weighing machine in grams. Some authors studying reliability of ultrasound estimation of fetal weight have included estimations performed up to 14 days prior to delivery,

¹¹other have restricted their data to estimations performed within 3 to 7 days ¹². ¹³ or have attempted to correct for the time elapsed between the ultrasound and delivery by the addition of 25 g per day or 12.4g or 13.0 g per day. ¹⁴ Therefore variation in fetal weight estimations in different time and days after delivery. We also need to keep in mind that ultrasound measurements are operator dependent. So the high percentage of error in the estimation of the fetal weight may stem from the operator dependence of the procedure.

CONCLUSION

From the results of our study it is concluded that:

- Most patients were below 30 years age.
- Mean period of gestation was 38 weeks.
- ON average ultrasound overestimated the fetal weight by 307 grams and underestimated the fetal weight by 195 grams.
- The mean error in the estimation of birth weight was 251 gram and only 37% estimates were within ± 200 grams of the actual weight.

A significant error in EFW was found that is 250 grams of actual weight. Therefore depending on only ultrasound for EFW may lead obstetrical interventions, it is recommended that ultrasound finding must be corrected with clinical examination for estimation of fetal weight. Before making any decision regarding future management of delivery.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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An Analysis of Predictors Associated with Intrapartum C-Section among Nulliparous Women

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ABSTRACT

Objective: To identify risk factors associated with cesarean section among nulliparous women presenting in labor at term with singleton cephalic fetus and to build a multiple logistic regression model for predicting its probability.

Study Design: It was a Case Control study.

Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynaecology Aga Khan University Hospital Karachi from April 2010 to January 2011.

Materials and Methods: Non-probability purposive sampling technique used, 280 nulliparous women of 18-45 years selected; 140 women who had caesarean section were taken as cases and 140 women who had vaginal delivery were taken as control.

Results: We evaluated 14 variables out of these seven (cervical dilatation and length, fetal station, history of miscarriage, maternal age, height and spontaneous rupture of membranes) were found to be statistically significant in Univariate analysis. The final model improved and predicted 70.0% of cases correctly. Of the variables evaluated, 5 variables remained significant in multiple logistic regression model which predicted the women at higher risk of for cesarean section. The receiver operating characteristic curve (ROC) analysis of risk status for predicting the probability of cesarean section had area under the curve of 0.729; suggesting it to be a good predictive model.

Conclusion: Final model included maternal history of miscarriage, maternal age and height, cervical dilatation and length at admission; and has the ability to identify women at risk of requiring cesarean section just at the time of presenting in labor.

Key Words: Primary emergency cesarean section, risk factors cesarean delivery

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INTRODUCTION

Caesarean section rates have been rising progressively worldwide¹ with a wide variability amongst various countries and regions.² The Caesarean section rate worldwide has been reported as 15% of births.³ Various factors associated with increase in caesarean section rates include nulliparity, extreme ages of reproductive life, height less than 150 cm, obesity, use of electronic fetal monitoring and fetal compromise.⁴ The caesarean section rate is significantly higher among primigravida (27.26%) in Pakistan, even for each indication, the frequency of caesarean section is higher among primigravida ($P < 0.05$).⁵

Due to the morbidity and mortality associated with cesarean section there is a need to identify the driving forces behind the global rise in cesarean rate in order to halt and reverse this trend.

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To achieve this, a detailed understanding of the factors contributing to the increasing rate is required.⁶ A deeper understanding of the risk factors for first cesarean section is needed to identify modifiable and non-modifiable risk factors in order to reduce the rate of primary and subsequently repeat cesarean section. In the National Sentinel Caesarean Section Audit, of all cesarean section carried out in England and Wales the main reasons reported were fetal distress (22%) and Failure to progress (20%).⁷ Various maternal and fetal factors can influence these two primary reasons for either emergency, urgent or scheduled cesarean sections.

The purpose of this study was to identify risk factors associated with cesarean section among nulliparous women presenting in labor at term with singleton cephalic fetus and to build a multiple logistic regression model for predicting its probability.

MATERIALS AND METHODS

The objective of study is to identify risk factors (increased maternal age, short stature, obesity, maternal history of miscarriages, gestational age, spontaneous rupture of membranes (SRM), cervical dilation and effacement and fetal station) associated with cesarean section among nulliparous women presenting in labor at

term with singleton cephalic fetus. Numbers of women undergoing Caesarean section and normal vaginal delivery were taken as primary outcomes are dependent variable whereas secondary outcome were hypothesized risk factors at the time of admission to labor room and included history of miscarriage and other confounding variables like maternal age, height, weight, marriage-conception interval, cervical dilatation, cervical length, fetal station are independent variable. It was a Case Control study completed in 10 months in 2011 in the department of Obstetrics & Gynaecology at Aga Khan University Hospital, Karachi.

A sample size of 140 cases and 140 controls was identified with 80% power with a two-sided alpha of 0.05 to detect a difference in incidence of increased BMI of 25% in women with normal delivery as compared to 47% risk of increased BMI in caesarean section with an odds ratio of 2.0 or moderate effect of one-third or greater for a continuous risk factor.

A non-probability purposive sampling technique was used for 'case' or 'control' Inclusion criteria include all nulliparous women of reproductive age (i.e. 18 - 45 years) presenting in labour at term with singleton cephalic fetus. All nulliparous women who refuse to participate; who required induction of labor or presented in labor but were originally planned for elective caesarean section were excluded from study. Data was collected on a structured pre-tested and peer reviewed questionnaire form during a face-to-face interview with the study participant.

Entry of data and analysis was done using SPSS version 16. Descriptive statistics were computed for all variables of the study. Univariate analysis was done to identify the risk factors by analyzing categorical variables with Chi-square test and continuous variables by t-test. Multiple logistic regression analysis was performed by entry method to identify independent risk factors for cesarean section and to develop a prediction model.

For correctness of the model a clear hypothesis was defined as "Maternal and fetal factors are associated with risk of caesarean section among nulliparous women presenting in labor at term with singleton cephalic fetus." Variable selection was done on the basis of existing knowledge after building a hypothesized model which included history of miscarriage as the exposure variable and maternal age, height, weight, marriage-conception interval, history and treatment for infertility, cervical dilatation, cervical length, fetal station, spontaneous rupture of membranes (SRM), pre-pregnancy and gestational hypertension, pre-pregnancy and gestational diabetes, at the time of presentation to the labor room as the potential confounding factors. A subset of maternal age, weight,

and height were considered as the factors having potential interaction with the primary exposure variable. Variable selection process included stepwise backward elimination to achieve hierarchically well formulated (HWF) model by first eliminating the insignificant interaction terms, followed by assessment of confounders and individual variables. Threshold of < 0.25 was kept at the time of Univariate analysis for inclusion in the multivariate model by entry method. Conformity to linear gradient was checked for the continuous variables by quartile method. Collinearity was assessed by variable matrix and smaller value of standard error. This was further evaluated by using the linear regression technique with tolerance at value < 0.1 and VIF value > 10 .

Effectiveness of the model was judged by goodness of fit and is reported as ROC curve analysis. Because of limited time and non-availability of additional data cross-validation was not performed, but will be done at a later stage.

Importance of each independent variable in the model is reported with statistical tests of significance with p-values and odds ratio. Binary variables were coded as '0' for reference category and '1' for the result of interest. Interactions were evaluated in the initial phase before clinical assessment of confounding variables.

RESULTS

Basic characteristics of the women are enlisted in Table-1. There were 14 variables evaluated, out of these seven were found to be statistically significant between the controls and cases in the Univariate analysis. Variables, Cervical dilatation, cervical length, fetal station, history of miscarriage, maternal age, spontaneous rupture of membranes (SRM) and maternal height were used in the initial model (Table-2) at the time of presentation in labor for admission. The final model had -2Log likelihood of 336.083 with Hosmer and Lemshow test non-significant at 0.260. The final model improved and predicted 70.0% of cases correctly.

Of the variables evaluated, 5 remained significant in the multiple logistic regression model which predicted the women at higher risk of for cesarean section (Table-3). There were 140 women who had undergone cesarean section and 140 women who had undergone vaginal delivery in the final model.

The receiver operating characteristic curve (ROC) analysis of risk status for predicting the probability of cesarean section is shown in Figure 1 with area under the curve of 0.729; suggesting it to be a good predictive model.

Table No.1: Characteristics of Cesarean section as Cases and Vaginal delivery as Controls. (n=140)

Variable	Controls (Vaginal delivery) Mean±SD	Cases (Cesarean section) Mean±SD	p-value
Maternal age (years)	24.6 ± 3.7	25.8 ± 3.2	.004
Height (cm)	159.1 ± 5.8	158.1 ± 5.3	.141
Weight (kg)	70.4 ± 10.7	71.6 ± 10.8	.318
Body mass index(BMI)	27.8 ± 3.8	28.7 ± 4.0	.064
Marriage-conception interval (months)	17.9 ± 15.5	16.7 ± 7.9	.419
Gestational age (weeks)	38.5 ± 1.3	38.7 ± 1.5	.295
Cervical dilatation (cm)	2.8 ± 1.5	1.9 ± 1.0	<.001
Cervical effacement (cm)	1.5 ± 0.7	1.8 ± 0.6	<.001
Fetal station (-3 to +3)	-2.5 ± 0.7	-2.8 ± 0.4	<.001
Spontaneous rupture of membranes (SROM), n (%)	37 (26.4)	51 (36.4)	.072
History of miscarriage, n (%)	5 (3.6)	19 (13.6)	.003
History of treatment for subfertility, n (%)	4 (2.9)	3 (2.1)	.702
Pre-pregnancy or gestational hypertension, n (%)	11 (7.9)	11 (7.9)	1.000
Pre-pregnancy or gestational diabetes, n (%)	6 (4.3)	6 (4.3)	1.000

Table No.2: Characteristics of variables at admission to labor room in Univariate analysis.

Variable	Odds ratio (95% Confidence interval)	P value	-2Log Likelihood ratio
Maternal age (years)	1.11 (1.03, 1.19)	.004	378.873
Height (cm)	.97 (.93, 1.01)	.141	385.959
Weight (kg)	1.01 (.99, 1.03)	.318	387.158
Body mass index(BMI)	1.06 (1.00, 1.13)	.064	384.700
Marriage-conception interval (months)	.99 (.97, 1.01)	.419	387.483
Gestational age (weeks)	1.09 (.93, 1.29)	.295	387.048
Cervical dilatation (cm)	.55 (.42, .69)	<.001	355.351
Cervical effacement (cm)	2.26 (1.53, 3.33)	<.001	369.179
Fetal station (-3 to +3)	3.5 (.24, .64)	<.001	372.109
Spontaneous rupture of membranes (SROM), n (%)			
No	1.00		
Yes	1.60 (.96, 2.66)	.072	384.904
History of miscarriage, n (%)			
No	1.00		
Yes	4.24 (1.54, 11.70)	.003	378.689
History of treatment for subfertility, n (%)			
No	1.00		
Yes	.75 (.16, 3.39)	.702	388.015
Pre-pregnancy or gestational hypertension, n (%)			
No	1.00		
Yes	1.00 (.42, 2.39)	1.000	388.162
Pre-pregnancy or gestational diabetes, n (%)			
No	1.00		
Yes	1.00 (.32, 3.18)	1.000	388.162

Table No.3: Final Multiple logistic Model of the Case-Control Study(n=140)

Risk factors	Controls (Vaginal delivery) Mean±SD	Cases (Cesarean section) Mean±SD	Adjusted odds ratio(95% Confidence interval)
Maternal history of miscarriage, n (%)	5 (3.6)	19 (13.6)	4.671 (1.483, 14.71)
Cervical dilatation at admission (cm)	2.8 ± 1.5	1.9 ± 1.0	0.591 (0.453, 0.772)
Cervical length at admission (cm)	1.5 ± 0.7	1.8 ± 0.6	1.353 (0.854, 2.144)
Maternal age (years)	24.6 ± 3.7	25.8 ± 3.2	1.076 (0.997, 1.162)
Maternal height (cm)	159.1 ± 5.8	158.1 ± 5.3	0.960 (0.916, 1.005)

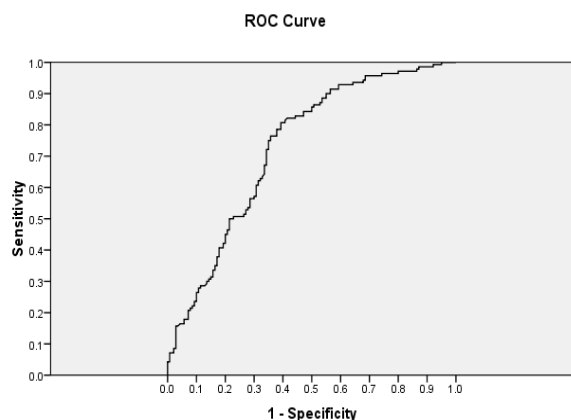


Figure No.1: Receiver operating characteristic curve (ROC) analysis

DISCUSSION

In this study we were able to identify risk factors which had statistical and clinical significance for prediction of nulliparous women requiring cesarean section when evaluated at the time of admission to labor room. The logistic regression model could identify 70.0% of women correctly which required cesarean section. One of the prime importance of this study is its ability to identify women at risk of requiring cesarean section just at the time of presenting in labor.

Increasing maternal age in primigravida has been significantly associated with cesarean delivery (53.7%) with mean age of case and control was 36.4 +/- 0.4 years and 23.1 +/- 1.6 years respectively.⁸ Other published data showed cesarean rate in elderly (>35years) versus younger primigravida (<35years) were (58.1% vs. 32.1%, P = 0.001).⁹ In our study the odds ratio were 1.076(CI 95% 0.997, 1.162). The risk of emergency cesarean section in labor lasting for more than 12 hours increased with increasing maternal BMI: OR 1.04 (1.01-1.06) (OR per 5-unit BMI-increase)¹⁰ similar results in other cohort studies were (36.2% vs. 22.1% in women with class III obesity versus women with normal BMI) (adjusted OR 1.46; 95% CI 1.23 to 1.73).¹¹ One study showed that more of the women in the study group (height <152 cm) had their delivery via caesarean section compared to those in the control group (height >152 cm) with a ratio of 3:1 for the study and control group respectively. There was a statistical significant relationship between delivery vaginally and via caesarean section between study group (< 152 cm) and control (> 152 cm), P = 0.03.¹² In our study we find height as statistically significant factor with OR (0.960 (0.916, 1.005)) but BMI was not statistically significant in our final model.

There was a significantly higher rate of Caesarean section in the recurrent miscarriage group.¹³ One study showed primigravida who had history of miscarriage, termination or stillbirth had odds of Caesarean section increased from 2- to 4-fold as compared to women who

had previous live birth.¹⁴ We also found it as a statistically significant risk factor with odd ratio of {OR 4.671(95% CI 1.483, 14.71)}, and p-value 0.003 in women with previous history of >2 miscarriage in our study.

It has been seen that medical and elective induction of labor in nulliparous women at term with a single fetus in cephalic presentation is associated with an increased risk of cesarean delivery, predominantly related to an unfavorable Bishop score at admission.¹⁵ There is a statistically significant increase in cesarean delivery rate with high presenting part on clinical examination. Patients with an unengaged vertex had 12.4 times higher risk of cesarean delivery than the patients with an engaged vertex.¹⁶ Similarly other study showed unengaged vertex in nullipara at the onset of active labour is associated with a higher risk of caesarean delivery due to arrest disorders and failure to descent of fetal head as compare to patients with engaged vertex.¹⁷

In our study cervical dilatation and cervical length was found to be statistically significant with {OR: 0.591(0.453, 0.772)} and {OR: 1.353 (0.854, 2.144)} respectively.

Rate of cesarean delivery increased as gestational age goes beyond 41 weeks of gestation (P < .001).¹⁸ We did not found statistically significant relation between gestational age and cesarean section.

Our study adds to the existing knowledge and also critically evaluates the models suggested for nulliparous women presenting in labor at term with singleton cephalic fetus and having risk of cesarean section.¹⁹

CONCLUSION

Final model included maternal history of miscarriage, maternal age and height, cervical dilatation and length at admission and has the ability to identify women at risk of requiring cesarean section just at the time of presenting in labor.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Prevalence of Risk Factors for Non-Compliance in Serologically Diagnosed Celiac Patients

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ABSTRACT

Objective: To investigate the prevalence of risk factors for non-compliance in serologically diagnosed celiac patients.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at the Department of Pediatric Medicine, Nishtar hospital, Multan, from March 2016 to February 2017.

Materials and Methods: A total number of three hundred and twenty nine (n=329) patients selected for study. Data was analyzed with the use of SPSS version 23.1. Categorical variables like gender and predictors of non-compliance were calculated and presented as frequencies and percentages and numerical variables like age were presented as mean \pm SD. Chi square test was applied to see effect modification. P value ≤ 0.05 was labeled as significant.

Results: A total number of 100% (n=329) patients were included in this study, both genders. Gender distribution showed that there were more males i.e. 55.9% (n=184) and 44.1% (n=145) were females. The mean age of the patients was 7.54 ± 3.22 . The main outcome variable of this study was Non-Compliance and it was observed that non-compliance was found 38.3% (n=126) in patients.

Conclusion: This study investigates the frequency of non-compliance in celiac patients and also identified the risk factors associated with non-compliance, finding of this study provide foundation to overcome these factors.

Key Words: Celiac disease, Serology, Non-compliance, Risk factors

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INTRODUCTION

Celiac disease is a common cause of malabsorption worldwide especially those of European decent making it a most common cause of genetically related malabsorption. Genetic, environmental and immunological factors are the main suspected etiological agents indicating the multifactorial nature of this disease¹. Celiac sprue is initiated by an environmental factor named gliadin which is a component of gluten and related prolamins. Gluten is found in wheat, barley, rye and oats. Whenever gluten containing substances are ingested by genetically susceptible individuals, an autoimmune response against tissue transglutaminase is commenced leading to progressive flattening of the small intestinal mucosa. Silent, potential, latent or symptomatic celiac disease are the various types of manifestation of celiac disease².

Gluten is largely indigestible owing to its complex macromolecular structure rich in proline and glutamine. Glutenins and gliadins are the alcohol-water soluble fractions of gluten. Gliadins can be segregated into its alpha, gamma and omega fractions on the basis of electro density³. 90 to 95% specificity and sensitivity of serological tests for detecting celiac disease in symptomatic, minimally symptomatic or even asymptomatic individuals have paved the way for calculating the true prevalence of celiac disease⁴. In North America, high prevalence of celiac disease amounting to almost 1% of the general population was narrated by several screening studies^{5,6}. Additionally, a dramatic increase in the prevalence of celiac disease is observed during the past few decades^{7,8}. In an epidemiological investigation conducted in Northern Sweden, a prevalence of almost 2% was found by using a combined serological/endoscopic approach in a population of 1000 adults⁹. Chronic diarrhea, weight loss, anorexia, abdominal distension, vomiting, abdominal pain are the typical manifestation of celiac disease in young children and infants. The sole treatment of a patient with celiac disease is lifelong avoidance of gluten ingestion. Though a daily dose of > 10 mg is likely to cause mucosal reaction, wheat, rye, oats, barley and their products should be avoided as completely as possible¹⁰. A strict gluten-free diet typically resolves gastrointestinal symptoms in a symptomatic patient within a few weeks. Normalization

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of hematological and biochemical parameters with improved height and weight follows the adherence to gluten free diet in a patient diagnosed with celiac disease. A study conducted by Margot L on celiac disease patients showed that, out of all patients, at least one negative follow-up serology was seen in 50% of patients and at least one positive follow-up serology was found in 27% of patients. Moreover, only 69%¹¹ of patients were documented to have good compliance.

This study was done to provide basic literature on the prevalence of risk factors for non-compliance in patients diagnosed with celiac disease and to help respective doctors in devising different strategies in order to minimize non-compliance. To this point, no local study is available on this topic despite the high prevalence of celiac disease.

MATERIALS AND METHODS

This descriptive study was conducted in department of Pediatric Medicine, Nishtar hospital, Multan, from March 2016 to March 2017. After approval from ethical committee of Nishtar hospital, Multan. Informed consent was taken from patient's guardian before including patient's data in research and they were ensured about the confidentiality of this information. Patient's addresses and telephonic contacts were taken. All aseptic measures were taken in order to collect and transport blood in BD Vacutainer for serology. Risk factors for non-compliance (medical illness, economical burden, religious norms, and unavailability of gluten free diet) were noted on follow up by researcher himself. All the collected data was entered on Performa for every patient. Patients with complaint of abdominal pain, chronic diarrhea and positive serological test were labeled as celiac patient. Medical illness (hypertension, diabetes etc.), patient's behavior (economic burden, prolong treatment etc.), religious norms and unavailability of gluten free diet which make the patients difficult to follow prescription were labeled as risk factors for non-compliance. Patients whose parents were not willing to give permission and those with age of <2 years or > 14 years were excluded from our study. SPSS version 10 was the computer software used for entering and analyzing all the collected data. Mean and standard deviation was calculated and presented for quantitative variables like age. Frequency and percentage was calculated and presented for qualitative variables like gender and risk factors (Medical illness, patient's behavior, religious norms, unavailability of gluten free diet). Effect modifier like gender was controlled by stratification of data. Post stratification chi square test was applied to see effect modification. A p value <0.05 was considered statistically significant.

RESULTS

A total number of 100% (n=329) patients were included in this study, both genders. Gender distribution showed that there were more females i.e. 55.9% (n=184) and 44.1% (n=145) were males. The mean age of the patients was 7.54 ± 3.22 (Table-1).

The main outcome variable of this study was Non-Compliance. Out of 100% (n=329) patients, in our study, it was observed that non-compliance was found 38.3% (n=126) in patients. It was also noted that out of 100% (n=329) patients, 16.7% (n=55) were having background of medical illness and 83.3% (n=274) patients presented without any medical illness. In these patients 31.6% (n=104) patients were non-compliant due to their behavior. A major reason of non-compliance in our study was religious norms, 40.4% (n=133) patients were non-compliant because of religious norms and 70.8% (n=233) were because of unavailability of gluten free diet (Table-2).

When patients were grouped into different age categories, it was noted that a majority of patients i.e. 51.7% (n=170) were aged from 2 to 7 years of age and 48.3% (n=159) were aged from 8 to 14 years of age. When Chi-Square was applied to check the effect modification, it was noted that gender, medical illness, patients behavior, religious norms, unavailability of gluten free diet and stratified age were significantly associated with non-compliance with P-values 0.000, 0.000, 0.000, 0.001, 0.007 and 0.025 respectively (Table-3).

A total number of 100% (n=329) patients were included in this study, both genders. Gender distribution showed that there were more males i.e. 55.9% (n=184) and 44.1% (n=145) were females. The mean age of the patients was 7.54 ± 3.22 (Table-1).

The main outcome variable of this study was Non-Compliance. Out of 100% (n=329) patients, in our study, it was observed that non-compliance was found 38.3% (n=126) in patients. It was also noted that out of 100% (n=126) patients, 15.1% (n=19) were having background of medical illness and 84.9% (n=107) patients were presented without any medical illness. In the Non-Compliance patients, 31% (n=39) patients were non-compliant due to their behavior. A main reason of non-compliance in our study was religious norms also, 30.2% (n=38) patients were non-compliant because of religious norms and 23.8% (n=30) were because of unavailability of gluten free diet (Table-2).

When patients were grouped into different age categories, it was noted that a majority of patients i.e. 51.7% (n=170) were aged from 2 to 7 years of age and 48.3% (n=159) were aged from 8 to 14 years of age.

Table No. 1: Demographic Variables

Characteristics	Frequency n=329	Percentage (%)
Gender		
Male	184	55.9
Female	145	41.1
Age groups		
2-7 years	170	51.7
8-14 Years	159	48.3

Table No.2: Frequency (Percentages %) of non-compliance and its factors

Characteristics	Frequency n=126	Percentage (%)
Non Compliance		
Yes	126	38.3
No	203	61.7
Medical illness		
Yes	19	15.1
No	107	84.9
Patient Behavior		
Yes	39	31.0
No	87	69.0
Religious Norms		
Yes	38	30.2
No	88	69.8
Unavailability of Gluten free diet		
Yes	30	23.8
No	96	76.2

Table No.3: Association of non-compliance and its factors

Gender	Non Compliance		P value
	No	Yes	
Male	88	96	0.000
Female	115	30	
Medical illness			
Yes	NIL	19	0.000
No	203	107	
Patient Behavior			
Yes	NIL	39	0.000
No	203	87	
Unavailability of Gluten free diet			
Yes	NIL	30	0.000
No	203	96	
Religious norms			
Yes	NIL	38	0.000
No	203	88	
Age Groups			
2-7 years	95	75	0.024
8-14 Years	108	51	

When Chi-Square was applied to check the effect modification, it was noted that gender, medical illness, patients behavior, religious norms, unavailability of gluten free diet and stratified age were significantly associated with non-compliance with P-values 0.000,

0.000, 0.000, 0.000, 0.024 and 0.000 respectively (Table-3).

DISCUSSION

Celiac disease is a multi-factorial disease whose only treatment is the restriction of gluten containing edible products. Parents of children suffering from celiac disease have a laborious duty to their children for maintaining their dietary compliance with gluten free die. Noncompliance to GFD in children with celiac disease is a global problem leading to increased morbidity and mortality associated with complications of untreated celiac disease. Effective counseling is the only way to ensure the required adherence. In our study, 329 patients were included with a little female predominance. Non-compliance was found only in 38.3% of patients while the remaining 61.9% of patients were compliant. This compliance rate was similar to the findings of various studies done both in and outside the India.

Our study results were in close approximation to the findings of Chandra et al who narrated a compliance rate of 75% in 2-17 years of age group¹². Similarly, a study done by Hm et al showed a variation of strict dietary compliance within the range of 45% to 81%¹³. Only a Canadian study done by Rashid et al had showed an exceptionally high compliance rate of 95%¹⁴. In our study, an overlapping trend was observed in various causes of non-compliance. Out of all the non-compliant patients, 70.8% were non-compliant because of unavailability of gluten free diet. Religious norms and behavior were the underlying causes of non-compliance in 40.4% and 31.6% of patients respectively. 16.7% of patients had a background medical illness as an excuse. Gender, medical illness, patient's behavior, religious norms, unavailability of gluten free diet and stratified age were significantly associated with non-compliance on applying chi square chart.

Age had an inverse relation with the compliance of GFD in our study. Same trend was observed in a study done by Ljungman and Myrdal¹⁵. Increased social interaction, outdoor activities, peer group pressure and need for experimentation are the factors responsible for increasing noncompliance in adolescence. Compliance is also related to the gender of the child in our study which is in total contrast to the finding of a study by Errichiello et al¹⁶. High degree of compliance is seen in children possessing positive attitude and behavior towards their condition. Dietary noncompliant group had greater difficulty in controlling the urge to violate dietary restriction at school and family party than that of dietary compliant group. Most of the food served at these places contains gluten posing a constant threat to the adherence in both dietary compliant and noncompliant groups. These findings emphasize the

need of widespread availability of gluten-free diet and its proper labeling.

A study conducted by Anson et al¹⁷ showed a direct relation between parental knowledge and dietary compliance owing to the fact that the better informed parents were more likely to identify gluten free food. The same idea is also supported by another study. Parents' positive attitude towards the child's condition and financial status is associated with higher degree of compliance. Anson et al. had also reported similar findings¹⁷. Therefore, counseling with the sole purpose of increasing awareness of parents regarding disease, various cheap and acceptable food alternatives, and delicious GFD recipes is likely to result in good compliance.

No doubt that the child's feelings and social activities like eating out and travelling are affected by this dietary restriction. Rashid et al¹⁴ and Anson et al¹⁷ have studied the effect of personal feeling of children on the degree of non-compliance. A feeling of being left out was reported in more than 50% of children by Rashid et al.⁴ These negative feelings are also one of the main reason for noncompliance in these patients. A study by Addolorato et al. have shown a decreased level of anxiety compared to the persistence of depressive symptoms on the use of GFD¹⁸. Anger was the predominant emotion reported in celiac patients by Ciacci et al. Chauhan JC et al. reported a statistically significant association of nuclear family to the good compliance¹². On the other hand, Joint family with all its temptation leads to poor compliance.

Our study was limited due to the fact that we were not able to study the effect of family type, parent's income, education level and child's emotion on the compliance of celiac patient. Moreover, histological and/or serological evaluation was not used in the confirmation of compliance assessed subjectively on the basis of dietary recall. However, the role of biopsy in a better assessment of long-term compliance compared to nutritional evaluation is uncertain. Only a modest correlation of histology was found with assessed dietary compliance in several previous studies. Visual analogue scale was used to calculate long-term adherence to the gluten-free diet in a study conducted by Mustalahti in 2002¹⁹. Jadrešin et al. used 7-day recall of patient's intake to define compliance with GFD into strict, semi strict and not on gluten-free diet²⁰. Similarly, a 4-day dietary record was used by Spatola in his study for evaluation of compliance^{21,22}. Therefore, dietary recall of 5 days was used to assess compliance in our study. All subjects were interviewed repeatedly in order to uncover minor dietary lapses and hidden transgressions in their follow up visits.

However, our study results point to both obvious and obscure factors leading to non-compliance, putting them on the hit list of interventions for improving dietary adherence in celiac patients.

CONCLUSION

This study investigates the frequency of non-compliance in celiac patients and also identified the risk factors associated with non-compliance, finding of this study provide foundation to overcome these factors.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Comparison of Pain in Patients with Topical Anaesthesia Alone Versus Topical Anaesthesia with Intracameral Lidocaine for Phacoemulsification

Ishfaq Hussain, Saima Altaf and Ali Hassan Shah

ABSTRACT

Objective: To compare pain in patients undergoing phacoemulsification with topical anaesthesia alone versus topical anaesthesia with intracameral lidocaine.

Study Design: Randomized controlled trials study.

Place and Duration of Study: This study was conducted at the Department of Ophthalmology, University Medical & Dental College, Faisalabad, from May 2016 to December 2016.

Materials and Methods: It was conducted on patients undergoing phacoemulsification. One hundred and twenty patients were selected in accordance with the inclusion and exclusion criteria. They were divided into two equal groups, group A patients were operated under topical anaesthesia alone while those of Group – B were operated under a combination of topical anaesthesia and intracameral preservative free lidocaine. Visual Analog Scale was used for pain assessment. Data was analyzed using computer software SPSS version 20.0. Mean and standard deviation were calculated for quantitative variables like age and pain. Frequency and percentages were calculated for qualitative variable i.e. gender of the patients. Chi-square test was applied for comparison and a P-Value ≤ 0.05 was considered as significant.

Results: A total of one hundred and twenty patients were selected. Out of them 50.8% were male and 49.2% were female. They were divided into two equal groups A and B, group A patients were operated under topical anaesthesia alone while group B were operated under topical anaesthesia along with intracameral Lidocaine. Group A and group B had a mean age of 54.55 ± 8.75 and 56.00 ± 9.01 years respectively. Eight patients of group A had pain compared to only 2 patients of group B. This difference is statistically significant with the P value of 0.041.

Conclusion: A significant reduction was observed in pain score of patients operated under topical anaesthesia with intracameral lidocaine for phacoemulsification as compared to topical anaesthesia alone.

Key Words: Pain Score, Topical Anesthesia, Phacoemulsification, Intracameral Lidocaine.

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INTRODUCTION

Loss of transparency of natural lens is termed as Cataract. Though it is mostly age-related, but cataract can appear in young age group due to ocular inflammation, trauma, several drugs and congenital problems¹. Loss of transparency causes gradual loss of vision, ultimately leading to blindness. 30% of UK population, aging 65 years or more, are suffering from cataract of one or both eyes and about 10% of this age group have already undergone cataract surgery.

The prevalence of cataract is in direct relation with age². Surgery is the only recognized treatment of cataract. Phacoemulsification was the preferred surgical method for treating cataract in 77% of patients in UK from 1997 to 1998³. Phacoemulsification is a safe and cost effective method compared to conventional extra capsular cataract surgery⁴. Now, more than 99% of cataract patients are treated with phacoemulsification in UK⁵.

The gradual replacement of conventional extra capsular cataract surgery with phacoemulsification technique for treating cataract surgery has altered the anesthesia requirements. Good analgesia and a stress free procedure are the ultimate goals of an ideal anesthesia. Topical, intracameral, subconjunctival, sub-Tenon, peribulbar and retrobulbar anesthesia are the various techniques used for achieving local anaesthesia in cataract surgery⁶. Retrobulbar hemorrhage, globe penetration, extraocular muscle injury, optic nerve trauma and brainstem anesthesia are the complications associated with traditional peribulbar and retrobulbar

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injections. These complications can be easily avoided using topical and intracameral local anesthesia making them popular, safe and effective anesthetic modalities in cataract surgery⁷. Topical anesthesia has advantages of being cost effective and non-invasive with least complications and better rehabilitation. Topical anesthesia, introduced first by Fichman in 1992, is widely accepted and used (61%) modality of anesthesia among US surgeons in cataract surgery⁸. Increased patient cooperation and reduced level of discomfort was shown in the adjuvant use of topical anesthesia with intracameral lidocaine 1% compared to topical anesthesia alone in a study conducted by Crandall et al.⁹. Early onset and intermediate span of lidocaine proves its suitability for cataract surgery¹⁰. Pupil dilate up to 4.39 ± 0.53 mm by intracameral injection of lidocaine during phacoemulsification making the compulsory use of mydriatics unnecessary¹¹. Javed EA¹² conducted a study using Visual Analog Scale (VAS) for assessing pain during phacoemulsification and found that a combination of topical and intracameral anesthesia has a superior analgesic property compared to the only use of topical anesthesia. The introduction of small-incision phacoemulsification has revolutionized cataract surgery minimizing the requirement of total akinesia of globe for safe surgery¹³. Thus, the use of GA (general anesthesia) and techniques of local anesthesia leading to akinesia are no longer required. This study was done to provide basic literature comparing pain in patients with topical anesthesia alone versus topical anesthesia with intracameral lidocaine for phacoemulsification and to help surgeons in choosing the best available method in order to minimize discomfort and pain to patient.

MATERIALS AND METHODS

After the ethical committee approval for this study, a total number of one hundred and twenty (120) patients were selected fulfilling the inclusion/exclusion criteria from the Department of Ophthalmology, University Medical & Dental College, Faisalabad. Patients were randomly divided into two equal groups using lottery method after taking informed consent. The calculated sample size is 120 cases (60 in each group), 80% power of study, taking expected percentage of 11.11% in topical alone versus 0% in topical anaesthesia with subconjunctival infiltration of 2% lignocaine for Phacoemulsification with 5% level of satisfaction. Group – A patients were operated under topical anaesthesia alone while those of Group – B were operated under a combination of topical anaesthesia and intracameral preservative free lidocaine. All the patients were operated by one doctor and observations were recorded using Visual Analog Scale on a pre-designed form. An unpleasant sensory and emotional experience which arises from actual or potential tissue damage was regarded as pain. Pain or no pain conditions were

decided according to pain score measured using Visual Analog Scale. A score of 0 to 3 was considered as no pain and a score of 4 to 10 was considered as pain. Patients with known history of hearing impairment, poor native language skills, mental sickness, nystagmus, involuntary movement disorder, intraoperative complications such as capsular rupture or vitreous loss were excluded from our study. Data was analyzed using SPSS version 14.0. Mean and standard deviation were calculated for quantitative variables like age and pain. Frequency and percentages were calculated for qualitative variable i.e. gender of the patients. Chi-square test was applied for comparison and a P-Value ≤ 0.05 was considered as significant.

RESULTS

A total number of one hundred and twenty (120) patients divided into two equal groups A and B, 60 patients of group A operated with topical anaesthesia alone and other 60 of group B operated under topical anaesthesia along with intracameral Lidocaine. Out of 120 patients 60 patients of group A have mean age of 54.55 ± 8.75 and group B patients of group B have mean age of 56.00 ± 9.01 Table-2. As regard to gender of patients out of 120 patients 61 (50.8%) were male and 59 (49.2%) were female Table 1.

Table No.1: Frequency and percentages of gender and pain

Characteristics	Frequency	Percentage (%)
Gender		
Male	61	50.8
Female	59	49.2
Frequency of Pain		
No pain	110	91.7
Pain	10	8.3

Table No. 2: Mean age and pain score

Characteristics	Group A n=60	Group B n=60
Age	54.55 ± 8.75	56.0 ± 9.01
Pain Score	2.67 ± 2.03	2.07 ± 1.00

Table No.3: Frequency of pain in both groups

Groups	Pain		P value
	No pain	Pain	
Topical anesthesia alone	52	8	0.04
Topical anesthesia with intracameral Lidocaine	58	2	
Total	110	10	

As regard to the pain score patients in group A have mean pain score of 2.67 ± 2.03 . Similarly in group B have mean pain score of 2.07 ± 1.00 Table-2. Similarly as regard to the pain out of 120 patients 110 (91.7%)

have no pain and 10 (8.3%) patients have pain Table-1. According to the groups, out of 60 patients in the group A (operated with topical anaesthesia alone) 52 patients have no pain and 8 have pain. Similarly in group B (operated under topical anaesthesia along with intracameral Lidocaine) out of 60 patients 58 were have no pain and 2 patients were have pain, the resulted P value is $P=0.041$ (Table-3).

DISCUSSION

The efficacy of topical anesthesia for phacoemulsification is widely accepted and proven from several studies^{14,15} making it a popular technique among cataract surgeons. Improved operating conditions (like optimum wound access) can be achieved by preserved ocular motility in topical anesthesia. Regional anesthesia techniques can lead to globe perforation, alteration of vitreous pressure and change in optic nerve blood flow. All of these sight threatening or even life threatening complications can be avoided by using topical anesthesia. Moreover, quicker postoperative recovery and reduced intensity of postoperative pain also make this technique preferable to both patient and doctor¹⁶. However, topical anesthesia alone may not be able to prevent pain produced by the movement of iris-lens diaphragm in some individuals.

Impulses from pain fibers exiting the eye (including the impulses coming to ciliary ganglion from ciliary body, iris and cornea) must be fully blocked in order to achieve complete analgesia in intraocular surgery. Topical anesthesia alone usually fails to block these nerves completely leading to considerable uncomfortable on intraoperative manipulation of the iris. Several techniques have been proposed to minimize and relieve this discomfort associated. Importance of adequate cycloplegia was advocated by Grabowin order to minimize the stretching of zonules and ciliary muscle. Role of hydrostatic pressure created by irrigation solution in alleviation of pain was explained by Novak and Koch¹⁷. Pandey et al.¹⁸ narrated various techniques to minimize pain including the gradual increase of microscopic luminance, minimal iris manipulation and low phacopower usage.

The intracameral xylocaine technique, first described by Gills et al¹⁹, was devised to overpower these difficulties. It uses 0.5ml of unpreserved xylocaine 1%, which is injected in the anterior chamber at the start of surgery. Efficacy, safety and dosage regimens of this techniques are accessed by various studies²⁰.

A significant efficacy of intracameral block was seen in operations requiring intraoperative manipulation of intra ocular structures. Patients receiving only topical anesthesia were more prone to suffer from considerable discomfort on iris manipulation, zonular stretching and spasm of the ciliary body. In our study, a total of 120 patients were included. As for as gender distribution is

concerned, 50.8% of them were male and 49.2% were female. They were divided into two equal groups A and B, group A patients were operated under topical anaesthesia alone while group B were operated under topical anaesthesia along with intracameral Lidocaine. Group A had a mean age of 54.55 with Standard Deviation of 8.75 compared to group B with mean age of 56.00 and Standard Deviation of 9.01. Out of 60 patients of the group A, only 8 had pain. Similarly, out of 60 patients of group B only 2 patients were having pain. These findings are statistically significant with the p value of 0.041 proving the superiority of topical anesthesia with intra cameral lidocaine compared to topical anesthesia alone.

Our finding are in total contrast with the results of a study conducted by Crandall et al, narrating no considerable difference of intraoperative pain scores, between patients receiving topical anesthesia alone or those receiving a combination of topical anaesthesia and intracameral lidocaine. Our results are in accordance with the findings of Pandey et al¹⁸ and Gills et al¹⁹ Koch et al²⁰. All of these studies have reported alleviation of discomfort and pain on irrigation of the anterior chamber with unpreserved xylocaine in patients undergoing phacoemulsification under topical anesthesia. Surgical difficulties can arise from poor patient compliance and eye mobility demanding a certain level of surgical expertise^{21,22}.

A considerable reduction of tissue manipulation and time consumption can be achieved by commonly used future less clear corneal incision techniques²³. Since its introduction, topical anaesthesia has gained immense popularity owing to significant reduction of potentially serious complications associated with retrobulbar and peribulbar Anesthesia. Absence of akinesia is the main disadvantage of topical anaesthesia. To achieve the desired level of akinesia, patients in our study were instructed to fix their gaze at the light of the operating microscope. Light intensity of the microscope was gradually increased from the lowest possible level to normal value at the beginning of capsulorhexis in order to counteract photophobia. Most of the manipulation of iris are done during hydrodissection phacoemulsification, lens aspiration and intraocular lens insertion. Thus, A higher pain scores during surgery was demonstrated in their manipulation under topical anesthesia by a study performed by O'Brien²⁴.

CONCLUSION

A significant reduction was observed in pain score of patients operated under topical anesthesia with intracameral lidocaine for phacoemulsification as compared to topical anesthesia alone.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Relation between Copper and Duration of Diabetes Mellitus

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ABSTRACT

Objective: Diabetes is a heterogeneous disease characterized by relative or absolute insulin deficiency. Reports have shown that trace elements and minerals lead to the pathology of obesity and diabetes due to their participation in per oxidation and inflammation. So the present study is aimed to investigate the relationship between serum copper levels and duration of diabetic condition.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at the Department of Biochemistry, Liaquat College of Medicine and Dentistry and Darul Sehat Hospital, Karachi from ____

Materials and Methods: For this purpose we have selected participants (n=120) on the basis of their history were divided accordingly into four groups; control group, diabetic duration 0-5years, diabetic duration 6-10 years, diabetic duration 10 years onwards. After monitoring their demographic parameters the blood sample was collected for the estimation of FBS, HbA1c and copper levels.

Results: Results have showed a significant rise in FBS, HbA1c and copper levels in all three diabetic groups compared to control (non-diabetic) individuals. Then correlation analysis has showed that levels of copper have a positive correlation with diabetic parameters indicating that copper levels were increased as the diabetic condition progresses.

Conclusion: Hence, blood copper levels are responsible for incidence and progression of diabetes mellitus. As the copper levels in blood are increasing gradually during diabetic condition.

Key Words: Copper, Diabetes, HbA1c

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INTRODUCTION

Diabetes mellitus is a chronic disease which is characterized by relative or absolute insulin deficiency or the ineffectiveness of the body to utilize the insulin it produces¹. Many of the researches signify that there is a direct relationship between macro and trace elements with diabetes.^{2,3} Trace elements are essential for human life and they interact with vitamins and macro elements and enhance their effectiveness in the body⁴. It has been reported that the diabetics show impaired insulin release which ultimately affects the indices of trace elements. This study denotes that the increased levels of trace elements were observed in diabetic subjects with clinical complications of hypertension, diabetic retinopathy and macro vascular diseases.

On the contrary, the diabetic subjects with none of these clinical complications showed lower trace elements status. Trace elements and minerals lead to the pathology of obesity and diabetes largely due to their participation in per oxidation and inflammation. Significant alterations have been noticed in some of the trace elements in case of diabetes such as iron, copper, magnesium and macro element manganese.⁵

Among all the trace elements, an increase in the Copper (Cu) ion levels with diabetic complications may be credited to hyperglycemia which initiates glycation and in turn releases copper ions as shown in one of the studies which indicates significant rise in Cu levels in diabetics as compared to controls⁶. Another study performed in mice that were given copper supplements showed a decrease in serum blood glucose levels⁷. An increase or decrease in Cu levels is related to different clinical conditions including diabetes mellitus which is a disease that leads to the formation of free radical resulting in oxidative damage. Moreover most of the clinical conditions of excess of copper are due to oxidative damage to membranes or macromolecules.⁸

A study done on diabetes and its complications associated with different trace elements indicate an increase in HbA1c levels with lack of control for diabetes mellitus. An increase in copper levels with an increase in HbA1c levels shows how glucose is regulated and that Cu is a vital indicator of oxidative stress⁹. It is a fact that copper, zinc-superoxide

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dismutase liberate copper ion when glucose concentration is raised above the normal levels indicating the reason of an increase in serum copper levels in diabetes. However the exact cause is still unidentified. In one of the studies, three parameters were studied i.e. retinopathy, macro-vascular disease and hypertension in diabetic subjects, their plasma levels of copper were administered and it was noticed that the plasma copper levels were significantly higher as compared to the subjects suffering from diabetes without these clinical conditions¹⁰. However inconsistent results have been noticed in case of diabetic patients who showed high and low serum and plasma levels of copper, in addition further investigations required to determine the relationship between copper and non-insulin dependent diabetes mellitus. So, the present study was designed to investigate the relationship between incidence of non-insulin dependent diabetes mellitus and plasma copper levels.

MATERIALS AND METHODS

Participants and sample collection: Total 120 participants took part in the study. This study was carried out at Liaquat College of Medicine and Dentistry and Darul Sehat Hospital Karachi; patients with DM type 2 were included in the study. The participants were differently grouped; the diabetics were divided depending upon duration of onset of diabetes and the controls into 4 equal groups (n=30);

Group 1: Controls

Group 2: DM with duration of less than 5 years.

Group 3: DM with duration of between 6-10 years and

Group 4: DM with duration of more than 10 years.

Subjects with DM2 were defined by fasting serum glucose >126 mg/dl or by having taken any hypoglycemic treatment. Studied patients were not taking any bone-active medication, hormone replacement therapy or insulin treatment, and gave their informed consent prior to joining this study. Study protocol was approved by ethics committee of the university. Anthropometric and demographic data including height, weight, age, gender, DM duration, history of coronary heart disease and medications, were recorded. Blood samples were collected following overnight fasting.

Biochemical Estimations: Blood was collected by venipuncturing the fasting individuals by using an evacuated tube system. Glucose stability in plasma is affected by bacterial contamination, storage temperature and glycolysis. The fasting plasma glucose (FPG), hemoglobin A1C (HbA1c) levels were measured in all samples. Glucose measurements were recorded with glucose oxidase method while HbA1c was determined by automated kit on cobas integra provided by Roche.

• HbA1c Estimation

In order to eliminate interference from leukocytes, this process employs TTAB (tetradecyltrimethylammonium bromide) as detergent in the hemolyzing reagent. In order to remove labile HbA1c, pretreatment of sample is not needed. Soluble antigen-antibody complexes are formed by the reaction of anti-HbA1c antibody with glycohemoglobin in the sample. An insoluble antibody-polyhapten complex can be formed by reaction of surplus anti-HbA1c antibodies after the addition of R2 (polyhapten reagents), which can be measured turbid metrically. In the hemolyzed sample, liberated hemoglobin is transformed to a derivative which has characteristic absorption spectrum. It is measured bichromatically during the pre-incubation phase when R1 reagent is added to sample in the above mentioned immunological reaction. Before use, blood specimen and hemolyzing reagent for HbA1c are allowed to equilibrate at room temperature. In order to get a homogeneous mixture of erythrocytes, instantly mix the sample at a reasonable rate and take caution to avoid the formation of foam. The sample is diluted with hemolyzing reagent prior to pipetting. It is then mixed thoroughly after which hemolysate can be used as the solution has changed its color from red to brownish green.

• Glucose Estimation:

Ultraviolet testing using enzymatic reference method with hexokinase is performed. The phosphorylation of glucose to glucose-6 phosphate by Adenosine triphosphate is catalyzed by hexokinase. In the presence of NADP, glucose-6 phosphate dehydrogenase oxidizes the glucose to glucose-6 phosphate without oxidation of any other carbohydrate. The rate of NADPH formation is measured photo-metrically and is directly proportional to concentration of glucose.

• Copper Estimation:

Copper was estimated by a direct colorimetric test which is based on formation of a stable color complex when copper is released from ceruloplasmin complex and forms complex with 3-5 Di Br-PAESA in buffered medium (At pH=4.70). Serum sample (50 µL) was mixed with 1ml working reagent mixture and absorbance was noted immediately at 582nm then add coloring reagent (3, 5-DiBr-PAESA) (50 µL, 0.4 mmol/L) and incubate for 4-5 min at 37°C. After again read it 582nm and calculate the difference between both readings. Copper standard (100 µg/dL) was used as reference standard.

Statistical Analysis: The results are presented as mean \pm SD for n=30 participants in each group. The statistical significant differences were evaluated by Tukey's test following one-way ANOVA using SPSS version 20. Correlation analysis between copper levels and HbA1c was performed using Pearson's correlation test via SPSS. Value of $p < 0.05$ was considered as a significant difference.

RESULTS

The present study investigates the correlation between diabetes and serum copper levels. Demographic data from patients of control Group and different durations of Diabetes mellitus i.e. group 1 (duration of diabetes 0 to 5 yrs.), group 2 (duration of diabetes 6 to 10 yrs.), group 3 (duration of diabetes 10 yrs. onwards) was obtained that includes the age (in years) of patients, body weight (in Kg) and systolic and diastolic blood pressure shown in table 1. Comparative analysis of this data shows that there are no significant differences in age, body weight and systolic and diastolic blood pressure between groups indicating that there is no variations in demographic parameters that can affect the biochemical parameters.

Table No.1: Demographic parameters for participants of control Group (Group 1) and patients of different durations of Diabetes mellitus [group 2 (duration of diabetes 0 to 5 yrs.), group 3 (duration of diabetes 6 to 10 yrs.), group 4 (duration of diabetes 10 yrs. onwards).

Variables	Group 1: Normal Control	Group 2: Diabetics Up To 5 Yrs Duration	Group 3: Diabetics 5-10 Yrs Duration	Group 4: Diabetics >10yrs
Age	53.56 ± 10.0	53.63 ± 9.30	56.26 ± 9.79	54.80 ± 9.55
Weight	71.23 ± 5.96	64.73 ± 7.36	68.60 ± 7.78	69.29 ± 8.68
Systolic. PR	151.00 ± 8.38	147.6 ± 10.23	149.4 ± 8.16	151.63 ± 6.61
Diastolic. PR	87.33 ± 3.67	88.63 ± 3.81	88.76 ± 3.89	88.56 ± 2.77

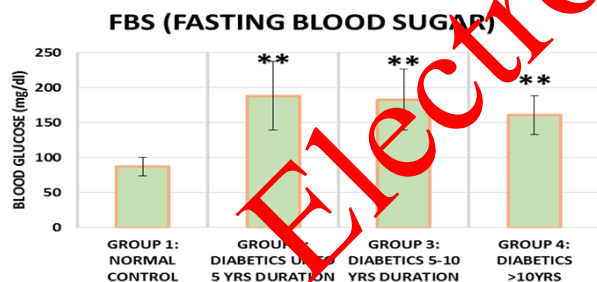


Figure No.1: Fasting blood sugar level in participants of control Group (Group 1) and patients of different durations of Diabetes mellitus [group 2 (duration of diabetes 0 to 5 yrs.), group 3 (duration of diabetes 6 to 10 yrs.), group 4 (duration of diabetes 10 yrs. onwards). Data are means ± SD (n= 30). FBS levels are expressed as mg per dL of blood. Data are analyzed for significant difference by One-way ANOVA followed by Tukey's post-hoc comparisons; **p<0.01 compared with control group.

In addition, the biochemical parameters confirming diabetic status were also determined that includes fasting blood sugar level (FBS) and HbA1c. Analysis of data presented in Fig. 1 shows that FBS was significantly increased (p<0.01) by 115%, 109% and 84% in group 2 (188±49.8 mg/dL), group 3

(182.83±44.75 mg/dL) and group 4 (160.47±28 mg/dL) respectively as compared group 1 (control group, 87.1±13.88 mg/dL). Analysis of data presented in Fig. 2 shows that HbA1c was significantly increased (F=27.472 p<0.01) by 71%, 64% and 78% in group 2 (8.41±1.87 %), group 3 (8.08±1.79 %) and group 4 (8.77±1.44 %) respectively as compared group 1 (control group, 4.91±0.989 %). Post-hoc analysis revealed that these increases are comparable in all three diabetic groups.

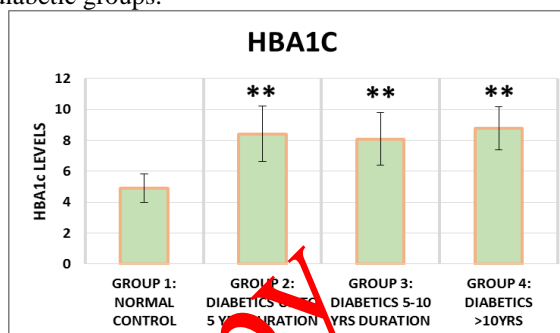


Figure No.2: HBA1c level in participants of control Group (Group 1) and patients of different durations of Diabetes mellitus [group 2 (duration of diabetes 0 to 5 yrs.), group 3 (duration of diabetes 6 to 10 yrs.), group 4 (duration of diabetes 10 yrs. onwards). Data are means ± SD (n= 30). HBA1c levels are expressed as %. Data are analyzed for significant difference by One-way ANOVA followed by Tukey's post-hoc comparisons; **p<0.01 compared with control group.

Copper levels in serum of participants of control group and patients of different durations of Diabetes mellitus [group 2 (duration of diabetes 0 to 5 yrs.), group 3 (duration of diabetes 6 to 10 yrs.), group 4 (duration of diabetes 10 yrs. onwards) are also estimated to find diabetes-induced alterations in serum copper levels. Data for serum copper levels is presented in Fig. 3 which shows that serum copper levels were significantly raised (F=17.588 p<0.01) by 36%, 18% and 38% in group 2 (130.87±26.2 µg/dL), group 3 (114.4±23.75 µg/dL) and group 4 (132.97±20.37 µg/dL) respectively as compared group 1 (control group, 96.2±18.06 µg/dL). Post-hoc analysis revealed that on comparing the three diabetic groups it has been found that this increase was significantly greater (p<0.01) in group 3 and group 4 as compare to group 2.

In order to find out the relation between diabetic profile and copper levels, a correlation test was performed between copper levels and diabetic profile parameters (HbA1c and FBS) to see the effect of duration of diabetes on serum copper levels. Pearson correlation test revealed the existence of a correlation between copper levels and diabetic profile. A significant positive correlation is noticed between Copper levels and FBS (r=0.299, p<0.001) and between copper and HbA1c (r=0.481, p<0.001). For HbA1c, there was a strong positive significance (p<0.01) correlation with copper in group 1, 2 and 3. It also showed a positive

significance correlation for control group ($p < 0.05$). In Control group, HbA1c showed a positive significance correlation (0.05 level) while it showed negative significance correlation in group 2 (0.01 level) and a strong positive significance correlation with copper in group 1 and 3 (0.01 level).

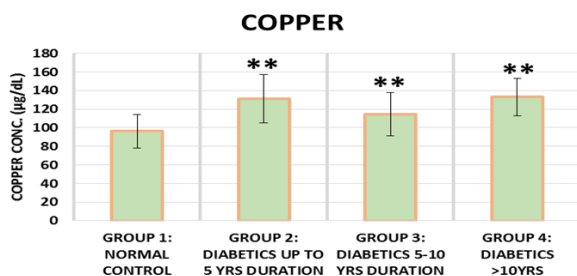


Figure No.3: Copper levels in participants of control Group (Group 1) and patients of different durations of Diabetes mellitus [group 2 (duration of diabetes 0 to 5 yrs.), group 3 (duration of diabetes 6 to 10 yrs.), group 4 (duration of diabetes 10 yrs. onwards). Data are means \pm SD (n= 30). Copper levels are expressed as μg per dL of blood. Data are analyzed for significant difference by One-way ANOVA followed by Tukey's post-hoc comparisons; ** $p < 0.01$ compared with control group.

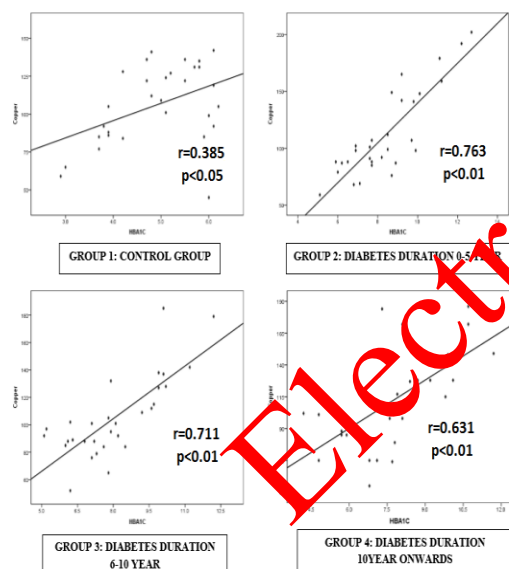


Figure No.4: Correlation between Copper and HbA1c in control Group, and different durations of Diabetes mellitus i.e. group 1 (duration of diabetes 0 to 5 yrs), group 2 (duration of diabetes 6 to 10 yrs), group 3 (duration of diabetes 10 yrs onwards) determined by Pearson correlation test.

DISCUSSION

Present study was designed to investigate the relationship between incidence of diabetes mellitus and plasma copper levels. Previous literature shows that there is a relationship of metal ions with diabetic complications as diabetic complications may be

credited to hyperglycemia which initiates glycation and in turn releases copper ions leading to generation of oxidative stress and production of AGEs¹¹.

Studies have shown that levels of Zn, Mn, and Cr were significantly reduced in blood and scalp-hair samples of diabetic patients as compared to control subjects of both genders while on contrary the urinary levels of these elements were found to be higher in the diabetic patients than in the age-matched healthy controls. In contrast, Cu and Fe levels were highly raised in scalp hair of diabetic patients compared to non diabetic subjects². Present findings revealed that plasma copper levels were significantly raised in diabetic patients as compared to nondiabetic controls. These results are consistent with previous studies that diabetic subjects with retinopathy, hypertension, or microvascular disease had higher plasma copper concentrations compared with both diabetic subjects without complications and with control subjects¹⁰.

Findings of present study shows that diabetic profile parameters (fasting blood sugar and HbA1c levels) were found to be significantly raised in patients of different durations of Diabetes mellitus (0 to 5 years, 6 to 10 years and 10 years onwards) compared to non-diabetic participants but there is no significant difference is found among these groups of different diabetic durations. Along with rise in diabetic profile parameters there is also a significant rise in plasma copper levels in all durations of diabetes mellitus. Then relationship between copper levels and diabetic profile parameters were also found to be significant as there is a significant positive correlation between them. Although the demographic parameters were almost comparable in all diabetic patients as well as in controls having no significant differences among them. So, the chances that rise in plasma copper levels may be due to any other factor are subsided.

Evidence has shown that metabolic complications appear to be associated with alterations in the levels of some minerals, especially copper¹². Copper ion is involved in the development of type 2 diabetes and thereby a potential therapeutic target for diabetes¹³. Increased Copper content of the lens presumably has a greater association with the development of lens opacification in diabetics than other trace elements¹⁴.

CONCLUSION

From the present findings it can be concluded that Blood copper levels are responsible for incidence and progression of diabetes mellitus from this it may be suggested that the copper levels in blood are increasing gradually during diabetic condition.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Emerging Trend of Self Harm by Using 'Kala Pathar' Hair Dye (Paraphenylene Diamine): An Epidemiological Study

Sidra Shahzadi, Hafiz Zarsham Ali Ikram and Sohail Akhtar

ABSTRACT

Objective: To study the demographic profile, clinical manifestations and outcomes in victims of 'Kala Pathar' hair dye (PPD) poisoning attending Medical emergency of a teaching hospital.

Study Design: Observational / descriptive study

Place and Duration of Study: This study was conducted at the Medical Emergency and Indoor Department of District Teaching Hospital Gujranwala from May 2015 to July 2015

Materials and Methods: The total 110 patients with Paraphenylene Diamine poisoning admitted to the District teaching hospital Gujranwala, through the history of the Kala pathar hair dye intake into the A & E room and Medical indoor of Hospital were studied. Conservative treatment & Tracheostomy as a lifesaving measure in all cases (with acute neck and laryngeal edema) was done. Data was analyzed & results were presented in the form of tables & figures.

Results: Total 110 cases of Kala Pathar intake were included in our study out of which 75 were females & 15 were males. Most of the cases belong to age group 11-20 years that were 57 (51.82%) then by 21-30 years of age 34 % and then 31-40 years of age 12 %. 105 (96%) patients were belonging to a lower socioeconomic status and they were from rural areas. Only 5(4%) belonged to urban areas. Suicidal tendencies, involving almost all 110 cases both men and women. Most of the patients had burning, throat and abdominal pain. All Kala Pathar poisoning cases developed angioneurotic edema, dyspnea, and neck swollen stridor victim.

ARF was the dose-dependent of the dye and observed in the cases where intake of more than 50 ml. Seventy nine percent (79%) of patients were discharged after well-managed and 24 (22%) died due to complications such as ARF, pneumonia, septic shock. Out of 24 cases who died, 20 (83.33%) were female and 4 (16.67%) were men.

Conclusion: Kala Pathar Paraphenylene diamine poisoning is more common in women with younger age groups, belonging to rural areas associated with high mortality rates. Cases should be diagnosed early, and start management quickly, since no specific antidote is available. The burden of this situation has been increasing, and there is an urgent need for public awareness about the toxic effects of hair dye (PPD). 'Kala Pathar' sale should be restricted by the relevant authorities.

Key Words: Kala Pathar; Paraphenylene Diamine; Hair Dye; Suicide; Intentional Self Injury; Poisoning.

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INTRODUCTION

More than 1 Million deaths per year occur worldwide due to suicides; this rate is increasing over the past 50 years, especially in under developed countries. About 60% of all suicidal deaths reported in the world may occur in Asia and 40% occur in China, India and Japan due to their large population.¹ The preferred method of self harm is the use of toxic substances that is one of the major problem encountered in the emergency room of many hospitals.

Intentionally self-poisoning causes the vast majority of deaths and puts great pressure on hospital services. The trend of self-harm by the ingestion of the hair dye 'Kala Pathar'(contains the active ingredient Paraphenylene diamine) is emerging in underdeveloped countries and this is related with high mortality^{2,3}

Ingestion of Paraphenylene diamine produces symptoms involving different organs, face, neck, pharynx, tongue & throat initially & its poisoning can cause angioneurotic edema, rhabdomyolysis & ARF. Renal tubular necrosis occurs by toxic metabolites Paraphenylene diamines leading to high mortality rates have also been reported by some authors up to 60% to 68.8% by authors,⁴⁻⁸ The toxicity of Paraphenylene diamine is dose-dependent with an expected lethal dose 7-10 grams.⁹

Paraphenylene diamines composed of highly toxic substances that can inhibit the production of cells, their effect are also on muscles, respiratory system, liver, and kidney & heart system. The toxicity is dependent on the amount of dose. When taken orally, death may occur

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due to angioneurotic edema within 6-24 hours.¹⁰ Despite the high frequency of the cases and the high mortality rate, no antidote is being used for this poison and the cases must be managed conservatively.¹¹ Early diagnosis and supportive care are useful. Cheap and free hair dyes are becoming one of the main causes of suicide in the underdeveloped countries, like India and Pakistan.¹² Most of the reported cases involving young women from 15 to 25 years of age.^{13,15}

Acute hair dye 'Kala Pathar' PPD Poisoning produces affect on upper respiratory tract associated with swollen, respiratory effort and prominence of tongue this may also lead to severe angioneurotic edema. Most of the patients require tracheotomy for airway obstruction^{16,17} PPD can cause cardiotoxicity & hepatotoxicity but a few reports are available about myocarditis, acute MI, ventricular thrombosis & cardiac arrhythmias.

The purpose of this study was to see the demographic profile, clinical manifestations and outcomes in victims of 'Kala Pathar' hair dye (PPD) poisoning attending Medical emergency of a teaching hospital.

MATERIALS AND METHODS

This study was conducted for a period of eight months from May 2015 to July 2015 at Indoor and emergency department of Medicine of District teaching hospital Gujranwala.

Patients with Paraphenylene Diamine poisoning admitted into the medical emergency and medical indoor of the District teaching hospital Gujranwala, through the history of the Kala pathar hair dye intake. Clinical history, active complaints, physical examinations, treatment and outcome was recorded. Gastric lavage was done in a small number of patients. All 'Kala Pathar' poisoning patients undergo steroids treatment while tracheal intubation is attempted in a few cases due to severe neck & laryngeal edema where respiratory obstruction is life threatened; in all these cases the tracheotomy was performed. Forced diuretic was done to avoid ARF due to rhabdomyolysis.

The cases of firearms, hanging, drowning accidental poisoning some other toxins were not included in this study. Victims were hospitalized and divided according to gender, age, residential background, treatment and final outcome. Data was analyzed & results were shown in the form tables & the figures.

RESULTS

Most of the cases belong to age group 11-20 years that were 57 (51.82%) then by 21-30 years of age 34 % and then 31-40 years of age 12 %.(Table No 1)

105 (96%) patients were belonging to a lower socioeconomic status and they were from rural areas. Only 5(4%) belonged to urban areas. (table no 2)

Suicidal tendencies, involving almost all 110 cases both men and women. Most of the patients had burning,

throat and abdominal pain. All Kala Pathar poisoning cases developed angioneurotic edema, dyspnea, and neck swollen strider victim.

ARF was the dose-dependent of the dye and observed in the cases where intake of more than 50 ml. Seventy nine percent (79%) of patients were discharged after well-managed and 24 (22%) died due to complications such as ARF, pneumonia, septic shock. Out of 24 cases who died, 20 (83.33%) were female and 4 (16.67%) were men. (Table No 3)

Table No 1: Age distribution among Kala Pathar Poisoning Cases

Age Groups	No of Cases	Percentages
11-20	57	51.82
21-30	37	34
31-40	13	12
41-50	2	1.81
51-60	1	0.91

Table No. 2: Residential Background of Kala Pathar Poisoning Cases

Residential Background	No of Cases	Percentages
Rural	105	96
Urban	5	4

Table No. 3: Final Outcome of Kala Pathar Poisoning Cases

Gender	No of Deaths	Percentages
Female	20	83.33
Male	4	16.67

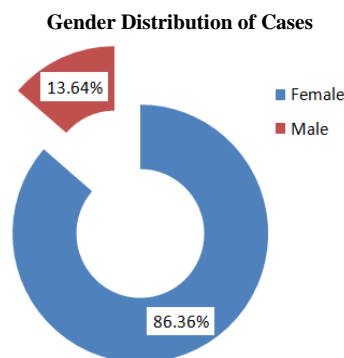


Figure No.1: Gender distribution among Kala Pathar Poisoning Cases

DISCUSSION

Kala Pather contain Paraphenylene diamine the available hair dye is becoming the main cause of suicide poisoning in developing countries involving people with low socioeconomic status and rural residents. It contains potential toxins including Paraphenylene diamine, sodium ethylene diamine tetra acetic acid and propylene glycol leading to multiple organ dysfunctions.

In our study, self-harm by use of PPD is more in the age group of 11- to 30 years with female predominance

of 89%. Akber et al & Anugrah Chrispal et al^{3,4} pointed out similar result just like our study showed about female predominance. Another study was reported by Sakuntala et al¹⁸ that show 80.64% of women predominance and female to male and to female ratio 1: 1.84 has been recorded by Nirmala and Ganesh et al¹⁹. Female predominance is because, this hair dye is low cost & easy available. In addition, women are more exposed to gender inequality & social pressure in underdeveloped countries. In our study patients develop neck swelling with varying degrees of neck edema within range of 3-6 hours. All patients developed angioneurotic edema, strider, and acute airway obstruction and underwent emergency tracheotomy.

An emergency tracheotomy rate 60% was recorded in a study at Multan³ & 87.5% in Nawabshah⁸, but 100% of patients required this procedure to be lifesaving measure in our study. The mortality rate was 21.10% in our study and this ratio is compared with other studies in Akbar et al that was 20% of patients while in a study by Khuhro et al recorded mortality rate 37.5% in their study and 22.58% mortality rate was reported by Jain PK et al²⁰. Another study was carried out by KN et al²³ in DI Khan, which reported mortality rate 47.4% due to PPD hair dye poisoning.

CONCLUSION

Kala Pathar Paraphenylene diamine poisoning is more common in women with younger age groups, belonging to rural areas associated with high mortality rates. Cases should be diagnosed early, and start management quickly, since no specific antidote is available.

The burden of this situation has been increasing, and there is an urgent need for public awareness about the toxic effects of hair dye (PPD). 'Kala Pathar' sale should be restricted by the relevant authorities.

Conflict of Interest: The study had no conflict of interest to declare by any author.

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Diagnostic Accuracy of Modified Alvarado Scoring System in Acute Appendicitis

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ABSTRACT

Objective: Diagnostic accuracy of modified alvarado scoring system in acute appendicitis.

Study Design: Observational study

Place and Duration of Study: This study was conducted at the Department of Surgery, Liaquat and Peoples University of Medical and Health Sciences Hospital Hyderabad and Nawabshah from Jan. 2015 to Dec. 2016.

Materials and Methods: This study was carried out on 227 consecutive patients of suspected acute appendicitis in the Physical examination started from general look of the patient, pulse, blood pressure, temperature and respiratory rate. Systematic examination included examination of central nervous system, respiratory system, cardiovascular system and spines. Examination of abdomen including distention, various signs, exact location of tenderness, signs of peritoneal irritation like guarding, rigidity, rebound tenderness. In group 1 all patients treated conservatively and discharged to home with advice that if symptoms persist or condition deteriorates, visit emergency department immediately. In group 2 all patients kept under observation for 24 hours and reassessed at 6 hourly intervals. Those who improve on conservative treatment were discharged to home. Others in whom condition is not improved and the score increased then the later group patients were submitted to group 3.

Results: Out of 227, 150 (66.7%) were male and 77 (33.92%) were female. Age ranged from 10-62 year with mean age was 23.4±7.7 years. 33 (14.54%) patients had an alvarado score of 1-4. All of them were discharged after initial assessment and symptomatic treatment. 3 patients were readmitted due to increase in severity of symptoms and required surgical intervention. Operative findings confirmed acute appendicitis. 49 (21.59%) patients with an Alvarado score of 5 were admitted for observation and evaluation. 37 patients required appendectomy because of persistence of symptoms and 12 patients were discharged after 24 hours of observation. 61 (26.87%) patients had score of 6-7 and were admitted for observation and evaluation. All the patients had increased severity of symptoms and required surgical intervention. 37% out of 227 patients were in the score range of 8-10, all of the underwent emergency surgery.

Conclusion: We conclude that modified Alvarado scoring system is a reliable, cheap, handy tool for diagnosis of acute appendicitis.

Key Words: Modified Alvarado scoring system, Acute Appendicitis, Diagnostic accuracy

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INTRODUCTION

Acute Appendicitis is a common and urgent surgical illness. "It is most commonly seen in young and middle age with male dominance". It is one of the most common causes of abdominal surgical emergencies with a lifetime prevalence of approximately 1 in 7 population. It has been estimated that approximately 6% of population suffer from acute appendicitis during

their life time². In the United States, 2,50,000 cases of appendicitis are reported annually, occurring mostly in the second and third decades of life³.

The incidence is highest in the teenage group, in which it is about 233/1,00,000 of the teenage population. In Asian and African countries, incidence of acute appendicitis is lower⁴. In mild cases it may resolve without treatment but in most cases require removal of inflamed appendix by appendectomy or laparoscopy."

The diagnosis of acute appendicitis is mostly clinical with typical features⁵. In order to reduce the negative appendectomy rate, various scoring systems have been devised to aid diagnosis of acute appendicitis. The Alvarado score is the most well-known and best performing in validation studies⁶. One such scoring system is modified Alvarado scoring system (MASS) which is based on statistical analysis of symptoms signs and laboratory data. The MASS has been shown by recent studies to be easy, simple and cheap for supporting the diagnosis of acute appendicitis⁶.

However, variations in clinical presentation occur according to the different positions of inflamed

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appendix⁷. "Acute appendicitis sometimes may be difficult to diagnose. Frequently appendix removed on clinical suspicion is reported histopathological as normal. The acceptable negative appendectomy rate in most surgical units varied from 5-25 percent⁸. Although nowadays normal appendectomy is considered to be quite a safe procedure but still associated with significant morbidity and may cause complications in 6-18% cases⁸."

Like elsewhere acute appendicitis is the most common general surgical emergency confronted in accident and emergency department. Appendectomies comprised about 50% of all cases admitted through emergency department, so a prospective study was carried out at surgical department Hyderanad and Nawabshah to ascertain the diagnostic accuracy based on clinical findings in accordance with the MASS.

MATERIALS AND METHODS

This observational study was carried out on 227 consecutive patients of suspected acute appendicitis in the department of surgery of Liaquat and Peoples university of Medical and Health Sciences Hospital Hyderabad and Nawabshah from January 2015 to December 2016 over a period of 2 years.

Physical examination started from general look of the patient, pulse, blood pressure, temperature and respiratory rate. "Systematic examination included examination of central nervous system, respiratory system, cardiovascular system and spines. Examination of abdomen including distention, various signs, exact location of tenderness, signs of peritoneal irritation like guarding, rigidity, rebound tenderness. Presence of any intraabdominal mass / visceromegaly. Rectal examination was conducted in all patients and vaginal examination in selected patients. On investigation routine blood examination, including blood CP, urine analysis, blood sugar, ultrasonography of abdomen and pelvis was done in all cases and uric acid creatinine in selective patients. Score was calculated for each patient based on clinical results. Patients were divided in three groups with respective score. Group 1: immediate discharge and sent home group with judicious follow up (SCORE 1-4), Group 2: observation group (5-7) and Group 3: immediate appendicectomy (8-10). Age less than 5 years, evidence of generalized peritonitis, evidence of appendicular mass and evidence of ruptured appendix were excluded from this study."

In group 1 all patients treated conservatively and discharged to home with advice that if symptoms persist or condition deteriorates, visit emergency department immediately. In group 2 all patients kept under observation for 24 hours and reassessed at 6 hourly intervals. Those who improve on conservative treatment were discharged to home. Others in whom condition is not improved and the score increased then the later group patients were submitted to group 3

RESULTS

Table No.1: Demographic Variable of Patients N=227

Variable	No. Patients	Percentage
Age		
• 10-12 years	12	5.31%
• 13-20 years	120	52.91%
• 21-30 years	81	35.71%
• 31-40 years	7	3.01%
• 41-50 years	4	1.76%
• > 50 years	3	1.32%
Modified Alvarado scoring		
• 1-4 SCORE	33	47.5%
• 5 SCORE	49	67.4%
• 6 SCORE	37	80.6%
• 7 SCORE	24	
• 8 SCORE	52	
• 9 SCORE	18	
• 10 SCORE	14	
Clinical Presentation (SIGNS)		
• Distension	40	80%
• Dehydration	24	48%
• Tenderness	22	44%
• Operation	15	30%
• External Hernia	11	22%

Table No.2: Clinical presentation and laboratory findings

Table No. 2: Clinical presentation and laboratory findings			
Symptoms	N (%)	Score (mean±SD)	P Value
Migratory Pain			
• Present	108(47.5%)	5.7 ± 2.0	< 0.001
• Absent	109(52.4%)	7.1 ± 1.6	
Nausea/Vomiting			
• Present	153(67.4%)	6.8 ± 1.9	<0.001
• Absent	74(32.5%)	5.5 ± 1.7	
Anorexia			
• Present	183(80.6%)	6.4 ± 2.1	0.76
• Absent	44(19.3%)	6.3 ± 0.6	
SIGNS			
Tenderness +ve in RIF			
• Present	212(93.3%)	6.5±1.8	<0.001
• Absent	15(6.6%)	4.8±2.6	
Rebound Tenderness			
• Present	149(65.6%)	6.6±1.8	0.06
• Absent	78(34.3%)	6.1±2.1	
Elevated Temperature			
• Present	156(68.7%)	6.3±2.3	0.14
• Absent	71(31.2%)	6.7±0.8	
Investigation			
Leukocystosis			
• Present	157(69.1%)	6.71±1.9	0.002
• Absent	70(30.8%)	5.8±1.9	
Neutrophilia			
• Present	189(83.2%)	6.6±1.8	0.002
• Absent	38(16.7%)	5.5±2.5	

Out of 227,150 (66.7%) were male and 77(33.92%) were female. Age ranged from 10-62 year with mean age was 23.4±7.7 years (Table No.1). 33(14.54%) patients had an alvarado score of 1-4. All of them were discharged after initial assessment and symptomatic treatment. 3 patients were readmitted due to increase in severity of symptoms and required surgical intervention. Operative findings confirmed acute appendicitis. 49 (21.59%) patients with an Alvarado score of 5 were admitted for observation and evaluation. 37 patients required appendectomy because of persistence of symptoms and 12 patients were discharged after 24 hours of observation. 61 (26.87%) patients had score of 6-7 and were admitted

for observation and evaluation. All the patients had increased severity of symptoms and required surgical intervention 37% out of 227 patients were in the score range of 8-10, all of the underwent emergency surgery (Table No.2)."

"Out of 227, 185 patients underwent surgery in this series, the operative finding included acute inflamed appendix in 145 patients (78.3%). In 40(21.6%) cases, the appendix was found to be normal, resulting negative appendectomy. The other pathology revealed in 5 patients including mesenteric lymphadenitis, rupture ovarian cyst, meckel's diverticulitis and twisted ovarian cyst one patients each and no pathology was found in 1 case (Table No.3).

Table No.3: Mode of treatment findings on exploration

Treatment	Group Score (N=227)				Total	P Value
	1-4 (n=33>)	5 (n=49)	6-7 (n=61)	>8 (n=84)		
• Operative	3(9.1%)	37(75.5%)	61(100%)	84(100%)	185	< 0.001
• Conservative	30(90.9%)	12(24.5%)	0	0	42	
Findings on Exploration						
• Inflamed appendix	3(1.6%)	20(10.8%)	40(21.6%)	82(44.3%)	145 (78.3%)	<0.001
• Normal appendectomy	0	16(8.6%)	10(10.2%)	0	35(18.9%)	
• Mesenteric lymphadenitis	0	1(0.5%)	0	0	1(0.5%)	
• Ruptured ovarian cyst	0	0	0	1(0.5%)	1(0.5%)	
• Meckels diverticulitis	0	0	1(0.5%)	0	1(0.5%)	
• Twisted ovarian cyst	0	0	0	1(0.5%)	1(0.5%)	
• No pathology found	0	0	1(0.5%)	0	1(0.5%)	

DISCUSSION

Appendix is a most frequent organ removed from body. The popularity this approach once gained is easy to understand. The surgeon's per operative diagnosis based on naked eye findings is well known to be unreliable, and without routine histological examination of the excised specimen there is possibility for our diagnostic appendicitis. But even if examination is made a routine the problem of misdiagnosis is still not completely solved. Understandably in larger number of operations one does not suppose acute appendicitis, but there is high incidence of 'acute appendicitis' on histopathology⁹.

According to some studies the clinical scoring system like Alvarado scoring can be used as quick and handy tool to apply in emergency departments and in rural area clinics to rule or rule out acute appendicitis¹⁰.

In last few years several scoring system have been developed for supporting the diagnosis of acute appendicitis¹¹. Alvarado score has been found a good aid in making the diagnosis of acute appendicitis. It is a mathematical tabulation of a common clinical signs and symptoms found in patients of acute appendicitis. Usage of this scoring in children remains debatable and various modifications are under trial at various centers.

Proceeding to exploration in children should not be necessarily determined by scores, high complication rate is very common in this age group¹². In this study patients below the age of ten years were kept in exclusion criteria.

The disease can occur at any time in a person's life the highest incidence is between the ages of 12-13 years while the lowest incidence is in individuals over the age of 60 years. Our data show that the majority of patients suffering from acute appendicitis were young patients. 88.55% of the patients suffering from were between 13-20 years of age. However we compare our results with those reported in other countries¹³.

Regarding the sex males had a highest incidence of acute appendicitis than females in nearly in all of age groups. Here males had a 1.95 times greater risk of having acute appendicitis than female which is in agreement in other studies¹⁴.

In present study all the patients complained of pain 108 patients presented with typical migratory pain, 38 with pain right iliac fossa, 60 complained of periumbilical pain while 21 presented with pain whole abdomen. Temperature elevation is not an essential finding in acute appendicitis. The fever may be low grade or high grade particularly associated with complications like perforation of appendicular abscess. Fever may be

associated with chills in out of 227 patients 156 were having fever 119 with low grade fever ($\leq 100 F$) while 37 (23.72%) were having high grade fever ($>100F$). Anorexia is an important and prevalent symptom in acute appendicitis in our study 80.6% of patients presented with anorexia this is comparable to studies¹⁵. When vomiting occurs in acute appendicitis it nearly always follows the onset of pain. Vomiting that proceeds is suggestive of intestinal obstruction. In our study 67.4% of patients presented with nausea or vomiting which is comparable with other studies¹⁶.

Debate has occurred for many years on the acceptable rate of negative appendectomy. The major concerns of surgeons managing a patient with acute right lower quadrant pain are the risks associated with negative exploration versus the hazards of the conservative management which may allow an appendix to perforate. In our study 185 (81.49%) out 227 patients with suspected acute appendicitis underwent appendectomy. Of those operated, 35 (18.94%) patients were found to have normal appendix while 5 (2.7%) had other pathologies so total normal appendix were 40 (21.64%). Hence, the negative appendectomy rate in present study was 21.6% which is comparable with other studies and reported 9.2% to 15.8%¹⁷.

This highlights the sensitivity of Alvarado scoring system. In female additional investigation may be required to confirm the diagnosis. Only 3 patients in this series with a score of below 4 had appendicitis. If this was used as admission criteria 33 patients with score of 1-4 did not require admission can be sent home with advise to come if symptoms aggravate. Forty nine patients with score of 5 were admitted in hospital of which 37 patients required appendectomy. The remaining twelve patients were discharged on conservative treatment. This highly suggests that patients with Alvarado score of 4 or less have minimal chances of appendicitis and thus no surgical intervention is required. While patients with score with the score of 5 or above will probably require surgical intervention.

"It is also important to emphasize that scoring may not be accurate in patients who are unable to give proper history, such as very young or those with communication problem¹⁸. Eighty four patients in this study were in the score range of 8-10. All underwent emergency surgery and were found to have acute appendicitis or its complications or found to have other pathology. The result of this study that clinical judgement can be prioritized and can lead to good clinical performance in management of patients with suspected appendicitis with no significant increase in rate of complicated appendicitis and negative findings on appendectomy⁸."

Modified Alvarado scoring system is easy to apply in emergency departments to rule in acute appendicitis. This system is a dynamic one along with observation

and clinical re-evaluation of the symptoms for the clinical picture.

CONCLUSION

Acute appendicitis is a diagnostic challenge for the surgeons. Modified Alvarado scoring system is a reliable, cheap, handy tool for diagnosis of acute appendicitis. In spite of having radiological investigations in the modern era there is no laboratory or radiological test which reliably diagnose the condition. Alvarado scoring system is found to be helpful in the diagnosis and management of acute appendicitis. Diagnosis is virtually confirmed with score of 7-10 especially in males and they should undergo appendectomy

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Risk Factors and Clinical Presentations of Central Nervous System Tuberculosis in a Population Attending a Tertiary Care Hospital

Hafiz Zarsham Ali Ikram, Sohail Akhtar and Sidra Shahzadi

ABSTRACT

Objective: The aim of this study was to see the risk factors and clinical manifestations of the central nervous system tuberculosis in the patients attending teaching hospital of Gujranwala.

Study Design: Observational / descriptive study

Place and Duration of Study: This study was conducted at the Indoor Department of Medicine of District Teaching Hospital, Gujranwala from February 2015 to September 2015.

Materials and Methods: Total 110 cases of TBM were included in our study. The clinical details of these patients were taken and particularly the details of the patient, the history (present, past related), the clinical features were recorded. Data was analyzed by SPSS v.18 and result formulated in the form of tables and figures.

Results: Past history of tuberculosis was present in 23 (25.55%) patients and 10 (11.11%) had family history of tuberculosis. In 44 (48.88%) cases there were no significant risk factors. The main symptoms of brain tuberculosis were convulsions (65.60%), headache (56.25%), fever (37.5%), vomiting (25%), visual impairment (9.3%) and weakness (25%). Motor deficits were found in (37.5%), urinary incontinence in (5.3%), ptosis in (12.5%) and cranial nerve palsy in (18.75%) patients.

Conclusion: The already suffering from tuberculosis was the major risk factor of Central Nervous tuberculosis. So the proper management of tuberculosis is necessary so that future risk factor for CNS tuberculosis should be reduced. Convulsions and headache were the most common symptoms of CNS tuberculosis.

Key Words: Tuberculosis; Granulomatous disease; Risk Factors; Complication

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INTRODUCTION

Tuberculosis is a granulomatous disease that caused by slow growing *Mycobacterium tuberculosis*, Gram-positive bacteria which not easily acid decolorization with aniline dye staining. The quality of acid-resistant is due to its lipid wall, while its tubercle proteins are related with tissue allergic features of granulomatous reaction.¹ Tuberculosis is prevalent in developing countries, but also even in developed countries after the first decline up to 1980s, the incidence of tuberculosis is on the rise.² It is the 7th major cause of death worldwide.

According to WHO there were 9.27 million new cases worldwide in 2007 and 1.3 million deaths in developing countries due to tuberculosis. 0.5 million cases of multidrug-resistant tuberculosis (MDR-TB) also reported in 2007.³

The interaction of HIV with tuberculosis, income inequality, and the emergence of MDR-TB is the key driver of the re-emergence of Tuberculosis in under developed countries.⁴⁻⁶ The 55% of total cases Tuberculosis are presented in Asia followed by Africa that is 31%.⁷ To solve the global threat of tuberculosis, MDGs 2015 was introduced halving the incidence of tuberculosis disease and death.⁸

In 2007 there were estimated 181 / 100,000 new cases & 223 / 100,000 epidemic cases in Pakistan. According to WHO Pakistan is on 8th in the list of countries having Tuberculosis in huge numbers. Pulmonary tuberculosis is the most common manifestation of tuberculosis, although it can involve any organ of the body. Extra Pulmonary tuberculosis is defined as the occurrence of isolated tuberculosis in any part of the body outside the lungs. *Mycobacterium* may spread to any body organs through lymphatic or hematopoietic transmission and remain inactive for many years before a particular site causes disease to occur. The manifestation may involve systematic involvement or just as prolong fever and non-specific systematic symptom.⁹ so the diagnosis may be vague and frequently late.

The proportion of EPTB in all tuberculosis cases varies from one country to another. The out-of-lung manifestation of tuberculosis is prevalent in 34% of non-HIV cases in Pakistan¹⁰, WHO estimates 34,000

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(15%) of newly reported cases, In 2007, an additional number of outbreaks of the extra pulmonary TB.¹¹ EPTB report range from one quarter to one third of all tuberculosis patients to the GP clinics in Karachi and hospitals of Rawalpindi.¹²⁻¹³

In our part of the world, tuberculosis is common although a lot of researches on this subject have been done on the central nervous system tuberculosis but only a few prospective studies are available. There is an urgent need for such researches in our country.

MATERIALS AND METHODS

This study was conducted for a period of eight months from February 2015 to September 2015 at Indoor department of Medicine of District teaching hospital Gujranwala.

Total 110 cases of TBM were included in our study. The clinical details of these patients were taken and particularly the details of the patient, the history (present, past related), the clinical features were recorded. In this prospective study all the confirmed cases of central nervous system tuberculosis were included. Cases of Bacterial meningitis and encephalitis were excluded from this study. Blood and cerebrospinal fluid PCR was performed for Mycobacterium tuberculosis.

RESULTS

Total 110 cases of TBM were included in this study.

Risk Factors: The previous history of Tuberculosis was present in 28(25.45%) cases and 13(12%) patients had positive family history of tuberculosis. In 9(8.18%) cases Extra Central nervous system tuberculosis was present out of which 3 had active lung disease. The 7(6.36%) patients in our study had diabetes. In our study there were no case of immunosuppression and AIDS. No important risk factor was observed in 54(49%) patients. (Table No 1)

Sign and Symptoms (Central nervous Tuberculosis)

The main symptom of Central nervous Tuberculosis was Convulsion (64%), Headache (55.5%), fever (36.5%), vomiting (26%), and visual impairment (8%) & weakness (24%). (Table No 2)

Table No. 1: Risk Factors of Central nervous Tuberculosis

Risk Factors	No of Patients	Percentage of patients
Past History	28	25.45
Family History	13	12
Diabetes	7	8.18
Extra CNS Tuberculosis	9	7
No Important Risk Factors	53	49

On clinical evaluation 26% patients were normal. In (38%) patients there were Motor deficit, Urinary incontinence in (10%), ptosis in (13%), and in (19%) cases Cranial nerve palsies were observed. (Figure 1)

Table No. 2: Symptoms of Central nervous Tuberculosis

Symptoms	No of Patients	Percentage of patients
Convulsions	70	64
Headache	61	55.5
Fever	40	36.5
Visual impairment	9	8
Vomiting	29	26
Weakness	26	24

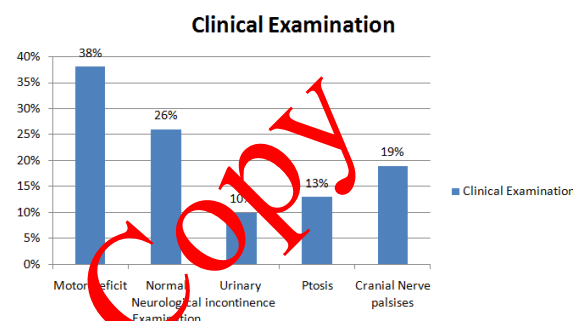


Figure No.1: Clinical Examination of Central nervous Tuberculosis

DISCUSSION

Central nervous system tuberculosis is very common in developing countries with high morbidity and mortality. Tuberculosis is prevalent not only in developing countries, but even in developed countries after the first decline up to 1980s, the incidence of tuberculosis is on the rise.¹³ The interaction of HIV with tuberculosis, income inequality, and the emergence of MDR-TB is the key driver of the re-emergence of Tuberculosis in under developed countries. The diagnosis of central nervous system tuberculosis is based on clinical and laboratory findings. CT, MRI preoperative diagnosis of tuberculosis is very sensitive, and routine histopathological diagnosis of tuberculosis is needed.

Past history of tuberculosis (25.55%) was the major risk factor in our study, followed by family history (11.11%), (7.77%) of Extra-central nervous system tuberculosis and diabetes (66.6%). There were no significant risk factors present in 48.88% of the cases. Neeru Vithalani et al¹⁴ found that most of the children had central nervous system disease cause by spread disease or miliary tuberculosis (34%) and only 21.8% of cases had the isolated central nervous system diseases, while isolated central nervous system diseases in adults were present in 50% of cases. The total 41% of cases had family history of tuberculosis that was reported from Matloob Azams' study¹⁵ in Pakistan. In Ramdurg SR et al¹⁶ study, the history of tuberculous

meningitis was found in 20% cases and old pulmonary tuberculosis in (66.6%) of cases. Martinez¹⁷ found Extra-central nervous system tuberculosis in (62.5%) patients with tuberculous pericarditis in 12.5% of the cases. In his study 12.5% of cases found active lung disease. We did not find any case of HIV infection in our study that was consistent with Bayinder¹⁸, 25% HIV-positive patients were present in the study that was conducted by Martinez. In study by Cormican¹⁹ 4.76% of cases were found with HIV positive. 20% of tuberculosis cases are related with HIV-positive infections in sub-Saharan Africa. Tuberculosis is prevalent in our country and past history and family history were important risk factors in our research, as in other studies in this geographic domain. In addition to this, people are different from the West, the subcontinent people live in joint family system who has a strong contact with person to person spread that contributing to family history of tuberculosis.

In our study convulsions (65.60%) and headache (56.25%) were the most common symptoms, followed by fever (37.5%), weakness (25%), vomiting (20%), visual impairment (9.3%). seizure was the main symptoms by the study of Garg RK²⁰, El Sayedd MM et al²¹ found that most common cause of seizures was tuberculous tumor. According to Martinez et al study headache was the most frequent symptom, followed by focal neurological deficit and seizures. Cicek Bayinder et al found the most common symptoms headache, fever, and vomiting similar to that of the Lakatos B et al²² study. The 9.3% of the cases with visual impairment were present in our study based on the results of the study by EL Sayed MM et al.

In our study, spinal tuberculosis rigid spine (29.65%), pain (79.33% L.C.S), neuronal deficits (62.5%) were the most common symptoms, followed by fever (17.24%). HSU et al²³ also found pain and stiffness as the most important symptom. Yanardag H et al²⁴ found back pain and sweating as the most common symptom. Le page et al²⁵ found neurological deficits in 74% cases. Ehsaei M²⁶ Owolabi L.F²⁷ found the nerve deficit was 63.8% and 100% respectively. In the nerve deficit we found limb paralysis (1.7%), limbs weakness (1.7%), paraplegia (25.80%) and paraparesis (34.48%). Mohn chang et al²⁸ found 25% of cases had paraplegia. L Cormican et al found a neurological deficit in 100% of cases.

CONCLUSION

The already suffering from tuberculosis was the major risk factor of Central Nervous tuberculosis. So the proper management of tuberculosis is necessary so that future risk factor for CNS tuberculosis should be reduced. Convulsions and headache were the most common symptoms of CNS tuberculosis.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Factors Associated with Stress and its Severity in Medical Students of Medical School of Pakistan

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ABSTRACT

Objective: In this study, we assessed perceived stress and its severity, sources and determinants.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the all MBBS classes of Nishtar medical college & hospital, Multan, from January 2014 to July 2016.

Materials and Methods: A total of five hundred and ten (510) subjects included in the study. Major subjects were (Anatomy, Physiology Biochemistry, Pharmacology, Surgery and Medicine) that are taught in five years of MBBS (Bachelor of Medicine and Bachelor of Surgery) tenure. This study period consist of lectures on medical topics and result evaluating system named as examination. Study style in medical field include one year study period and than at the end of year a written and oral examination system is designed to evaluate clinical and knowledge based skills of medical professionals.

Results: A total number of five hundred and ten (510) female parturient were enrolled in the study, one hundred and thirty eight (27.1%) from 1st year class of MBBS, one hundred and thirty three (26.1%) from class 2nd year, eighty three (16.2%) from 3rd year MBBS class, one hundred and seventeen (22.9%) from 4th year and thirty nine (7.6 %) from final year class of MBBS. Among these fifteen (2.9%) were married female and a big strength four hundred ninety five (97.1%) were unmarried. Chi-square test and logistic regression test were applied to see the effect modification and association respectively.

Conclusion: The students of medical school were reported to be under an uncertain condition of high stress. Student's academic profile and psychosocial circle are considered to be the main stressors in our study. But there is a big gap in limited literature available on this evaluation, there is more need to find out correlation between stressors and student's psychosocial academics.

Key Words: Stress, Severity, Medical Students

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INTRODUCTION

Medical school education is a stressful period of a medical school going person because of very tough education and busy life style. Some other factors like far from family and friends and enjoyable environment also contribute. Study of drugs and their application is also a tough task¹, it's also observed that some medical students have multiple suicidal attempts due to severe depression and anxiety disorders². This stressful time period also results in poor academic record and physical activities and physical life of students⁴.

All these factors that take part in unhealthy lifestyle of a student are called "stressors". Most common stressors in this time period include a bright future, family issues, parent's expectations, social attachments and atypical environment⁵.

Along with academic pressure and financial problems examination system in medical field also labeled as a stressor⁶ because of intensity of stress in this time duration^{7,8}. Lot of research work has been done on under and post graduates of medical education and profession but there is limited knowledge available on comparison of its effects during different classes¹⁰.

In most studies stress was reported among medical students in under developed countries like Pakistan, Malaysia and India and most common stressor was academics. Not only education but marital status, gender difference, age factor and poor clinical grip also labeled as stressors because of unpleasant events in this age, hormonal changes in different genders and lack of confidence in clinical grip¹¹.

MATERIALS AND METHODS

This cross sectional study was conducted at all MBBS classes of Nishtar medical college & hospital, Multan, from January 2014 to July 2016. Major subjects were (Anatomy, Physiology Biochemistry, Pharmacology, Surgery and Medicine) that are taught in five years of MBBS (Bachelor of Medicine and Bachelor of Surgery) tenure. This study period consist of lectures on medical

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topics and result evaluating system named as examination. Study style in medical field include one year study period and than at the end of year a written and oral examination system is designed to evaluate clinical and knowledge based skills of medical professionals.

A handmade performa was used to collect data of all variables. A total number of five hundred and ten medical school going students of five years of medical students were enrolled. All students were asked to fill up that performa about their demographics, academics, and a list of 33 items list of stressors.

RESULTS

Five hundred and ten parturients (510) of female gender were enrolled in our study. Mean age of parturients was 20.08 \pm 1.55 with minimum age 17 years and 25 maximum.

Table No.1: Demographic Variables

Students in classes	Frequency	%age	Chi-Square P Value
1 st Year	138	27.1%	0.340
2 nd Year	133	26.1%	
3 rd Year	83	16.2%	
4 th Year	117	22.9%	
Final Year	39	7.6%	
Marital Status			0.773
Married	15	2.9%	
Unmarried	495	97.1%	
Living In			0.265
Hostel	318	62.4%	
Day Scholar	192	37.6%	
Area Belongs To			0.260
Urban	435	85.3%	
Rural	75	14.7%	

Table No.2: Responses of Medical Student to the Perceived Stress Scale

Statement	Never	Almost Never	Sometimes	Often	Very Often	Chi-Square P Value
In the last month, how often you because of that happen unexpectedly?	68 (13.3%)	36 (7.1%)	214 (42%)	87 (17.1%)	105 (20.6%)	0.000
In the last month, how often have you felt that you were unable to control the important things in your life?	76 (14.9%)	68 (13.3%)	165 (32.4%)	118 (23.1%)	83 (16.3%)	0.000
In the last month, how often have you felt nervous and "stressed"?	31 (6.1%)	38 (7.5%)	204 (40%)	132 (25.9%)	104 (20.4%)	0.000
In the last month, how often have you dealt successfully with day to day problems and annoyances?	33 (6.5%)	34 (6.7%)	185 (36.3%)	168 (32.9%)	90 (17.6%)	0.000
In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	41 (8.0%)	54 (10.6%)	151 (29.6%)	197 (38.6%)	66 (12.9%)	0.000
In the last month, how often have you felt confident about your ability to handle your personal problems?	36 (7.1%)	36 (7.1%)	126 (26.3%)	193 (37.8%)	111 (21.8%)	0.004
In the last month, how often have you felt that things were going your way?	65 (12.7%)	70 (13.7%)	227 (44.5%)	117 (22.9%)	31 (6.1%)	0.004
In the last month, how often have you found that you could not cope with all the things that you had to do?	71 (13.9%)	98 (19.2%)	210 (41.2%)	87 (17.1%)	43 (8.4%)	0.000
In the last month, how often have you been able to control irritations in your life?	52 (10.2%)	62 (12.2%)	169 (33.1%)	160 (31.4%)	67 (13.1%)	0.000
In the last month, how often have you felt that you were on top of things?	94 (18.4%)	86 (16.9%)	208 (40.8%)	79 (15.5%)	43 (8.4%)	0.001
In the last month, how often have you been angered because of things that happened that been outside of your control?	50 (9.8%)	65 (12.7%)	183 (35.9%)	116 (22.7%)	96 (18.8%)	0.000
In the last month, how often have you found yourself thinking about things that you have to accomplish?	30 (5.9%)	36 (7.1%)	157 (30.8%)	159 (31.2%)	128 (25.1%)	0.001
In the last month, how often have you been able to control the way you spend your life?	50 (9.8%)	54 (10.6%)	175 (34.3%)	162 (31.8%)	69 (13.5%)	0.002
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	76 (14.9%)	98 (19.2%)	165 (32.4%)	78 (15.3%)	93 (18.2%)	0.000

Table No.3: Frequency of Stressors

Stressor	Never	Rarely	Sometime	Often	Always	Severity Mean \pm SD	Chi-Square P Value
Performance in module examination	69 (13.5%)	103 (20.2%)	152 (29.8%)	100 (19.6%)	86 (16.7%)	5.45 \pm 2.27	0.002
Performance in practical	135 (26.5%)	101 (19.8%)	119 (23.3%)	75 (14.7%)	80 (15.6%)	4.60 \pm 2.10	0.000
Competition with peers	180 (34.9%)	113 (22.2%)	100 (19.6%)	63 (12.4%)	54 (10.6%)	3.70 \pm 2.23	0.001
Lack of special guidance from faculty	155 (30.4%)	87 (17.1%)	137 (26.9%)	70 (13.7%)	61 (12%)	4.40 \pm 2.03	0.000
Dissatisfaction with class lectures	81 (15.9%)	80 (15.7%)	122 (23.9%)	125 (24.5%)	102 (20%)	4.79 \pm 1.99	0.000
Unavailability of learning materials	79 (15.5%)	68 (13.3%)	153 (30%)	123 (24.1%)	87 (17.1%)	4.86 \pm 2.12	0.001
Becoming a doctor	90 (17.6%)	80 (15.7%)	126 (24.7%)	122 (23.9%)	82 (16.1%)	5.09 \pm 2.44	0.223
Frequency of examination	32 (6.3%)	79 (15.5%)	152 (29.8%)	126 (24.7%)	121 (23.7%)	5.65 \pm 2.42	0.000
Difficulty in reading text books	114 (22.4%)	141 (27.6%)	152 (29.8%)	72 (14.1%)	31 (6.1%)	4.07 \pm 2.11	0.000
Family problems	232 (45.4%)	71 (13.9%)	77 (15.1%)	80 (15.7%)	50 (9.8%)	4.10 \pm 2.48	0.000
Lack of recreation	67 (13.1%)	82 (16.1%)	131 (25.7%)	124 (24.3%)	106 (20.8%)	5.19 \pm 2.48	0.220
Living condition in hostel	92 (18%)	44 (8.6%)	104 (20.4%)	69 (13.5%)	201 (39.4%)	6.08 \pm 3.00	0.000
Loneliness	111 (21.8%)	85 (16.7%)	120 (23.5%)	99 (19.4%)	95 (18.6%)	5.29 \pm 2.81	0.334
Inability to socialize with peers	120 (23.5%)	135 (26.5%)	136 (26.7%)	72 (14.1%)	41 (9.2%)	3.85 \pm 2.12	0.000
Accommodation away from home	60 (11.8%)	47 (9.2%)	102 (20.0%)	151 (29.6%)	110 (21.4%)	7.05 \pm 2.41	0.000
Worried about future	49 (9.6%)	43 (8.4%)	167 (32.7%)	112 (22%)	149 (29.2%)	5.02 \pm 2.41	0.000
Relation with opposite sex	189 (37.1%)	103 (20.2%)	78 (15.3%)	45 (8.8%)	97 (19.0%)	3.55 \pm 2.13	0.995
Adjustment with roommates	155 (30.4%)	71 (13.9%)	184 (36.1%)	50 (9.8%)	50 (9.8%)	4.82 \pm 1.87	0.000
Lack of entertainment	78 (15.3%)	68 (13.3%)	154 (30.2%)	111 (21.9%)	139 (27.3%)	5.27 \pm 2.20	0.000
Difficulty in journey to back home	141 (27.6%)	111 (21.8%)	102 (20.0%)	70 (13.7%)	86 (16.9%)	3.00 \pm 2.25	0.000
High expectations of parents	25 (4.9%)	25 (4.9%)	97 (19.0%)	70 (13.7%)	293 (57.5%)	5.70 \pm 2.28	0.000
Number of fertility	129 (25.3%)	209 (41.0%)	101 (19.8%)	36 (7.1%)	35 (6.9%)	3.37 \pm 1.64	0.654
Lack of personal interest in medicine	228 (44.7%)	71 (14.1%)	134 (26.3%)	44 (8.6%)	32 (6.3%)	5.08 \pm 2.09	0.000
Financial instability in family	221 (43.3%)	85 (16.7%)	123 (24.1%)	42 (8.2%)	39 (7.6%)	4.56 \pm 1.96	0.030
Political situation in surrounding	192 (37.6%)	80 (15.7%)	103 (20.2%)	81 (15.9%)	54 (10.6%)	6.51 \pm 2.65	0.457
Having drugs/smoking	318 (62.4%)	31 (6.1%)	42 (8.2%)	27 (5.3%)	72 (14.1%)	1.99 \pm 2.26	0.002
Quality of mess	64 (12.5%)	3 (7.1%)	84 (16.5%)	171 (33.5%)	150 (30.4%)	7.38 \pm 2.13	0.001
Over eating/under eating	91 (18.4%)	116 (22.7%)	121 (23.7%)	69 (13.5%)	110 (21.6%)	5.18 \pm 1.95	0.687
Class attendance	157 (30.8%)	64 (12.5%)	93 (18.2%)	91 (17.8%)	105 (20.6%)	6.16 \pm 2.30	0.145
Sleeping difficulty impact have impact	74 (14.5%)	57 (11.2%)	160 (31.4%)	97 (19%)	122 (23.9%)	5.36 \pm 2.06	0.006
Physical disability	221 (43.3%)	92 (18%)	89 (17.5%)	56 (11%)	52 (10.2%)	4.19 \pm 1.99	0.001
Inadequate exercise	143 (28%)	106 (20.8%)	122 (23.9%)	66 (12.9%)	73 (13.4%)	4.45 \pm 2.07	0.000

Out of these 15 (2.9%) were married and a big total of 495(97.1%) unmarried. Among these enrolled parturients 138(27.1%) were enrolled from 1st year class of MBBS, 133(26.1%) from second year, 83(16.2%) from third session, 117(22.9%) from 4th year and remaining 39 (7.6%) were enrolled from final session of MBBS. A big number of parturients were hospitalized 318(62.4%) and remaining 192(37.6%) were living in third homes/day scholars. Among these total participants 435(85.3%) from Urban areas and

75(14.7%) were living rural areas of community (table-1). Status of students about response to perceived stress scale was described in table no.2.

Similarly categorical description of most frequent frequency were mentioned in table-3. It was observed that most frequent stressor was parents expectations 293(57.5%), 2nd most common cause was examination system percentage of this stressor was 121(23.7%), condition of hostel and living standard was 3rd frequent stressor which have a percentage of 201(39.4%),

sleeping problem was found in 122(23.9%), stress about thirty better future was found to be 149(29.2%). Remaining stressors include quality of mess 150(30.4%), far from home and family 150(30.4%).

Effect modification was calculated by applying Chi-square test and noted that class of parturients, happening of things unexpectedly, desire of copying matter, confidence about handling life problems and ability to handle them, confidence to control irritation in life, broad and wide syllabus, examination results, unsatisfactory knowledge containing lectures, class competition, lack in literature availability, lack of interest in medical field, hostel accommodation, financial issues, lack of exercise and unhealthy environment have significant effects on life of a student and produce stress.

In our study stress was a binary responsive variable can be measured by yes and no labelling, to see it's correlation with other variables logistic regression was applied, it was found that stress was depended on loneliness, sleeping problem, dissatisfaction with class lectures, and coping with important changes in difficult situations of life.



Figure No.1: Percentage of stress according to its severity.

Table No.4: Logistic Regression

Terms	Coefficients	S.E	P-Value
Constant	1.907	0.632	0.000
Dissatisfaction with class lectures	0.425	0.122	0.000
Loneliness	-0.324	0.128	0.003
Sleeping difficulties	0.3563	0.0974	0.000
happened unexpectedly			0.000
Almost Never	-1.783	0.538	
Sometimes	0.390	0.411	
Often	1.414	0.608	
Very often	2.373	0.701	
Effectively coping with important changes that were occurring in your life			0.000
Almost Never	1.848	0.660	
Sometimes	2.396	0.566	
Often	1.376	0.492	
Very often	1.228	0.601	

DISCUSSION

This study was conducted in Nishtar medical college & hospital, Multan, from January 2014 to July 2016. A total number of five hundred and Ten (510) female parturients were enrolled in this study. Among these total parturients one hundred and thirty five (27.1%) were from 1st year class of MBBS, 2nd big ratio from 2nd year class about one hundred and thirty three (26.1%), eighty three were from (16.2%) from 3rd year class, one hundred and seventeen (22.9%) from and 4th year and thirty nine (7.6 %) from pioneer/final year MBBS class. Among these fifteen (2.9%) were married and a large number of parturients about four hundred and ninety five (97.1%) were unmarried. Mostly students living in hostel and about three hundred and eighteen (62.4%) and remaining one hundred and ninety two (37.6%) were day scholar, further results found that a big strength belongs to urban areas four hundred and thirty five (85.3%) and remaining seventy five (14.7%) were belongs to rural areas.

Throughout its tenure medical education and profession is very stressful, some professionals found it mild and some found it moderately and severely.^{12, 13} Where we are considering marital status and self respect as predictor of stress, academic performance in medical. It is found that students of 1st MBBS are at high risk due to new arrival in medical forum.¹⁴ Similarly severity of stress changes according to the environment, syllabus of medical education, examination system behavior of colleagues.¹⁵ A similar study from India reported 37% stress rate during medical tenure¹⁶. A long time ago a study was conducted on Spanish incidence of stress was 61.7%.¹⁷

In this study we used perceived stress scale to evaluate and analyze all aspect of stress. On other hand we recommended that use of this scale should be used limited, because it analyze as educational stress, cannot be used for personal stress.

A study conducted by Cohen et al suggested that gender difference is not concern with stress and severity of stress except those people who are working in private places. But with comparison of Cohen study we conducted our study only on female students¹⁸.

In our study it was observed that most frequent stressor was parents expectations 293(57.5%), 2nd most common cause was examination system percentage of this stressor was 121(23.7%), condition of hostel and living standard was 3rd frequent stressor which have a percentage of 201(39.4%), sleeping problem was found in 122(23.9%), stress about thirty better future was found to be 149(29.2%). Remaining stressors include quality of mess 150(30.4%), far from home and family 150(30.4%).

In this study it is found that perceived stress and academic skills were strongly correlated but a minimum literature availability. It is reported that early and acute

stress has deep dependency on student's examination and results¹⁹. Conclusion of these studies also reported that not only acute but chronic or old stress also have effects on students educational profile. Among medical students, examination and results are the main stressors^{20, 21}, but this system cannot be changed because it is a single, effective and refined procedure to test the student's knowledge and assessment of clinical skills. Lack of recreational activities and limited social circle also considered as stressor. Study conducted in USA reported that low examination burden and self learning behavior and recreational activities are effective and give relaxation by reducing stress.

CONCLUSION

The students of medical school were reported to be under an uncertain condition of high stress. Student's academic profile and psychosocial circle are considered to be the main stressors in our study. But there is a big gap in limited literature available on this evaluation, there is more need to find out correlation between stressors and student's psychosocial academics.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Economic Burden of Childhood Pneumonia in Abbottabad, Pakistan

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ABSTRACT

Objective: To estimate the cost per episode of childhood pneumonia in under-five children as well as both direct and indirect costs associated with the treatment of these infections.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Pathology, Shahina Jamil teaching hospital of Frontier Medical College, Abbottabad, Pakistan from July, 2014 and June, 2015.

Materials and Methods: Under-five children who were suffering from childhood pneumonia or suffered and treated for it in the past one month were included in the study. Their mothers/caretakers were the respondents. Data was obtained using a structured and pre-tested questionnaire.

Results: There were 229 respondents. Total median cost, direct non-medical cost and median direct medical cost associated with each episode of pneumonia was 300 PKR, 100 and 150 PKR, respectively. Non-medical expenses associated with treatment were low, 105 PKR. Direct medical expenses were 250 and 100 PKR in terms of medications and user fee at private health facility while at a public health facility, they were 100 and 03 PKR, respectively. It is evident that the expenses incurred in terms of fee and medicines were noticeably higher in private sector than in public sector. Indirect expenses were considerably higher among those patients who had visited a public health center as an out-patient. It was attributed to increased waiting time for medical consultation, 120 minutes, as compared to half hour at a private center. The indirect costs associated with hospitalized patients were non-significant. Many different methods were used to meet the health expenses related to treatment of ARIs in under-five children so as to produce extra funds. These methods included borrowing, allocation of fixed funds and selling personal goods or animals. Majority of the study participants (68.6%) had their monthly earnings amid 10,000-20,000 PKR.

Conclusion: The childhood pneumonia is associated with substantial economic burden. This must be considered while making health plans and strategies. This burden of disease could be attenuated by enhancing public sector medical services, curtailing treatment costs and introducing preventive strategies. The most significant preventive strategy will be to initiate influenza and pneumococcal immunization.

Key Words: childhood, pneumonia, economic, out of pocket expenses.

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INTRODUCTION

Childhood pneumonia is one of the leading causes of childhood mortality in developing nations. About 20% of deaths in under-five children are attributed to childhood pneumonia worldwide.¹ More than half of these cases of childhood acute respiratory tract infections (ARIs) happen in sub-Saharan Africa and south-Asia.² Childhood pneumonia was a main reason for repeated visits to a clinician and also put considerable financial load on health resources chiefly

in developing nations where health system is already inadequately funded.¹ About 40% visits to an out-patient pediatric department in Pakistan are due to symptoms of respiratory tract infection e.g. cold, cough etc.³ ARIs are responsible considerable morbidity and mortality and meanwhile put substantial financial pressure on health care system because of increased usage of health resources and due to decreased productivity.⁴

Health financing is a fundamental component of an economic system of any country because it aids in imparting professional health services to its populace. Conversely, the conditions are sub-optimal in many developing nations. Many such countries like ours strive for adequate financing of their health system.⁵ Public sector could not provide proficient and professional health services because of these financial restraints due to modest allocations. However, private health sector, which is believed to be of superior quality, efficient and competent by a number of people, price heavily for offering health services leading to hefty out of pocket expenses (OOP).⁶ Non-responsive

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public health system, lack of faith and distrust in government hospitals, poor infrastructure, lack of trained medical personnel force public towards private health centers. All this collectively adds considerably towards treatment costs.^{5,7} Hence, people are forced to use alternate ways .e.g. borrowing or selling their belongings to generate extra money so as to pay hefty medical and treatment expenses.⁵ Similarly, these enormous medical costs prevent them from getting treatment of their sick child at an earlier stage which further leads to higher rates of complications and deaths whereas pneumonia-related mortality can be reduced by 50% by early diagnosis and treatment.⁸

In 2012, budgetary health allocations were only 0.27% of GDP in Pakistan.⁹ These allocations were lowest as compared to all previous health allocations which in turn have pushed OOP further higher, upto 85%. When compared with other countries especially Eastern Mediterranean countries, these OOP costs were considerably higher.⁵ Considering total health expenditures in Pakistan, the governmental contribution is only 25% while 72% is contributed by private health sector. The non-governmental and developing organizations contribute the rest of 3% expenses.⁵ Increasing poverty along-with no functional health insurance system in place in our country, public is pressed towards catastrophic health expenses.¹⁰

There is not sufficient data in this area in our region. Therefore, we have performed this study in under-five children to ascertain the financial burden of childhood respiratory tract infections. The principle objective was to estimate the costs associated with each episode of childhood pneumonia and especially to determine direct medical, direct non-medical and indirect expenses associated with the childhood pneumonia.

MATERIALS AND METHODS

This cross-sectional study was conducted at Department of Pathology, Shahina Jamil Teaching hospital of Frontier Medical College, Abbottabad,, from July, 2014 to June, 2015. Children who were suffering from ARI or who were ill and being treated for ARI in past month and less than five years of age were included in the study. On the other hand, those children who were suffering from chronic respiratory illness and were more than five years of age were excluded from this study. ARI was diagnosed by skilled clinician using European Center for Disease Prevention and Control's criteria.⁴ There were 229 respondents with nil refusals. These were the mothers/caretakers of the children included in the study. Data was obtained using a structured and pre-tested questionnaire which took about 15-20 minutes to be filled. Respondents were particularly inquired about the cost of transport, drugs, diagnostic tests, consultation charges, mode of arranging money and any explicit financial allocations set aside for health purposes.

Direct expenses were sub-divided into direct medical costs, which were associated with medical treatment e.g. costs of medicines and diagnostic tests, consultation fee, etc, and direct non-medical costs, which were incurred on lodging, meals and travel (to health facility). Indirect medical expenses were estimated as the cost of absence from work. Expenses were estimated in Pakistani rupees (PKR).

Statistical package for social sciences (SPSS, version 21) was used to enter, organize and analyze data. Median was used for expressing expenses because the data was not normally distributed and the median was not affected by the extreme variations in data values.

RESULTS

The total number of respondents was 229. Total median cost, direct non-medical cost and median direct medical cost associated with each episode of pneumonia was 300 PKR, 100 and 150 PKR, respectively, as shown in Table 1.

Table No.1. Cost per episode of childhood pneumonia in PKR (n=229)

Variable	Median	Minimum	Maximum	Interquartile range
Total cost	300	0	2700	108 - 683
Direct medical cost	150	0	950	50 - 300
Direct non-medical cost	100	0	400	50 - 150

Non-medical expenses associated with treatment were low, 105 PKR. This may be due to the fact that the estimation of non-medical costs excluded consultation fee as well as most of the medications were purchased directly from drug stores as over the counter drugs.

Table 2. Cost according to the health facility used in PKR, (n=229)

Variable	Median	Minimum	Maximum
Direct medical costs at private health facility			
User fee	100	0	200
Medicines	250	0	750
Direct medical costs at public health facility			
User fee	3	0	3
Medicines	100	0	250
Direct non-medical costs at public and private health facility			
Transportation	80	0	200
Lodging/meals	50	0	250

Direct **medical** expenses were 250 and 100 PKR in terms of medications and user fee at private health facility while at a public health facility, they were 100 and 03 PKR, respectively, as shown in Table 2. It is

evident that the expenses incurred in terms of fee and medicines were noticeably higher in private sector than in public sector.

Indirect expenses were considerably higher amongst those patients who had visited a public health center as an out-patient. It was attributed to increased waiting time for medical consultation, 120 minutes, as compared to half hour at a private center. The indirect costs associated with hospitalized patients were non-significant. This was because female caretakers or mothers attended their ailing child while the males visited them before or after work.

Various methods were employed to meet the health expenses related to treatment of ARIs in under-five children so as to produce extra funds. These methods included, i)- borrowing, ii)- allocation of fixed funds and, iii)- selling personal goods or animals, Table 3.

Table.3 Mode of arranging money for treatment of ARI, (n=229)

Mode	Number	Percentage
Borrowing	125	55%
Fixed savings for health	75	33%
Sale of material goods	22	10%
Sale of animals	7	2%
Total	229	100%

Majority of the study participants (68.6%) had their monthly earnings amid 10,000-20,000 PKR, Table 4.

Table No.4 Monthly income of the parents in PKR, (n=229).

Monthly income	Number	Percentage
<10000	37	16.2%
10000-20000	157	68.6%
21000-30000	29	12.6%
>30000	6	2.6%
Total	229	100%

DISCUSSION

Childhood pneumonia in under-five children put a lot of economic pressure, especially on an already over-burdened and inadequately funded public health system among developing nations. It causes significant utilization of public health resources which in turn leads to considerable out of pocket expenses in private sector. Under-privileged and disadvantaged poor people in developing countries have to bear this burden which contributes towards catastrophic health expense and push this populace into vicious circle of poverty. This causes hindrance in pursuing medical treatment at an earlier stage which contributes toward medical complications and childhood mortality. Furthermore, these people have to use extra means e.g. borrowing, savings or selling personal possessions or domestic animals to raise extra funds so as to meet hefty OOP expenses.^{1,5}

Total median cost, direct non-medical cost and median direct medical cost associated with each episode of pneumonia was 300 PKR, 100 and 150 PKR, respectively, in our study. This finding was similar to other studies. A study conducted by Rehman et al in slums of Islamabad has shown that the average cost of treatment associated with each pneumonia episode was 400 PKR.⁵ Hussain et al have conducted their study in Northern areas of Pakistan. They also have reported that the total direct expenditures associated with each episode of childhood pneumonia were 456.19 PKR.¹ Similarly, according to Dongre et al, the average cost of treatment was 166.24 INR, (268 PKR), for each episode of respiratory tract infection in their Indian patients.¹¹

Health expenses were quite high in private sector than in public sector in our study. They were mostly related to medications and fee. Same finding was reported by Dongre et al in their study which was conducted in India. As per their findings, health expenditures especially related to medications and fee were significantly higher for seeking treatment at a private health facility than at a public facility.¹¹ Likewise, Peasah et al have reported that the costs of treatment were twice as high at a private center than at a public center.⁴ This has shown that the private health sector significantly contributes in hefty OOP costs because it's a very expensive treatment option.

Various methods were used to generate extra funds to bear hefty OOP costs. The chief mean was borrowing, (55%), usually from a friend or a neighbor. The other methods were fixed health savings per month, (33%), and selling of personal possessions or their animals, (12%). Similarly, Rehman et al have reported that the main methods of generating extra funds were borrowing (42%) and sale of material goods (23%) in their study.⁵ Monthly income of majority of our study participants, 68.6%, was among 10,000-20,000 PKR. Likewise, the average monthly income of a household was 10,000 PKR according to Rehman et al and majority of their households, 72%, had their monthly earnings between 7,000 to 10,000 PKR.⁵ On the other hand, according to Dongre et al the average monthly income of most of their subjects, 55.4%, was fewer than 1500 INR, (2500 PKR).¹¹ The difference in monthly earnings may be attributed to the study setting. Our study was performed in an urban area while that was of Rehman et al was carried out in slums of Islamabad, Pakistan while that of Dongre et al was conducted in a rural areas of India.

Childhood pneumonia is associated with hefty costs and OOP expenses. Enhancing public sector health services via improved funding and employing qualified and skilled workers, educating masses to increase awareness among them, introducing health insurance and preventive strategies like pneumococcal and influenza vaccination could be some of the important steps which can improve the outcome of these

respiratory infections in children and reduce OOP health expenses.^{1, 4, 5}

CONCLUSION

The childhood pneumonia is associated with substantial economic burden. This must be considered while making health plans and strategies. This burden of disease could be attenuated by enhancing public sector medical services, curtailing treatment costs and introducing preventive strategies. The most significant preventive strategy will be to initiate influenza and pneumococcal immunization.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Efficacy of Cranberry Extract Bacillus Coagulans & Turmeric Extract in Patients With Bacterial Vaginosis

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ABSTRACT

Objective: The objective of this study was to assess the efficacy and safety of conventional therapies alone (antibiotic, metronidazole, antibiotic metronidazole) versus conventional therapies with combination therapy cranberry extract bacillus coagulans & turmeric extract, in patients with bacterial vaginosis.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at nine study sites from three major cities (Karachi, Lahore and Islamabad) in Pakistan from January to September 2016.

Materials and Methods: After ethics committee approval at physician discretion 150 Patients meeting the eligibility criteria received standardized conventional therapies alone (Antibiotic / Metronidazole/Antibiotic Metronidazole) & 150 patients received conventional therapies with Combination therapy Cranberry extract bacillus coagulans & turmeric extract. The primary outcome measures were frequency of recurrence of vaginal infections and improvement of symptoms.

Results: For this study, 300 healthy, newly diagnosed & treatment experienced, non-pregnant women were enrolled to participate with the symptoms and signs of BV from 09 different centers from Pakistan. Amsel's criteria were significantly decreased after treatment in both groups at week 2 ($p=0.003$). The microbiological cure rate of bacterial vaginosis at week two was significantly ($p<0.001$) higher in experimental group (76.9%) as compared to conventional group (58.5%). There were significant ($p<0.001$) differences between two groups in terms of recurrence rate of bacterial vaginosis at week 12.

Conclusion: This study demonstrated the safety and efficacy of cranberry extract bacillus coagulans & turmeric extract in preventing BV recurrence. Therefore this product can be used for the improvement of clinical and microbiological parameters in patients with BV.

Key Words: Bacterial vaginosis (BV), non-antibiotic treatment, antibiotics, emerging therapies, bacillus coagulans

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INTRODUCTION

Bacterial vaginosis is the most widely recognized problem of lower genital tract and the most common reason for vaginal discharge and unpleasant odour among women of reproductive age.

One of the most eminent disorders which tops the list of all the vulvovaginal infections and adds 60% of these infections is Bacterial Vaginosis (BV).¹ The prevalence varying widely depending on the patient population and can be diagnosed both clinically and microbiologically. BV prevalence is ranging from 12% in Australian women, 29% in North American women followed by more than 50% in East/Southern Africa women.²⁻⁵

BV is a poly microbial infection resulting from many anaerobic bacterial including Gardnerella vaginalis, Prevotella species, Mobiluncus species, Atopobium vaginae and Mycoplasma species. One more factor which is taken in consideration while discussing about pathogenesis of BV is the absence or decrease in the amounts of Lactobacilli which releases hydrogen peroxide, it is witnessed that their reduction also contributes as a prime cause of BV.⁶ As BV is a very complex disorder, the complications are numerous if it is left untreated. The complications mostly comprise of low birth weight of fetus, pelvic inflammatory disorder⁷, premature birth and inability to conceive amongst others.⁸

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In contemporary times probiotics have managed to gather attention of many medical personnel because of their prominent health promoting benefits. Probiotics are basically the living microorganisms which when administered in particular amounts provide lots of health stimulating benefits.⁹ Previously many studies were done on the role of probiotics and the results made it evident that beneficial health promoting results do exist. Cranberry juice was subjected as a treatment for UTI by Kontiokari T et al, who showed that prevention of recurrence of UTI is by frequent intake of cranberry juice in increasing the count of lactobacilli.¹⁰ The objective of this study was to assess the efficacy and safety of conventional therapies alone (antibiotic, metronidazole, antibiotic metronidazole) versus conventional therapies with combination therapy cranberry extract bacillus coagulans & turmeric extract in patients with bacterial vaginosis.

MATERIALS AND METHODS

Phase IV interventional, prospective study was conducted at different centers in Pakistan from January to September 2016. Nine study sites from three major cities (Karachi, Lahore and Islamabad) were selected on the basis of patient population, facilities and equipments, data storage and security, willingness to participate in study and high quality personnel who deliver high quality data. The sample size was calculated with the WHO sample size calculator¹¹ with the assumption that the product would be $\geq 50\%$ more efficient than placebo.¹² The recommended sample size was 300 participants (conventional group, n = 150; combination therapy group, n = 150).

Groups	Subgroups	Number of Patients
Conventional	Antibiotic	50
	Metronidazole	50
	Antibiotic + Metronidazole	50
Experimental	Antibiotic + Cranberry extract bacillus coagulans & turmeric extract x BD	50
	Metronidazole + Cranberry extract bacillus coagulans & turmeric extract x BD	50
	Antibiotic + Metronidazole + Cranberry extract bacillus coagulans & turmeric extract x BD	50

The decision to start treatment was made by the gynecologists as per study protocol. Participants were selected by using consecutive sampling method who

willing to undergo screening after signing informed consent, the inclusion criteria were newly diagnosed & treatment experienced (had 03 episodes of bacterial vaginosis per year), non-pregnant (14-26 weeks), females outpatients 15-44 years of age with diagnosis of Bacterial vaginosis. Criteria for diagnosis of BV included presence of three out of four Amsel's clinical criteria including pH > 4.5, positive Whiff test results, a gray-white homogenous discharge, and presence of clue cells.

At 02 weeks treatment with Metronidazole 400 mg B.D/other antibiotic was stopped in groups of conventional and experimental. Cranberry extract bacillus coagulans & turmeric extract was continued till week 12. At week 12 all patients on conventional therapies with Combination therapy Cranberry extract bacillus coagulans & turmeric extract was evaluated for the recurrence through clinical symptoms & HVS test. Each patient was followed up for a period of 12 weeks. 03 study visits was performed at baseline, 02 weeks and at 12 weeks for the recurrence.

All analyses were performed on SPSS version 21. For continuous variables summary statistics included n (number of observations), mean and standard deviation as well as frequencies and percentages for categorical variables were presented. A chi square test was used to find out the difference between the categorical groups. A p-value ≤ 0.05 was considered as significant.

RESULTS

Out of 300 enrolled patients a total of 267(89%) women, 131(87.3%) in conventional group and 136(90.7%) in experimental group completed the study. In this study, no participant was excluded from the study due to an adverse event or serious adverse events related to the use of the probiotic product, while 33(11%) patients were excluded for other reasons. At week 2, two patients were lost to follow while 3 patients became pregnant; six patients left the study because of side effects of antibiotic treatment and poor compliance. At week 12, twelve patients were lost to follow, of these 5 became pregnant and 7 due to poor compliance with antibiotic treatment. There was no significant difference between two groups in terms of demographic and reproductive characteristics such as age, duration of marriage, age at first pregnancy, parity, abortion, use of contraceptive method and frequency of intercourse per week ($P > 0.05$).

At week 2, the difference between two groups in terms of clinical improvement, i.e. improvement in Amsel's criteria, was significant($p=0.003$); in other words, experimental group was more effective than conventional treatment in terms of clinical improvement (Table 1). The microbiological cure rate of bacterial vaginosis at week two was significantly ($p<0.001$) higher in experimental group (76.9%) as compared to conventional group (58.5%) (Table 2).

The results of safety evaluation in experimental group at 12 weeks are shown in Table 3. Nausea was reported in 3 patients in conventional group while none of the subjects in experimental group showed this symptom. Heartburn had the highest frequency among study subjects in experimental (6) and conventional (5) groups. Skin rash, headache, metallic taste, and abdominal pain were reported in experimental group 2, 4, 1 and 1 ($p < 0.469$). The severe adverse event was not reported in any experimental treatment group at 12 weeks. There were significant ($p < 0.001$) differences between two groups in terms of recurrence rate of bacterial vaginosis at week 12, i.e. recurrence was 33.6% in conventional group as compared to 16.2% in experimental group (Table 4).

Table No.1: Resolution of symptoms of Bacterial Vaginosis at Week Two as Reported by Patients (n=289)

Treatment Arms	Resolution of Symptoms at Week 2 n(%)			p-value
	Fully Relieved	Partially Relieved	Not Relieved	
Conventional (n=142)	71(50)	36(25.4)	35(24.6)	0.003
Experimental (n=147)	101(68.7)	28(19)	18(12.3)	

Table No.2: Microbiological Cure of Bacterial Vaginosis at Week Two (n=289)

Treatment Arms	Cure Rate (HVS) at Week 2 n (%)		p-value
	Yes	No	
Conventional (n=142)	83(58.5)	59(41.5)	<0.001
Experimental (n=147)	113(76.9)	34(23.1)	

Cure (0-1 Amsel's Criteria) absence or presence of only one of Amsel's Criteria

Table No.3: Safety Evaluation in Both Groups at Week 12(n=267)

Treatment Arms	Adverse Events n (%)	p-value	Serious Adverse Events n (%)
Conventional (n=131)	6(4.6)	0.469	Nil
Experimental (n=136)	9(6.6)		Nil

Table No.4: Recurrence of Bacterial Vaginosis in Both Groups at Week 12 (n=267)

Treatment Arms	Yes n(%)	No n(%)	p-value
Conventional (n=131)	44(33.6)	87(66.4)	<0.001
Experimental(n=136)	22(16.2)	114(83.8)	

DISCUSSION

This study exhibited that when traditional antibiotics along with metronidazole and probiotics, turmeric extract and cranberry juice were added the consequences were comparatively better. Reduction of Lactobacilli as discussed previously, plays a enormous in the infection of the vagina and even constant periods of remissions and recurrences, hence in one such study by Anukam et al and Mastromarino, they administered certain strains of lactobacilli in biologically friendly quantity, demonstrated positive results in treatment of BV due the restoration of the microbiota and even prevention of recurrences.^{13, 14} One of the major problem in treating BV and other vaginal infections is their tendency to recur. Therefore to resolve this issue, probiotics were added with the traditional antibiotics and the results were pleasantly surprising, not only BV was cured faster but even recurrences were tackled to quite an extent.^{15,16} Use of cranberry juice to treat BV was considered to play a major role is resolution of UTI, Kontiokari T et al in the study results showed that within the period of 6 months, recurrence rate were lower in group given cranberry juice as compared to those who were not given.¹⁰ Clinical improvement based on Amsel's criteria was estimated at 80% and 70% in micosin and metronidazole treatment groups, respectively.¹⁷

In order to analyze the rate of resolution of infection after the treatment, HVS test laboratory criteria was taken into consideration. The results of the both groups showed a significant variation in recurrence of symptoms. Lactobacilli as previously discussed is one of the major treatment modality in curing BV, hence it was added with traditional antibiotics like metronidazole, clindamycin and tinidazole. The results were quite satisfying as BV was completely cured in high rates plus minimum recurrence was observed and there was early reestablishment of microbial flora.¹⁸⁻²⁰

Adverse reactions in this kind of treatment modality were either negligible or were of mild severity. Probiotics are very well tolerated by majority of adult women and have played an effective role in reduction of BV symptoms. Hence they were considered safe pharmaceutically.²¹⁻²⁵

The study purpose was primarily to exhibit the difference between the experimental preparation along with the conventional standard treatment and the standard treatment alone. It was witnessed that in those patients who experimental modality was added, recurrences were less seen when it was analyzed both clinically and microbiologically. Keeping in mind that BV is highly recurrent and prevalent in our setup and with metronidazole the choice of antibiotic multiple side effects, herbal alternative integration into the standard drug therapy can lead to fewer side effects with more effective treatment.

To be precise, probiotics, cranberry and turmeric extract along with conventional therapy demonstrate a secure and efficient way to treat the vaginal infections and equalize the balance of the vaginal microbial flora. Moreover along with reduction in recurrence rates, vaginal pH also gets normalized and there is decrease in the Amsel's score as well. We suggest the use of these alternatives in such kind of infections where rebalancing of microbiota is required.

CONCLUSION

This study demonstrated the efficacy and safety of cranberry extract, bacillus coagulans & turmeric extract in preventing BV recurrence, as this product contributes to the improvement of clinical and microbiological parameters, thereby lengthening the remission period. Our findings supported the positive effects of probiotics described in previously mentioned studies. Probiotic combination treatment regimens appear promising but larger, well-designed randomized conventional trials with standardized methodologies are needed to confirm the benefits of probiotics in the treatment of BV.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Epidemiological Features of Lumbar Disc Lesion in Patients Reporting Neurosurgery at DHQ Mirpur

Muhammad Wasim Khan¹, Riaz Ahmad Choudary² and Muhammad Nadeem Khan³

ABSTRACT

Objective: This study examined the social and demographic characteristics of lumbar disc prolapse in patients reporting to outpatients department of Neurosurgery at DHQ Hospital Mirpur AJK

Study Design: Observation / descriptive study

Place and Duration of Study: This study was conducted at the Department of Neurosurgery, DHQ hospital Mirpur from June 2015 to January 2017

Materials and Methods: A total of 108 patients with proven lumbar disc prolapse on MRI who attended the neurosurgical outpatient from June 2015 to January 2017 were included in the study.

Results: The most common age group involved was between 31-40 years and 41-50 years (31.5 % each). The most commonly affected level was L4/5 (44.4 %). Majority of patients affected (66.7%) were from rural areas. 44.4 % were moderate and 29.6% were heavy workers. The patients who drove vehicle on bad roads were more affected.

Conclusion: Lumbar disc prolapse is common in people working or living in poor infrastructure

Key Words: Disc prolapse, Working conditions, Rural or Urban, Level of disc prolapse

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INTRODUCTION

Upright posture puts enormous stress on the spine. Compressive loads on lumbar intervertebral discs are 1 to 2.5 times the body weight during normal walking. During lifting of 14 to 27 kg objects axial compressive loads in lumbar spine increase up to ten times body weight with anteroposterior shear loads approaching double body weight¹. Eccentrically placed loads result in bulging of the annulus to the opposite side (2). Excessive mechanical loading in a vulnerable disc precipitates degeneration. Direct mechanical damage whether through cyclic fatigue loading, hypermobility or increase shear stress can be associated with degenerative progress².

Lumbar disc prolapse is protrusion of nucleus pulposus through annulus fibrosus which compress the exiting nerve roots or cauda equine compelling the patient to go on bed and seeking the treatment.

The problem of lumbar disc prolapse is of utmost importance in our community because of the fact that spine of people is subjected to severe stress due to peculiar working conditions and poor infrastructure. .

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MATERIALS AND METHODS

This study was planned to find out epidemiological aspect of lumbar disc herniation at our neurosurgical unit during June 2015 to January 2017. It was a hospital based prospective study in which 108 patients newly diagnosed with MRI who attended the neurosurgical clinic were included. The patient data were recorded according to preset protocol.

Patient profile like age sex BMI occupation area of residence (rural/urban) road conditions in their locality (good/bad) and vehicle used by them (four wheel/motorbike) were noted.

Clinical and radiological characteristics like duration of illness sphincter disturbances, history of direct trauma and no of pregnancies in female patients were documented MRI findings of prolapsed disc such as level and type were also documented.

SPSS version 18 was used to analyze the data

RESULTS

Among 108 patients 56 (51.9%) were male and 52 (48.1%) were female. The most common age of presentation was 31-40 years and 41 to 50 years (31.5% each) followed by 21-30 years (21.4 % n:26). Highest percentage of patient was between 21-50 years (88.1 % n:94). The patients from rural areas were 66.7 % (72 patients). The percentage of rural moderate workers was 45.8 % (Table 1). Among 40 female rural patients 27 (67%) were moderate workers.

Table No.1: Life style versus area of residence in Lumbar disc Prolapse Patients

			Occupation			
			Sedentary	Moderate Worker	Heavy Worker	Total
Residence	Rural	Count	10	32	29	71
		% within Residence	14.1%	45.1%	40.8%	100.0%
		% within Occupation	41.7%	64.0%	87.9%	66.4%
		% of Total	9.3%	29.9%	27.1%	66.4%
	Urban	Count	14	18	4	36
		% within Residence	38.9%	50.0%	11.1%	100.0%
		% within Occupation	58.3%	36.0%	12.1%	33.6%
		% of Total	13.1%	16.8%	3.7%	33.6%
Total		Count	24	50	33	107
		% within Residence	22.4%	46.7%	30.8%	100.0%
		% within Occupation	100.0%	100.0%	100.0%	100.0%
		% of Total	22.4%	46.7%	30.8%	100.0%

Table No.2: Vehicle driving versus road conditions

			Vehicle		
			Motor Bike	4 Wheeler	Total
Roadcond	Good	Count	0	10	10
		% within Roadcond	.0%	100.0%	100.0%
		% within Vehicle	.0%	50.0%	41.7%
	Bad	Count	4	10	14
		% within Roadcond	28.6%	71.4%	100.0%
		% within Vehicle	100.0%	50.0%	58.3%
Total		Count	4	20	24
		% within Roadcond	16.7%	83.3%	100.0%
		% within Vehicle	100.0%	100.0%	100.0%

Among 24 vehicle users most common were four wheeled drivers (83.3%) followed by motor bike drivers (16.7 percent). Fifty percent 4 wheel drivers and all the motor bike drivers were using bad road conditions. (Table 2)

History of direct trauma was noted in 9.3 percent of patients and among them 80 % were female and 20 % were male.

Majority of patients (35.2%) had duration of illness between 1-3 months followed by more than 12 months (31.5 %), 22.2 % patients had duration of illness 4-6 months.

Bladder and bowel involvement was found in only 1.9 % of patients and all of them were male.

L4/ 5 disc prolapse was the most common (44.4) percent of patients followed by L5 /S1 (37 %). Multiple level disc prolapse was found in 13 % of patients. L 3/4 level prolapse was in 3.7 % and higher level was in only 1.9 %.

L4 /5 level disc prolapse was most common in all age groups except in 21-30 years where L5 /S1 was found in 30 % of patients as compared to 20.8 % at that level. Multiple disc prolapse were found more common in age groups between 41-50 years.

Common disc prolapse in female was L4 /5 (65 %) as compared to male (35 %).

Vehicle drivers on bad road conditions had common disc prolapse at L4/5 level (50 %) followed by L5/S1 level (25 %). Sixty percent of drivers having good road conditions had L5 / S1 prolapse compared to 40 % at L4 /5 level.

Among the female patients who had multiple disc prolapse 66.7 % had multiple pregnancies.

The most common age of presentation for protruded disc was 31-40 years (33.3 %) and extruded was in 21-30 years (25%). Migrated disc was not found below 20 and above 60 years.

Table No.3: Age Group versus level of disc prolapse

		Leveldisc						
Age group in years			L3-4	L4-5	L5-S1	Multiple	55	Total
	0-20	Count	0	2	0	0	0	2
		% within AgeGroup	.0%	100.0%	.0%	.0%	.0%	100.0%
		% within Leveldisc	.0%	4.2%	.0%	.0%	.0%	1.9%
	21-30	Count	0	10	12	4	0	26
		% within AgeGroup	.0%	38.5%	46.2%	15.4%	.0%	100.0%
		% within Leveldisc	.0%	20.8%	30.0%	28.6%	.0%	24.1%
	31-40	Count	0	14	18	2	0	34
		% within AgeGroup	.0%	41.2%	52.9%	5.9%	.0%	100.0%
		% within Leveldisc	.0%	29.2%	45.0%	14.3%	.0%	31.5%
	41-50	Count	4	14	6	8	2	34
		% within AgeGroup	11.8%	41.2%	17.6%	23.5%	5.9%	100.0%
		% within Leveldisc	100.0%	29.2%	15.0%	57.1%	100.0%	31.5%
	51-60	Count	0	4	4	0	0	8
		% within AgeGroup	.0%	50.0%	50.0%	.0%	.0%	100.0%
		% within Leveldisc	.0%	8.3%	10.0%	.0%	.0%	7.4%
>70	Count	0	4	0	0	0	4	
	% within AgeGroup	.0%	100.0%	.0%	.0%	.0%	100.0%	
	% within Leveldisc	.0%	8.3%	.0%	.0%	.0%	3.7%	
Total		Count	4	48	40	14	2	108
		% within AgeGroup	3.7%	44.4%	37.0%	13.0%	1.9%	100.0%
		% within Leveldisc	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table No.4: Sex * Residence Cross tabulation

			Residence		
			Rural	Urban	Total
Sex	Male	Count	32	24	56
		% within Sex	57.1%	42.9%	100.0%
	Female	Count	40	12	52
		% within Sex	76.9%	23.1%	100.0%
Total		Count	72	36	108
		% within Sex	66.7%	33.3%	100.0%

DISCUSSION

The actual cause of Lumbar intervertebral disc prolapse is not known, but many factors (autoimmune, genetic, re-absorption and biomechanical) have been implicated in accelerating the process³.

The intervertebral disc gets dehydrated and decreased in size with aging process. It has been shown that failure of the human lumbar intervertebral disc occurs

most often in the part of spine that is subjected to heaviest mechanical stress⁴.

A family history of lumbar disc herniation, lumbar load and hard work are the major risk factors for lumbar disc herniation⁵.

However, the most commonly identified risk factor associated with lumbar disc herniation includes young age, male gender, familial association, environmental factor, trauma and cigarette smoking⁶.

In this study male are more affected than females which is common in all studies^{5,7}.

The most common age of presentation was 31-40 years and 41 to 50 years 31.5% each. which is comparable to studies carried out by Prasad and Webber's et al.^{7,8}. This is the age group involved in more stressful activities resulting in continuous trivial trauma to spine. Among moderate workers who had disc prolapse 64% had rural life. That may be due to poor infrastructure in rural areas which cause continuous stress to spine.

Females working in rural areas were found to have more incidence of lumbar disc prolapse.

Seidler and colleagues in their studies found a statistically significant positive association between extreme forward bending and disc herniation⁹.

Fifty percent of four wheel drivers and all of motor bike drivers in our study were driving on bad roads which is statistically significant ($P < 0.001$) to suggest that repeated jerks on bad roads are prone to develop lumbar disc prolapse comparable to study carried out by Prasad and colleagues⁷.

In male professional drivers, the occurrence of sciatic pain has showed stronger associations with measures of internal lumbar loads¹⁰.

Majority of the patients had duration of illness between 1-3 months. 63.2 % of patients were from rural areas, which is comparable to other studies^{7,9} but no statically difference between area of residence and duration of illness could be found.

The incidence of bowel and bladder dysfunction was found only in 1.9 % of patients which was comparable to studies carried out by Wein and others^{11,12}.

Heavy manual labor and diabetes mellitus in males and housekeeping females are found to be more prone for lumbar disc prolapse^{13,14}.

Considering the level of disc prolapse multiparous women and increase in age was found to have multiple disc prolapse. Among the females who have multiple disc prolapse 66.7 % had 3-4 pregnancies and 33.3% had more than 5 pregnancies. This is in line with other studies reported in literature^{15,16,17}.

The L4/5 level disc lesion was found to be more common in all age groups except 21-30 years where common lesion was L5/S1. This is in comparison with most of studies^{18,19,20}. In our study patients who had multiple disc prolapse 57.1 % were between 41-50 years and 42.9 % were heavy workers comparable to other studies²¹.

CONCLUSION

In this study rural areas moderate and heavy workers, females with multiple pregnancies and the drivers running vehicle on bad road conditions were found to have increased tendency of lumbar disc prolapse.

Improving the infrastructure in rural areas may help to reduce the incidence of lumbar disc prolapse. This is a small study further studies with large sample size are needed for more evaluation of the problem

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Evaluation of Ultrasonography and Fine Needle Aspiration Cytology in Diagnosing Thyroid Nodules

Inayatullah Memon¹, Mir Khuda Bux Talpur², Zafar Iqbal Shaikh² and Mir Omer Talpur¹

ABSTRACT

Objective: The present study was conducted to compare diagnostic validity of ultrasonography and fine needle aspiration cytology (FNAC) in thyroid gland swellings.

Study Design: Observational study

Place and Duration of Study: This study was conducted at the Department of Radiology Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad and Department of Pathology Indus Medical College Tando Muhammad Khan, from April 2014 to September 2016

Materials and Methods: A sample of 100 thyroid patients was selected according to the inclusion criteria of age \geq 20 years, and volunteers, new cases of thyroid neck swellings. Clinical examination was performed followed by sonography and FNAC with 23 G disposable syringe of 10 ml (BD, USA). Data was collected on a structured proforma. Software SPSS 22.0 version (IBM, incorporation, USA) was used for data analysis at 95% Confidence interval ($P \leq 0.05$).

Results: Mean \pm SD age of study subjects was 49.7 ± 11.5 years. 63% were female and 37% male subjects ($p=0.0001$). Overall sensitivity, and specificity, PPV and NPV of sonography in identifying malignant thyroid lesions was 69%, 87%, 56% and 58% respectively.

Conclusion: The present study shows thyroid sonography is an extremely useful non-invasive test for ruling out the malignant lesions when combined with FNAC.

Key Words: Sonography, Fine Needle Aspiration Cytology, Thyroid Nodules

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INTRODUCTION

Thyroid gland swellings are very common. Thyroid gland nodules of any nature are termed as the goiter. Goiter is a common endocrine disorder and a surgical problem of routine clinical practice. A prevalence of 3-8% thyroid nodules reported in general population. In persons with >65 years of age, the prevalence reaches to 50%.^{1,2} Profile of thyroid nodules is frequently encountered in all age groups particularly, the adolescent age, except for those geographical areas where there is iodine deficiency. Thyroid nodules may present clinically as hypothyroidism, hyperthyroidism or simply as glandular enlargements.³ A previous study reported 5-10% adult general population proved of having thyroid pathologies and nodular thyroid swellings were most frequent found in 2.5-3% of cases.⁴ Prevalence of hyperthyroidism is reported in 2% and 0.6% of male and female populations.

While the hypothyroidism and goiter is reported in 4.8% and 0.9% and 2.9% and 0.4% cases respectively. Prevalence of thyroid swellings increases with aging.⁵ Sonography for the thyroid lesions was first introduced in the 1966-1967.⁶ Since then, it has been widely used and now used as an excellent modality in clinical practice.⁷ After clinical examination of thyroid nodules, the sonography is the first imaging modality. Fine needle aspiration cytology (FNAC) is now a well-established, first line, non-invasive and rapid screening and diagnostic tool for thyroid nodules. Major limitation of FNAC is the inadequate sampling of tissue which depends on the experience of clinician and overlapping of cytological features.⁸ Sonography is a non-invasive, simple, easy available and cost effective procedure for the screening of thyroid nodules. Sonography helps in detecting thyroid lesions at an earlier age. Hence it helps clinicians for differential diagnosis for a rapid reach to the final diagnosis and institution of medical therapy and or surgical intervention. The sonography has unleashed a multitude of clinically unapparent thyroid lesions in differentiating benign and malignant lesions.^{9,10} The present study was conducted to evaluate correlation of diagnostic validity of ultrasonography and fine needle aspiration cytology (FNAC) for thyroid gland nodules at tertiary care hospital.

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MATERIALS AND METHODS

The present observational study was conducted at the Department of Radiology, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad and Department of Pathology Indus Medical College Tando Muhammad Khan, from April 2014 to September 2016. A sample of 100 thyroid patients (63 female and 37 male) was selected according to the inclusion criteria of age ≥ 20 years, and volunteers, new cases of thyroid neck swellings of both gender presenting for the first time. Diagnosed cases of thyroid lesions and being treated thyroid disorders were exclusion criteria. A structured proforma was used for the data collection, entry and confidentiality. Consent form was signed in advance before entry of study protocol. Clinical examination was performed by the clinicians for making a diagnosis of thyroid swellings and excluding other neck swellings. Sonography was performed by a Consultant Radiologist and fine needle aspiration cytology was interpreted by a Consultant Pathologist. Sonography was performed by "GE LOGIQ P5" with a linear probe of 4-12 MHz. High frequency transducers (7.5 -15.0 MHz) were used for the deep ultrasound penetration up to 5 cm and images with a resolution of size of 0.7 -1.0 mm. Linear array transducers were preferred compared to sector transducers due to wide near-field of view. 23 G disposable syringe of 10 ml (BD, USA) were used for aspiration of thyroid nodules tissue specimen. The part was sterilized with spirit swabs and patients were taken into confidence that the procedure does not cause any harm and is useful for the patients themselves. Two smears were prepared from the thyroid nodule aspiration. First slide was air dried and stained with MGG stain, while the second slide was fixed in ether and stained with H&E staining. Ethical approval was taken before conducting and planning for the research. Data was collected on a structured proforma as mentioned above. The Data sheet was typed on SPSS 22.0 version (IBM, incorporation, USA) for data analysis. Student t-test analyzed the numerical data and results were presented as mean and standard deviation (SD). Chi square test was used for categorical data analysis, sensitivity, specificity, positive predictive value (PPV) negative predictive value (NPV) were calculated from the data. Data was analyzed at 95% Confidence interval ($P \leq 0.05$).

RESULTS

Mean \pm SD age of study subjects was 49.7 ± 11.5 years. 69% of subjects were 4th to 7th decade of age ($p=0.0001$). Most common age category was the 5th decade noted in 35% of subjects. 63% were female and 37% male subjects ($p=0.0001$). Female to male ratio was 1.7:1 ($p=0.0001$). Sonography Echogenecity of thyroid lesions is shown in table 2. Majority of thyroid lesions showed hyper echoic features ($p=0.0001$).

Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of ultrasonography are shown in table 3. Of 100 samples, 65 (62 benign lesions and 3 malignant lesions) were hyper echoic, 25 (9 were benign and 16 were malignant) were hypo echoic and 7 were iso echoic and 3 were anechoic. On the basis of hypo echoic nature of the lesion; the sensitivity, specificity, PPV and NPV of sonography was 80%, 86%, 67% and 92% respectively. Of these 100 samples, the 65 lesions (62 benign, 3 malignant) showed well defined tissue architecture by FNAC and 35 lesions (25 malignant, 10 benign) were proved with ill defined margins. Thus, on the basis of ill defined margins of the lesions; the sensitivity, specificity, PPV and NPV of Sonography was 85%, 85%, 65% and 95% respectively. The sensitivity, specificity, PPV and NPV on sonography for the calcification, vascularity and anteroposterior to transverse (A/T) ratio are shown in the table 3. Overall sensitivity, and specificity, PPV and NPV of sonography in identifying malignant thyroid lesions was 69%, 87%, 65% and 90% respectively. The sonography is a good non-invasive test for ruling out the malignant thyroid lesions, this may be used for rapid clinical diagnosis and for surgical procedures.

Table No.1. Characteristics of study population (n=100)

Age	No	%
20- 29.9 years	13	13.0
30- 39.9 years	18	18.0
40- 49.9 years	35	35.0
50- 59.9 years	23	23.0
≥ 60 years	11	11.0
Male	37	37.0
Female	63	63.0
Urban Male	19	19.0
Urban Female	18	18.0
Rural Male	42	42.0
Rural Female	21	21.0

Table No.2. Sonography findings of thyroid lesions (n=100)

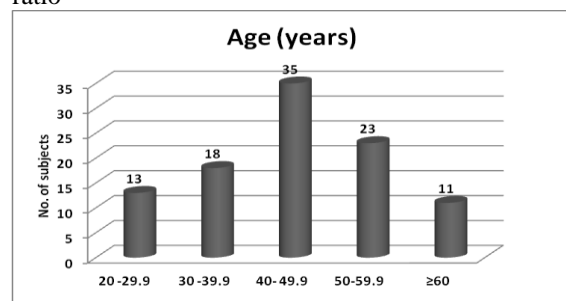
	No	%	P-value
Hyper echoic lesions	65	65.0	0.0001
Hypo echoic lesions	25	25.0	
Iso echoic lesions	7	7.0	
An echoic lesions	3	3.0	

P-value significant, Chi square testing

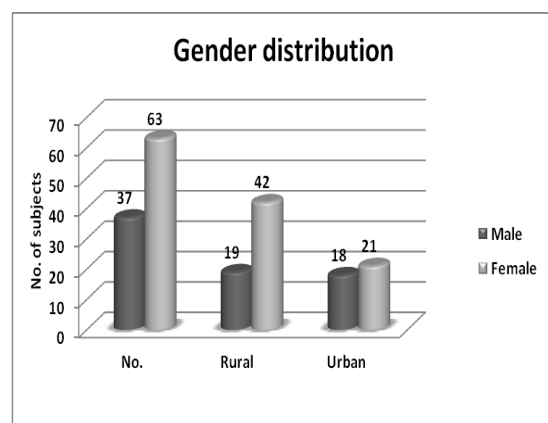
Table No.3: Sensitivity, specificity, PPV and NPV of ultrasonography of thyroid nodules

	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Echogenecity	80	86	67	92
Calcification	69	87	65	90
Vascularity	65	83	59	89
A/T ratio	63	80	59	85

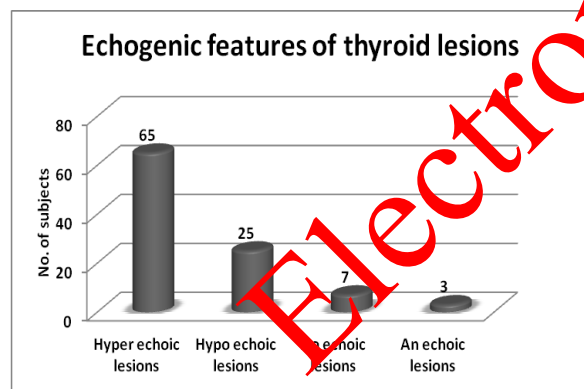
PPV- positive predictive value, NPV- Negative predictive value, A/T ratio- anteroposterior to transverse ratio



Graph No.1: Age distribution of study subjects



Graph No.2: Gender distribution of study subjects



Graph No.3: Echogenecity features of thyroid lesions

DISCUSSION

Ultrasonography (sonography) has occupied its dignity in clinical practice because of being non-Invasive, inexpensive, and authenticity. Sonography is safe as it free of radiations. Now-a-days sonography has become the first line imaging modality for the evaluation of thyroid gland swelling and nodules because of excellent visualization of thyroid parenchyma. Sonography is highly sensitive as it detects vascularity, septations, fibrosis, calcifications, cysts, etc. Fine needle aspiration cytology (FNAC) is another less invasive technique of

confirming the diagnosis. The present study evaluated the diagnostic utility of sonography and FNAC of thyroid lesions which is being reported for the first time from our tertiary care hospital. Thyroid nodular lesions are common and a previous study reported 50% prevalence at ultra-sonography in the adult population.¹¹ Nodular thyroid hyperplasia is the most common cause of benign thyroid lesions and <7% of nodules may prove malignant.¹² The present study compares the ultrasonography in the evaluation of thyroid lesions in correlation with FNAC at our tertiary care hospital. Mean \pm SD age of study subjects was 49.7 ± 11.5 years. 69% of subjects were 4th to 7th decade of age ($p=0.0001$). Most common age category was the 5th decade noted in 35% of subjects. The findings are in agreement with previous studies.^{13,14} Of 100 thyroid lesions, 63% were female and 37% male subjects ($p=0.0001$) proved a female to male ratio of 1.7:1 ($p=0.0001$). These findings are in full agreement with previous studies.¹³⁻¹⁵ Of 100 samples, 65 (62 benign lesions and 3 malignant lesions) were hyper echoic, 25 (9 were benign and 16 were malignant) were hypo echoic and 7 were iso echoic and 3 were anechoic. On the basis of hypo echoic nature of the lesion; the sensitivity, specificity, PPV and NPV of sonography was 80%, 86%, 67% and 92% respectively. The above findings of sonography in comparison to FNAC are in keeping with previous studies,¹⁴⁻¹⁶ as they reported approximately similar results. Of these 100 samples, the 65 lesions (62 benign, 3 malignant) showed well defined tissue architecture by FNAC and 35 lesions (25 malignant, 10 benign) were proved with ill defined margins. Thus, on the basis of ill defined margins of the lesions; the sensitivity, specificity, PPV and NPV of Sonography was 85%, 85%, 65% and 95% respectively. The findings are in accordance with previous studies.^{17,18} Overall sensitivity, and specificity, PPV and NPV of sonography in identifying malignant thyroid lesions was 69%, 87%, 56% and 58% respectively. The findings are in full agreement with previous studies^{19,20} as the sensivity, specificity; PPV and NPV reported by these previous studies are consistent to the present study. A previous study²¹ reported findings of hypo echoic nature (87%), ill-defined margins (48%), micro calcifications (44%), and A/T ratio >1(40%) is in agreement with above study. The findings of calcification of thyroid lesions proved as one of least sensitive marker in predicting the malignancy which is inconsistent finding. However, these findings are in keeping with studies as reported by Mary et al²² and Enrido et al,²³ they reported highest correlation of malignancy with central vascularity. The Enrido et al²³ reported the sensitivity rates of malignancy by sonography by degree of hypo echoic nature (87%), central vascularity (75%) micro calcifications (29%) and ill-defined margins (77%). The findings are consistent to the present study as the irregular margins

and vascularity showed highest correlation with malignant thyroid lesions on the sonography. Sonography findings suggestive of increased risk of thyroid cancer include hypo echogenicity, vascularity, solid texture, and irregular margins increase the chances of diagnosis of malignancy. However, high controversies have been reported for from study to study and country to country.^{24,25} The present study shows sonography is a good non-invasive test for ruling out the malignant thyroid lesions; this may be used for rapid clinical diagnosis and for surgical procedures.

CONCLUSION

The present study shows sonography is an extremely useful non-invasive test for ruling out the malignant thyroid lesions; and this may be used for rapid clinical diagnosis and for the surgical procedures. Overall sensitivity, and specificity, PPV and NPV of sonography in identifying malignant thyroid lesions was 69%, 87%, 56% and 58% respectively compared to fine needle aspiration cytology.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Apertognathia in Preadolescent Orthodontic Patients

Apertognathia in Preadolescent Orthodontic Patients

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ABSTRACT

Objective: The purpose of this study was to calculate the frequency of an apertognathia in preadolescents.

Study Design: Descriptive / Cross Sectional study

Place and Duration of Study: This study was conducted at the Department of Orthodontics, de'Montmorency College of dentistry, Lahore from 1.1.2014 to 31.12.2016.

Materials and Methods: Preadolescents with apertognathia were selected by purposive sampling technique. Plaster models of 100 patients were taken and assessed for the presence of apertognathia. The frequency of apertognathia and its percentage with respect to gender and severity grade was calculated.

Results: The frequency of apertognathia was found to be 10%. Male to female ratio was 1:2.

Conclusion: It was concluded that females are more affected by apertognathia than the males in preadolescents. The high frequency of apertognathia i.e. 10% in preadolescents suggests that there is need to focus on preventive and interceptive orthodontics.

Key Words: Apertognathia, Open bite, Preadolescent

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INTRODUCTION

Apertognathia is a absence of vertical overlapping between upper and lower incisors when the jaws are brought together. It is multifactorial in nature; different etiological factors reported in literature include sucking habits, tongue thrust, TMJ involvement, anamelogenesis imperfecta. Association of cervical vertebral column morphology and head posture issues in preorthodontic patients with apertognathia is already proven. Combining traditional techniques to correct apertognathia have been proposed. Traditional techniques of apertognathia management reported in literature are occlusal bite blocks, modified protraction headgear, anterior vertical elastics, multiloop edgewise archwire therapy, and at present the use of skeletal anchorage devices. Another term used in describing apertognathia is anterior open bite (AOB). Apertognathia is classified as dental or skeletal, anterior or posterior and unilateral or bilateral.

It may classify as simple or complex. The implication of an apertognathia irrespective of its cause include aesthetic issues, speech and phonetic issues, lingual interposition during deglutition and difficulty in biting front teeth. Severity grades of apertognathia are: Moderate (0-2 mm), Severe (3-4 mm) and Extreme (more than 4 mm).

The frequency of Apertognathia ranges from 2% to 12% and varies between ethnic groups and by age and sex. In view of the fact that the frequency in different populations is different; this study was design to find out the frequency of apertognathia in preadolescents and its gender distribution.

MATERIALS AND METHODS

This study was conducted at the Department of Orthodontics, de'Montmorency College of Dentistry, Lahore in which orthodontic plaster models of 100 untreated patients, between the chronological ages of 6 and 12 years and irrespective of gender, were included to determine the frequency of apertognathia. Duration of this study was January 2014 to December 2016. The inclusion criteria were, patients having no previous orthodontic treatment and presence of AOB, whereas patients with history of tooth extraction and having craniofacial syndromes were excluded. The amount of AOB was confirmed by measuring interincisal distance with digital vernier callipers on plaster models. The data was analyzed in Statistical Package for the Social Sciences software package (SPSS) 20. The mean age and gender distribution among the selected sample was calculated

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RESULTS

The mean age of the patients was 9 years. Out of total sample of 100, 10 (10%) patients had open bite malocclusion. Out of 10, 4 (40%) were males while 6 (60%) were females. 80 % had moderate open bite of <1mm and 20% had >1mm anterior open bite. The male to female ratio was found out to be 1:2. (Table No.1)

Table No. 1: Frequency of Apertognathia among patients (N=100)

Parameter	Frequency
Apertognathia patients	10 (10 %)
Males having Apertognathia	4 (40 %)
Females having Apertognathia	6 (60 %)
<1mm Apertognathia	80%
>1mm Apertognathia	20%

DISCUSSION

The incidence of apertognathia in our study was found to be 10%. The results of this study revealed that moderate type was more prevalent than severe type of Apertognathia. The male to female ratio in our study was 1:2. This is close to the Belgian ratio of 2:3 but in contrast to the findings of certain studies, where no gender differences were found.^{17,18}

Although several reported studies concluded the frequency of apertognathia in 6-12 year old patients, the findings are difficult to compare and contrast; in part because of different methodologies, age differences of sample, interexaminer variations, and the different sample sizes. Frequency of apertognathia in the present study was found out to be lower than that reported in Argentinean, Uganda, Hawaii and Kuwait, where the studies revealed the percentage range of 2-4%.¹⁹⁻²² However, results are similar to certain studies where frequency of apertognathia was found out to be in range of 8-10%.²³⁻²⁶

No study has been reported specifically in our Punjab population regarding frequency of apertognathia in preadolescent subjects. Results are similar to those of Ahmed et al. where they found frequency of apertognathia in preadolescent subjects of Hyderabad population at 8% with male to female ratio of 1:3.²⁷

The limitation of this study is small sample size; further large scale studies are suggested. We did not investigate etiological causes of apertognathia, nor did we observe whether the apertognathia was skeletal or dental in origin. We will focus on these aspects in the future studies.

CONCLUSION

It was concluded that Apertognathia is more common among females than males in preadolescents. The high frequency of Apertognathia i.e. 10% in preadolescents

suggests that there is need to focus on preventive and interceptive orthodontics.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Dyslipidemia in Type 1 Diabetes Mellitus in Children

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ABSTRACT

Objectives: To determine the frequency of dyslipidemia in type 1 diabetic children from 2 to 16 years of age.

Study Design: Descriptive / cross sectional study.

Place and Duration of Study: This study was conducted at the Diabetic Clinic Pediatric Department, Mayo Hospital Lahore for six month.

Materials and Methods: Total 200 diabetic children were included in the study. Children selection was done by using predefined inclusion criteria. Serum samples of patients fulfilling the inclusion criteria were taken for serum total cholesterol and LDL cholesterol under aseptic conditions according to laboratory instructions. Samples were sent to chemical pathology department of King Edward Medical University to which Mayo Hospital is affiliated. Data entry and analysis was done by using SPSS.

Results: Average age of all 200 children was 10.66 ± 3.32 years. Minimum age was 5 and maximum age was 16 years respectively. Gender distribution of children shows that there were 74 male and 126 female patients. There were 24 children whose duration of diabetes was <5 years and 176 of the children had >5 years of duration of diabetes. Only 2% of the children were obese while the remaining 98% of the children were non obese. Dyslipidemia was labeled in the presence of anyone i.e. Total cholesterol > 170 mg/dl or LDL cholesterol > 110 mg/dl. There were 26 (13%) children who had dyslipidemia.

Conclusion: In young diabetic children frequency of Dyslipidemia was 13%. Although this frequency of dyslipidemia is quite less when compared with other studies reported in literature. Even then this frequency indicates that it is necessary to screen young diabetic children for dyslipidemia to avoid future complications.

Key Words: Type-1 Diabetes Mellitus (T1DM), Young Children, Dyslipidemia, LDL, Cholesterol, Obesity, Duration of Diabetes.

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INTRODUCTION

The prevalence of dyslipidemia (DLP) in the general population, including children, has recently increased^{1,2}. Changes in lifestyle that contribute to overweight and obesity, including sedentarism and high carbohydrate and fat diets, may have contributed to this increased DLP prevalence^{1,3,4}.

In patients with type 1 diabetes mellitus (T1D), the presence of DLP significantly increases cardiovascular risk. Patients with T1D have a 2–4 times greater risk of developing atherosclerosis compared to people without diabetes mellitus, and cardiovascular events account for up to 44% of the total mortality in these patients^{5,6,7}.

However, there are few studies that have investigated the relationship between DLP and T1D in young people; most of the information has been based on adult studies^{6,8,9}. The relationship between dyslipidemia and cardiovascular disease risk is well documented in adult diabetic population. It narrows sex gap for cardiovascular risk.⁶ Statins are given in adults in both type 1 and type 2 diabetes for prevention of primary and secondary cardiac events which work by lowering the low density lipoprotein cholesterol levels^{7,10}. In search study in which 2448 subjects (including both type 1 and type 2 diabetics) were included, The overall prevalence of high total cholesterol concentration (>240 mg/dL) was 5%; while prevalence for high LDL-C (>160 mg/dl) was 3% and 48% had LDL levels over the 100 mg/dL.

This study will help to highlight this aspect of DM in our population and guide in future for further studies regarding various treatment options of dyslipidemia found to be prevalent in type 1 DM in international studies. This data will also help us in making screening criteria for treatment of dyslipidemia in type 1 diabetic children and will also help us in future for implementation of treatment protocol of dyslipidemia in our country.

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MATERIALS AND METHODS

This is a Descriptive cross sectional study conducted at Diabetic clinic Pediatric Department Mayo hospital Lahore. Study duration is 6 months.

Non probability purposive sampling technique was used for selection of patients. Sample size of 200 cases was calculated with 95% Confidence level, 5% margin of error and taking expected percentage of dyslipidemia (LDL-cholesterol >110 mg/dl) i.e. 15% in type 1 diabetic children from 2 to 16 years of age.

Children aged up to 2-16 years, diagnosed as type 1 diabetes mellitus of >2 years duration on insulin therapy were enrolled in this study.

Children with associated conditions which can cause derangements in lipid levels like nephrotic syndrome (24 hour urinary proteinuria >40mg/m²/hour), chronic liver disease (coarse shrunken liver on USG), celiac disease and hypothyroidism (decreased serum T4) were excluded. Patients who did not consented to participate in the study.

After full informed and voluntary consent taken from patients (if mature enough) / attendants and Approval of study by ethical committee. Detailed review of history and clinical examination was carried out in all patients who were diagnosed as type 1 diabetes mellitus before inclusion in the study. Serum samples of patients fulfilling the inclusion criteria were taken for serum total cholesterol and LDL cholesterol under aseptic conditions according to laboratory instructions. Lipid levels were done by photometric test by the use of commercial kits. Serum total cholesterol and LDL cholesterol levels were recorded. Obesity a confounder was taken as BMI >95 percentile for age. All the data was recorded on a Proforma Annexure 1.

Data was entered and analyzed in SPSS version 17. Categorical variables like dyslipidemia, (present/absent) gender (M/F) were described in terms of frequencies and percentages. Continuous variables like serum cholesterol, LDL cholesterol, age were described in terms of means and standard deviations. Data was stratified for duration of diabetes i.e. (<5 years, >5 years) and presence or absence of obesity to address the effect modifiers.

RESULTS

Total 200 children who were diabetic included in this study with >2 years of duration of illness. Mean age of all 200 children was 10.66±3.32 years. Minimum age was 5 and maximum age was 16 years. Gender distribution of children shows that there were 74 male and 126 female patients. Whereas mean age of male and female patients was 9.02±3.58 and 11.63±2.74 years respectively. There were 24 children whose duration of diabetes was <5 years and 176 of the children's duration of diabetes was >5 years. (Table-1)

Only 4 (2%) of the children were obese while the remaining 196 (98%) of the children were non obese.

Cholesterol level of 26(13%) patients were >170 mg/dl and the remaining 174(87%) children's cholesterol level was <170 mg/dl (Table-2) LDL was >110 mg/dl in 14(7%) children while in remaining 186 (93%) LDL level was <110 mg/dl respectively. (Table-3)

Dyslipidemia was labeled in the presence of either Total cholesterol > 170 mg/dl or LDL cholesterol > 110 mg/dl. There were 26(13%) children who had dyslipidemia. (Table-4)

Table No.1: Distribution of frequency for duration of diabetes

	Frequency	Percent (%)
Duration of diabetes less than 5 years	24	12
Duration of Diabetes more than 5 years	176	88
Total	200	100

Table No.2: Distribution of frequency for serum cholesterol level of patients

	Frequency	Percent (%)
Serum Cholesterol >170mg/dl	26	13
Serum Cholesterol <170mg/dl	174	87
Total	200	100

Table No.3: Distribution of frequency for ldl level of patients

	Frequency	Percent (%)
LDL Cholesterol > 110mg/dl	14	7
LDL Cholesterol < 110mg/dl	186	93
Total	200	100

Table No.4: Distribution of frequency of dyslipidemia in type 1 diabetic children

		Frequency	Percent
Dyslipidemia	Present	26	13.0
	Absent	174	87.0
Total		200	100.0

Table No.5: Dyslipidemia in type 1 diabetic children in relation to duration of diabetes

		Duration of Diabetes		Total
		<5 Years	>5 Years	
Dyslipidemia	Present	0(0%)	26(14.8%)	26(13%)
	Absent	24(100%)	150(85.2%)	174(87%)
Total		24	176	200

There were 26(13%) children who had dyslipidemia, all of these children's duration of diabetes was >5 years. Whereas in the remaining 174 children among them 150 children's duration of diabetes was >5 years and 24 children duration of diabetes was <5 years. (Table-5)

Dyslipidemia was also studied in relation to the obesity status of the children. Among 26 children who had dyslipidemia 4 patients were obese while the remaining 22 children were non obese. (Table-6).

Table No.6: Dyslipidemia in type 1 diabetic children in relation to obesity

		Obesity		Total
		Present	Absent	
Dyslipidemia	Present	4(100%)	22(11.2%)	26(13%)
	Absent	0(0%)	174(88.8%)	174(87%)
Total		4	196	200

DISCUSSION

The incidence of type 1 diabetes has increased globally over the past decades⁸. It has been estimated that on an annual basis some 65,000 children aged less than 15 years develop type 1 diabetes mellitus. Increased blood sugar levels also result in significant disturbance in lipid metabolism including both qualitative and quantitative change in the lipids. There are several studies that have evaluated dyslipidemia in type II diabetic patients, but dyslipidemia in type 1 diabetic patients especially in young age remains largely undiagnosed and undertreated.

Dyslipidemia is a preventable major risk factor for cardiovascular disease (CVD). The intensity of dyslipidemia predicts macro vascular complication such as a coronary artery disease in patients with type 1 diabetes mellitus. Total 200 diabetic children were included to see the frequency of dyslipidemia in them. In our study mean age of patients was 10.66 ± 3.23 . Mean age of male and female patients was 9.02 ± 3.51 and 11.63 ± 2.74 years respectively. Females were greater in number as compared to male children. A cross sectional study from Pakistan evaluated the lipid profile of recently diagnosed uncomplicated young type 1 diabetic children. In This study age range of children was 9-16 years respectively.⁹ While in our study age range of children was 2-16 years. Another case control study in which lipid profiles and lipoprotein levels of 45 children aged 2-18 years with established diabetes were compared with those of 45 healthy controls.¹ Age range of this study was almost similar to our study but our study was cross sectional and lipid profile shows that in our study serum cholesterol level was <170 in 87% children and 13% children were having >170 cholesterol level.

Study from Iran evaluated 128 children with type I diabetes. In this study Patients' mean age was 12.6 ± 4.1 years.. Mean duration of diabetes was 6.9 ± 3.2 years. In our study frequency of Dyslipidemia in diabetic children was 13 % (26/200). Among these children all were having duration of diabetes >5 years and among these children only 2 % (4/200) children were obese. Faghih in his case control study reported that Dyslipidemia was more prevalent in diabetic children

than in controls (52.9% vs. 47.1%, respectively) (¹). As compared to our study frequency of dyslipidemia in type I diabetics was quite high in this study. Moayeri reported that type I diabetic patients with poor metabolic control are at higher risk of developing dyslipidemia. Moreover 21.4% had isolated hypertriglyceridemia, 11.6% isolated hypercholesterolemia and 15.5% mixed hyperlipidemia. Factors associated with dyslipidemia included longer duration of diabetes, higher mean age, higher mean HbA1C¹¹. In our study it was also found that all children who had dyslipidemia, their duration of diabetes was >5 years indicating strong association of increased duration of diabetes with dyslipidemias. However, we did not measure Hb1AC in our study.

Studies in children with diabetes demonstrate that the atherosclerotic process begins early in life and that high lipid levels during childhood are associated with coronary atherosclerosis in adulthood. Studies reported in the 1970s and 1980s found a high prevalence of dyslipidemia in youth with type 1 diabetes. However, a review published in 1992 concluded that lipid profiles were antiatherogenic in type 1 diabetes. A 1992 publication from the Diabetes Control and Complications Trial (DCCT) compared lipid concentrations among youth ages 13 to 17 years screened in 1983 to 1989 with published data on adolescents examined in 1972 to 1975 by the Lipid Research Clinics.¹²⁻¹³

SEARCH is a six-center study that began conducting population-based ascertainment of cases of non-gestational diabetes in patients younger than 20 years in 2001.^{11,14} Evidence of abnormal fasting lipid levels in youth with DM has come from the SEARCH study, in which 3% of subjects with T1D had an LDL-c level >160 mg/dL, 14% had an LDL-c level >130 mg/dL, and almost half (48%) had an LDL-c level over the recommended threshold of 100 mg/dL. Reported prevalence were higher in youth with T2D, at 9%, 24%, and 57% for these same cut points, suggesting that obesity has a negative impact on LDL-c (although much more research is needed on the mechanism of the increase in LDL-c sometimes seen in obesity). A recent review of complications in youth with T2D reported a wide ranging incidence of dyslipidemia (15% to 62.5%).¹⁴

Our data and the search data support the importance of optimizing glycemic control and lifestyle interventions aimed at reducing obesity as essential components of managing lipid abnormalities in this population.¹⁵

Future research needs include prospective longitudinal data on the natural history of dyslipidemia, safety and efficacy data from clinical trials of lipid-lowering medications, and ultimately the long-term relation of dyslipidemia and its treatment to future health outcomes in youth with T1D. Limitation of our study was that it included all the type 1 diabetic children

irrespective of their status of diabetic control and insulin requirement as HbA1c was not done.

CONCLUSION

In young diabetic children frequency of Dyslipidemia was 13%. Although this frequency of dyslipidemia is quite less when compared with other studies reported in literature. Even then this frequency indicates that it is necessary to screen young diabetic children for dyslipidemia to avoid future complications.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Renal Derangement in Patients of Asphyxia Neonatorum

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Renal
Derangement in
Neonates with
Asphyxia

ABSTRACT

Objectives: To find the incidence of Renal Derangement in Neonates with Asphyxia Neonatorum.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at the Department of Pediatric Medicine, Nishtar Hospital, Multan from January 2016 to January 2017.

Materials and Methods: A total number of 100% (n=264) neonates were included in this study, both genders. SPSS version 23 was used to analyze data, mean \pm SD deviation was calculated for numerical variables and frequency (percentages) was calculated for categorical variables. Chi square test was applied to see the effect modification. P value ≤ 0.05 considered as significant.

Results: A total number of 100% (n=264) neonates were included in this study, both gender. Out of these 100% (n=264) patients, 71.6% (n=189) patients having Renal Derangement (creatinine > 0.8 mg/dl). When chi-square was applied to check the effect modification it was observed that gender, stratified Apgar score and stratified birth weight (≤ 2.5 kg and > 2.5 kg) were significantly associated with Renal Derangement with P-values 0.000, 0.05 and 0.000 respectively.

Conclusions: Asphyxia is a major cause of Acute Renal Failure in Neonates, its outcome can be improved with early monitoring of patients renal parameters e.g urea and serum creatinine.

Key Words: Renal derangement, Asphyxia, Neonates, Creatinine.

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INTRODUCTION

Asphyxia (inadequate supply of oxygen) can give rise to hypoxic ischaemic organ damage of variable severity in newborns resulting in severe life-long fatal outcome including renal insufficiency. We are in dire need of highly advanced techniques and methods in order to diagnose birth asphyxia, determine its severity and anticipate its outcomes destined to develop in future¹.

CNS is the most vulnerable system prone to develop hypoxic injury. Birth trauma, oxidative stress, metabolic complications and increased cerebral permeability are the different mechanisms contributing to complications resulting from asphyxial damage to central nervous system². It is a renowned fact that poor outcome of newborn suffering from asphyxia deficits can be predicted to great extent by measuring oxidative stress marker level in the blood.^{3,4} About 56% of these infants suffer from acute kidney injury making it a leading outcome of perinatal asphyxia.

Therefore, researchers have paid a great deal of attention to pathology specific biomarkers due to their clinical worth and applicability⁵. Renal deficiency can

appear within a day of hypoxic ischaemic injury. If this change persists, it can induce irreversible kidney damage i.e., cortical necrosis⁶.

Early suspicion and timely diagnosis of renal failure is of supreme importance in order to maintain fluid and electrolyte balance which in turn helps to keep a stable biochemical milieu. However, unreliability of routinely accepted clinical and established biochemical parameters add difficulty to the process of diagnosis making of renal failure in this age group⁷. Out of many blood markers, S100B is the most potent blood-markers. Its concentration increases significantly after 24 hour of severe birth asphyxia.^{8,9}

A study conducted by Gupta B, focusing on the development of renal failure in asphyxiated neonates showed that majority (26 out of 33, approximating to 78%) of asphyxiated neonates had nonoliguric renal failure in contrast to oliguric failure which was reported in only 7 out of 33 patients mounting only to 21%¹⁰.

MATERIALS AND METHODS

After approval from ethical committee of Nishtar Hospital, Multan, informed consent was taken from patient's guardians before including patient's data in research and they were ensured about their confidentiality. Patient's telephonic contacts and addresses were taken. Serum creatinine was investigated by blood samples. Risks and benefits of treatment was discussed with patients/parents/Guardians. Weight of baby was noted at the

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time of birth by the researcher himself. Neonates suffering renal insufficiency diagnosed by antenatal ultrasound, oligohydrominias diagnosed by antenatal ultrasound, babies with history of maternal addiction of analgesia and sepsis infection were excluded from our study. Renal function tests were done twice, first within 24 hours of birth and then again on 3rd day of life in the form of serum creatinine. Only those babies who had deranged renal parameter on 3rd day of life were undergone serum creatinine and other required tests on every other day until the recovery of the baby. The standard hospital protocol of conservative management was followed for neonates with renal failure. Other tests like ABGs (arterial blood gases), FENa+ (fractional excretion of sodium) and ECG were recommended only on the basis of individual requirement of patients. Serum creatinine level of $> 0.8\text{mg/dl}$ was the criteria opted to label renal failure in asphyxiated newborn. Similarly newborns with APGAR score of ≤ 7 at five minutes according to APGAR scale (Annexure II) asphyxia were labelled as asphyxiated newborns. All the data entered and analyzed using computer software SPSS version 23. Mean and standard deviation was calculated for quantitative variables like APGAR score and birth weight ($\leq 2.5\text{ kg}$ and $>2.5\text{ kg}$). Frequency and percentage was calculated for qualitative variables like gender and renal derangement. Effect modifier like birth weight ($\leq 2.5\text{ kg}$ and $>2.5\text{ kg}$), APGAR score and gender was controlled by stratification of data. Post stratification chi square test was applied. A p value ≤ 0.05 was considered statistically significant.

RESULTS

A total number of 100% (n=264) neonates were included in this study, both genders. Gender distribution showed that there were more males i.e., 55.7% (n=147) and 44.3% (n=117) were females. The mean APGAR score of the patients was 4.43 ± 1.66 . The mean birth weight of the patients was $2.54 \pm 0.50\text{ kg}$. It was observed that out of these 100% (n=264) patients, 71.6% (n=189) patients having Renal Derangement (creatinine $> 0.8\text{ mg/dl}$) and 28.4% (n=75) have normal creatinine values. When patients were grouped in different categories with respect to Apgar score and birth weight it was seen that 23.9% (n=63) patients having APGAR score from 1 to 3 and a big majority of the patients 76.1% (n=201) having APGAR score from 4 to 7. It was also observed that 46.2% (n=122) patients were weighted of $\leq 2.5\text{ kg}$ and 53.8% (n=142) were weighted of $>2.5\text{ kg}$.

When chi-square was applied to check the effect modification it was observed that gender, stratified APGAR score and stratified birth weight ($\leq 2.5\text{ kg}$ and $>2.5\text{ kg}$) were significantly associated with Renal Derangement with P-values 0.000, 0.05 and 0.000 respectively.

TableNo.1:Demographic Variables

Characteristics	Frequency n=264	Percentage (%)
Gender		
Male	147	55.7
Female	117	44.3
Renal Derangement		
Present	189	71.6
Absent	75	28.4
Apgar Score		
1-3 Apgar Score	63	23.9
4-7 Apgar Score	201	76.1
Stratified Duration of Perforated Ulcer		
$\leq 2.5\text{ kg}$	122	46.2
$>2.5\text{ kg}$	142	53.8

Table No.2: Inferential Results (n = 264)

Renal Derangement	Gender		P – value
	Male (n = 147)	Female (n = 117)	
Yes (n = 189)	122	68	0.000
No (n = 75)	26	49	

Table No.3: Inferential Results

Apgar Score	Renal Derangement		P Value
	No	Yes	
1-3 Apgar Score	12	51	0.05
4-7 Apgar Score	63	138	
Total	75	189	

Table No.4: Inferential Results

Birth Weight	Renal Derangement		Total
	No	Yes	
2 kg	20	102	0.000
3 kg	55	87	
Total	75	189	

DISCUSSION

Acute renal failure in Perinatal asphyxia take place by two pathways i.e., reduced circulating blood volume and prolonged ischemia leading to pre renal impairment and acute tubular necrosis respectively¹¹. Just like a double edge sword, renal injury and its complications including renal failure, renal vein thrombosis and acute tubular necrosis are the well-known end-results of compensative adaptive mechanisms triggered by birth asphyxia. Out of all the complications of renal damage, ARF is most common and severe one with poor prognosis. Possibility of irreversible renal damage is the destination of up to 40% of survivors of ARF¹².

In our study, 264 neonates of both genders were included. Gender distribution showed that there were

more males (55.7%) than female (44.3%). Their mean Apgar score was 4.43 ± 1.66 and mean birth weight was 2.54 ± 0.50 kg. 71.6% (189 out of 264) were suffering from Renal Derangement. Additionally, our study showed that gender, stratified Apgar score and stratified birth weight (≤ 2.5 kg and > 2.5 kg) were significantly associated with Renal Derangement.

In present study, the incidence of ARF is 71.6% which is comparable with the study done by Pammi et al¹³, Gopal et al¹⁴ and Karłowicz et al¹⁵. Only few studies conducted by Gopal G et. Al¹⁴ and Jayashree G et. Al¹⁶ contradict our finding by reporting lower incidence. Only one study done by Girish et al. had narrated a little higher incidence of ARF than that of our study. Although data is not shown but non oliguric ARF is the predominant type of ARF encountered in asphyxiated newborn in our study similar to most of the studies including the findings presented by Gupta et al.¹⁰ but it was not comparable with the findings of Jayashree et al. in which oliguric ARF was the predominant type. Biochemical parameters used to define renal failure in our study were similar to the parameters used in a research conducted by Jayashree et al. in the present study. In addition to these studies our findings are supported by previously conducted studies. In our study, birth weight, Apgar score and stages of HIE were found to be related with higher incidence of ARF similar to the findings of Gopal et al.

Our criteria for diagnosis enabled us with early recognition of AKI and timely intervention. Thus preventing the conversion of pre-renal AKI to intrinsic AKI. This also signifies the importance of fluid balance and fluid electrolyte balance in preventing permanent renal damage. Though kidney occupies the site of one of the best oxygenated organ but redistribution of blood flow to other more vital organs makes it susceptible to hypoxicischemic injury and in turn lead to temporary loss of renal concentrating ability. Asphyxiated neonates have reduced creatinine clearance compared to healthy neonates. The reduced creatinine clearance is in direct relation with the severity of HIE. Only one study¹⁷ in present literature contradicts this general concept by reporting increase creatinine clearance in asphyxiated newborns. This contradiction might be attributed to the fact that newborns with severe asphyxia and those dying within a week of their birth were not included in that study. The degree of deterioration or improvement of renal functions is found to give a better view of the prognosis of the patient.

A study conducted by Brochieback¹⁸ narrated the fact that deranged renal functions like concentrating defect, renal tubular acidosis or reduced creatinine clearance can develop up to 40% of survivors. Ominous signs that can predict mortality are oliguria, hyponatremia and abnormal renal ultra sound. Our study was limited due to our inability to monitor BP, residual renal tubular

dysfunction, RTA, urinary concentrating ability, and renal imaging.¹⁹

In our study, raised level of plasma creatinine concentration for at least two days was used as a single criteria for labeling an asphyxiated child with acute renal failure. Oliguria was not included in the criteria for the fear of neglecting non-oliguric acute renal failure in asphyxiated infants. In order to overcome the error produced by chromogens present in plasma in modified Jaffe technique, high performance liquid chromatography was used to determine plasma creatinine concentrations²⁰.

CONCLUSION

Asphyxia is a major cause of acute renal failure in neonates, its outcome can be improved with early monitoring of patients renal parameters e.g urea and serum creatinine.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Thrombocytopenia in Septic Neonates

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ABSTRACT

Objectives: To find the frequency of Thrombocytopenia in Septic Neonates.

Study Design: Observational / Descriptive study

Place and Duration of Study: This study was conducted at the Department of Pediatrics, Nishtar hospital, Multan from December 2015 to December 2016.

Materials and Methods: A total number of two hundred and twelve (n=212) enrolled in the study. Data was analyzed with statistical software SPSS version 21.1. Mean \pm SD were calculated for quantitative data and frequencies (percentages) were calculated for qualitative data. Chi square test and logistic regression was applied to see association between thrombocytopenia and septicemia. SPSS software was used to analyze the data and p value ≤ 0.05 was considered as significant.

Results: A total number of 100% (n=212) neonates were included in this study, either genders. Gender distribution showed that there were more males i.e., 61.8% (n=131) and 38.2% (n=81) were females. The mean age of the patients was 11.80 days with S.D 6.37. The main outcome variable of this study was thrombocytopenia. Out of 100% (n=212) patients, all were sepsis patients, in our study, it was observed that 86.3% (n=183) patients have thrombocytopenia.

Conclusions: we concluded that thrombocytopenia is a major and early predictor of sepsis but not sufficient for the diagnosis of septicemia, so other parameters must be ruled out.

Key Words: Thrombocytopenia, Septicemia, Neonates, Blood.

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INTRODUCTION

Sick, premature and neonates in the intensive care unit confront common hematological problems called thrombocytopenia which is usually a manifestation of an underlying pathologic process. About 20 to 40% of the neonates can suffer a high rate of morbidity and mortality in our setups due to that cause. Premature and ill neonates mostly have low platelet count¹. It is narrated by various studies that bacteria, rickettsia, protozoa, fungi and viruses are the main etiological factors underlying neonatal septicemia and leading to thrombocytopenia. Immune mediated, genetic disorders and chromosomal anomalies are the remaining culprits of thrombocytopenia².

Disseminated intravascular coagulation (DIC) is a coagulopathy arising in few patients of bacterial

septicemia. Thrombocytopenia is not only seen in disseminated intravascular coagulation but also in early sepsis^{3,4}. Diagnosis of thrombocytopenia is based entirely on CBC (complete blood count) and peripheral blood smear. To rule out common variable immune deficiency as an underlying causative agent for thrombocytopenia immunoglobulin assay is commonly performed laboratory test in pediatric population⁵.

Cure is yet to be found for thrombocytopenia. Even successful medical or surgical management is failed to bring down and reduce relapses frequency arising many years after treatment⁶. Thrombocytopenia can resolve spontaneously on its own without the need for its treatment in most of the children⁷. Though, in neonates, sepsis is the main causative agent for thrombocytopenia but Birth asphyxia, folic acid deficiency and vitamin B6 are also included in its known causes. Better prognosis of thrombocytopenia is associated with a relatively longer follow-up and lower age at the time of diagnosis of this hematological problem⁸. Immunosuppression with the use of Azathioprine (150 mg/d) and or cyclophosphamide (50-100 mg/d) is considered as an essential part of treatment of this abnormality. However, early use of rituximab in the treatment regime is found to be associated with delaying or even avoiding surgery altogether in young patients in a meta-analysis of various studies of adult patient with the same problem⁹. In addition to this benefit, relapses can also be averted with Rituximab therapy¹⁰. A study conducted by Arif SH, on the topic of bacterial sepsis

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and thrombocytopenia in patients admitted to neonatal intensive care unit, showed that thrombocytopenia was present in 83.5% of patients and positive blood culture in only 41.1 % of studied patients¹¹.

This study was planned to provide basic literature for the sole purpose of providing precise investigation and treatment of thrombocytopenia because despite of common occurrence of thrombocytopenia, no local study was available to show the frequency of occurrence of thrombocytopenia in septic neonates.

MATERIALS AND METHODS

This study was started after approval from ethical committee of Nishtar Hospital, Multan. Duration of study was from December 2015 to December 2016. Informed consent was sought from patient's guardian in order to include the patient's data in research. Guardians were ensured about the confidentiality of information. Their Addresses and telephonic contacts were taken. BD Vacutainer ethylene diamine tetra acetic acid (EDTA) tubes were used for the purpose of collecting and transporting blood samples to the respective laboratory for platelet count under strict aseptic measures. Automatic hematological cell counter was used to calculate platelet count as a part of complete blood count. All the concerned data was entered on the Performa of each patient. Thrombocytopenia was measured in terms of laboratory investigation, if Platelet count is less than 1, 50000 μl^{-1} it was labeled as thrombocytopenia.

Sepsis was labeled positive on the basis of positive septic screen and Septic screen was considered positive if any two of the following was present (i) Total Leukocyte count (TLC) of $<5000/\text{cc}$ mm or $>20000/\text{mm}^3$, (ii) Absolute Neutrophils Count of $<1800/\text{mm}^3$, (iii) Immature /Total Neutrophils ratio of >0.2 , (iv) Micro ESR $>15\text{mm}$ in 1 hour, (v) Platelet Count of $<150000/\text{mm}^3$, (vi) CRP value of $>1\text{mg/L}$. Preterm babies of $<2.5\text{ kg}$ weight and whose parents were not willing to give permission were excluded from the study. Computer software SPSS version 16 was used for entering and analyzing all the data. Mean and standard deviation was calculated for quantitative variables like age of patients. Frequency and percentage was calculated for qualitative variables like gender, sepsis and thrombocytopenia. Effect modifier like gender was controlled by stratification of data. Post stratification chi square test was applied. A p value of <0.05 was considered statistically significant.

RESULTS

A total number of 100% (n=212) neonates were included in this study, both genders. Gender distribution showed that there were more males i.e. 61.8% (n=131) and 38.2% (n=81) were females. The mean age of the patients was 11.80 days with S.D 6.37. The main outcome variable of this study was

Thrombocytopenia. Out of 100% (n=212) patients, in our study, it was observed that 86.3% (n=183) patients have Thrombocytopenia.

When patients were grouped into different age categories, it was noted that 27.8% (n=59) patients were 1 to 7 days, 41% (n=87) were 8 to 14 days, 21.2% (n=45) were 15 to 21 days and 9.9% (n=21) were 22 to 28 days of age. When Chi-Square was applied to check the effect modification, it was noted that gender and stratified age were significantly associated with Thrombocytopenia with P-values 0.000 and 0.004 respectively. When logistic regression was applied to find the predictors of Thrombocytopenia, it was noted that gender was the predictor of Thrombocytopenia and age was not the predictor of Thrombocytopenia with P-values 0.000 and 0.225 respectively. Odd ratios of age and gender also showed this trend i.e. 1.04 and 5.29 respectively.

Table No.1: Demographics and frequency of Thrombocytopenia

Thrombocytopenia		
Characteristics	Frequency	Percentage (%)
Gender		
Male	131	61.8
Female	81	38.2
Age in days	11.80 ± 6.37	
Thrombocytopenia		
Yes	183	86.3
No	29	13.7
Age Groups		
1-7 Days	59	27.8
8-14 Days	87	41.0
15-21 Days	45	21.2
22-28 Days	21	9.9

Table No.2: Inferential Results

Gender	Thrombocytopenia		P Value
	No	Yes	
Female	21	60	0.000
Male	8	123	
Total	29	183	

Table No.3: Inferential Results

Age Groups	Thrombocytopenia		Total
	No	Yes	
1-7 Days	12	47	0.001
8-14 Days	6	81	
15-21 Days	11	34	
22-28 Days	0	21	
Total	29	183	

Odd ratios

Age 1.0431

Gender 5.2905

DISCUSSION

Sick babies both pre and full term suffer a great deal of morbidity and mortality by a frequently encountered problem called thrombocytopenia¹². In different studies, about 20 to 40% of NICU admitted newborns had thrombocytopenia¹³. Though bacterial septicemia has various manifestations but thrombocytopenia is the common one. Neonates are more prone to infection in virtue of their weak immune system. Moreover, neonates are made more susceptible to infections by the complex interaction of several identified risk factors in both neonates and their mother. Rapid treatment following early suspicion and accurate diagnosis is necessary for the better prognosis of neonatal septicemia. Occurrence of thrombocytopenia early in the course of septicemia make it an early predictor of septicemia^{14,15}.

In our study, 212 neonates of both genders were included. Males constituted about 61.8% compared to 38.2% of females with the overall mean age of 11.80 days with S.D of 6.37. Thrombocytopenia was the main outcome variable in our study. All selected study patients were septic and 86.3% (n=183) of them showed thrombocytopenia. On applying Chi-Square it was noted that gender and stratified age were significantly associated with Thrombocytopenia with P-values 0.000 and 0.004 respectively. Similarly, in a previous study 83.5% of sick neonates admitted in NICU had a platelet count of $<150 \times 10^3/\mu\text{l}$. Only 33.8% of these cases were narrated to have positive blood culture results. Low platelet count is a significant change present in bacterial septicemia observed even in the patients with negative blood culture results¹⁶. That's why; it was also shown by that study that platelet count is a good indicator of septicemia irrespective of blood culture report.

Though data is not shown but gram positive bacteria were isolated more commonly than gram negative in neonates suffering from septicemia, same as found in a study by Jack et al.¹⁷ But these findings are in total contrast to several Indian studies in which gram negative bacteria are the most commonly isolated organisms. But another fact is worthy of mentioning that thrombocytopenia was much intense in severity in neonates who get infected by gram negative bacteria compared to gram positive and almost every patient of gram negative septicemia had thrombocytopenia with a strong tendency to develop DIC compared to its rival group. A study done by Riedler et al.¹⁸ showed more prevalence of thrombocytopenia reaching up to 80% in gram negative septicemia compared to gram positive septicemia (65%).

Growth of organism on blood culture is different in various studies depending upon the local prevalence's and conditions favoring a specific organism. Out of numerous organism in different studies Coagulase

negative staphylococcus growth ranges from 4.46 to 90% in various studies conducted by Batisti et al¹⁹ and Simpson et al¹⁹. In earlier times it was not considered pathogenic and was discarded but now the development of thrombocytopenia and other complications proves the pathogenicity of that organism. The virulence, ability of colonization, ability to acquiring antibiotic resistance, its survival in inanimate environment and its acquirement in neonates especially premature born without normal flora in first few weeks make Klebsiella one of the important organisms on cultures of NICU admitted neonates and in several outbreak. In few cases, Acinetobacter, Citrobacter and Pseudomonas can also be isolated. Despite the suspicion of nosocomial outbreak most of these cases can be attributed to incidental findings.

Mortality rate in septic patients is considerably greater in preterm and low birth weight neonates. The most virulent of all the organisms in term of causing mortality is Klebsiella. Out of many complications of septicemia, DIC is a fatal one needing intensive treatment. Consumptive coagulopathy in DIC makes thrombocytopenia an important finding. But it is suggested by Nosen et al that majority of cases of septicemia show thrombocytopenia without the development of full blown DIC²⁰. Not only bacteria but protozoa, fungi, virus and rickettsia can be the cause of underlying infections leading to thrombocytopenia. Most of the studies were done only for bacterial isolate, thrombocytopenia in patients with no bacterial growth in culture might be attributed to above mentioned causes.

CONCLUSION

We concluded that thrombocytopenia is a major and early predictor of sepsis but not sufficient for the diagnosis of septicemia, so other parameters must be ruled out.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Zingiber Officinale Rosc (Ginger), Trigonella Foenum Graecum (Methi) and Allium Sativum Linn (Garlic) on Lipid Profile and Liver Enzyme Activities in Hypercholesterolemic Rats in Comparision with Drug Atorvastatin

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ABSTRACT

Objective: To evaluate and compare the hypolipidemic and hepatoprotective effects of Zingiber officinale (ginger), Trigonella faenumgraecum (Methi) and Allium sativum (Garlic) in hypercholesterolemic animal model (albino rats) in comparison with 3-hydroxy 3- methyl glutaryl Co A reductase inhibitor (Atorvastatin)

Study Design: Experimental study.

Pace and Duration of Study: This study was conducted at Biochemistry Department, Al Tibri Medical College, Isra University, Karachi Campus from January 2016 to December 2016.

Materials and Methods: Thirty six albino rats (wistar strains) of both gender were taken and divided into six groups namely (A) Normal control (B) Hypercholesterolemic (C) Zingiber 5% (D) Fenugreek 5%, (E) Allium sativum 5% supplemented groups and (F) Atorvastatin supplemented group. The blood was analyzed for lipid profile and serum liver enzymes after 8 weeks of supplementation.

Results: The serum cholesterol, LDL-C, triacylglycerol, Alanine aminotransferase (ALT), Aspartate aminotransferase (AST) and Alkaline phosphatase (ALP) were increased in hypercholesterolemic rats as compared to normal control rats. Zingiber officinale, Fenugreek and Allium sativum supplemented groups, when compared with hypercholesterolemic group showed lowering of lipid profile and also lowering of serum liver enzyme activities. Zingiber officinale, Fenugreek and Allium sativum supplemented rats had shown no significant difference in the serum level of total cholesterol, HDL- C, LDL-C among the three groups. The triacylglycerol level was markedly decreased in Zingiber officinale supplemented group as compared with Atorvastatin supplemented group. ALT, AST level had shown no significant difference in Zingiber officinale supplemented group as compared to Atorvastatin supplemented rats.

Conclusion: The data obtained from this study concluded that the Zingiber officinale, Fenugreek and Allium sativum had shown the preventive role in hyperlipidemia. Zingiber officinale is more effective in lowering serum triacylglycerol level and also potent hepatoprotective effect as compared to Fenugreek, Allium sativum and Drug Atorvastatin.

Key Words: Hyperlipidemia, Allium sativum, Fenugreek, Atorvastatin, Zingiber.

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INTRODUCTION

Hyperlipidemia is a main hazard for ischaemic heart disease (IHD). The prevalence of hyperlipidemia as well as its complications are increasing in the world. Moreover alteration in lipid profile results in a diversity of long standing diseases such as diseases of arteries of

heart and atherosclerosis. It is a common disorder in developed as well as under developed countries. Hyperlipidemia is among main factors which causes disabilities and deaths¹.

There are number of antihyperlipidemic agents for controlling hyperlipidemia. Lipid lowering treatment using different types of statins effectively reduce the lipoproteins particularly low density lipoprotein (LDL) and cholesterol². Statins can inhibit 3-hydroxy-3-methyl glutaryl CoA (HMG-CoA) reductase, which mediates cholesterol production³. However the use of statin is restricted due to enhanced undesired effects they possess along with their therapeutic efficacy⁴.

Recent studies have directed towards the protective effect of plants on hyperlipidemia. Hence it was felt worth wise to explore role of commonly used herbs in

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experimental animals for controlling hyperlipidemia. Herbs have been known to be used as traditional medicines in various diseases from ancient times in many parts of the world including Pakistan. The use of herbal medicine is cost effective with few side effects as compared to the modern medicines⁴.

Zingiber officinale (ginger) contain a number of bioactive substances namely 6- gingerol, 6- shogaol, sesquiterpene and Zingerberene⁵. Ginger posses antihyperlipidemic effects and the response of ginger constituents rely upon the amount taken⁶. The oral administration of ginger extract with daily dose of 25mg /kg for 6 weeks caused significant reduction in blood glucose and triacylglycerol while it could not reduced the increased level of total cholesterol and LDL- C to normal level⁷.

Fenugreek seeds are good source of soluble dietary fiber; their consumption has shown the reduction in serum and liver cholesterol levels.⁸ Fenugreek seeds and its phytochemicals –trigonelline and diosgenin exhibit protective role in liver and the elevated level of liver enzymes decreased by using Fenugreek⁹. Fenugreek seeds administration to high cholesterol diet (HCD) group lowered the amount of total cholesterol, triacylglycerol and lowdensity cholesterol where as HDL-C level was significantly increased in hypercholesterolemic diet (HCD) fed rats¹⁰.

Garlic contains sulphur compounds δ -glutamyl -s - allyl -L -cysteines and S -allyl -L-cysteine sulfoxide and other garlic components possess hypocholesterolemic properties¹¹. Garlic (*Allium sativum*) decreases total cholesterol and triacylglycerol and lower LDL in hypercholesterolemic group as compared to control group¹².

The use of medicinal plants is advocated in treatment of hypercholesterolemia because of their negligible side effects, and easy availability. The aim of this study is to assess the comparative hypocholesterolemic effects of *Zingiber officinale* Rosc., Fenugreek (*Trigonella foenum graecum* linn) and *Allium sativum*. It is also planned to assess the side effects of these medicinal plants on hepatic enzymes.

MATERIALS AND METHODS

It is a Descriptive Comparative Experimental study, conducted at Department of Biochemistry Al-Tibri Medical College and Hospital Karachi during January 2016 to December 2016. Thirty six albino rats of either gender with average weight of 150-200 grams were used for this study. The rats were obtained from animal house of Al-Tibri Medical College and Hospital. The rats were kept in good conditions and ad libitum. Rats were randomly divided into six groups (A, B, C, D, E, and F). In each group six rats (n=6) were included.

Group A was given normal rat diet and served as normal control while group B was given hypercholesterolemic diet containing 20% fat and 1%

cholesterol. Remaining groups were given the diet according to diet chart. All group of animals were fed the diet for 8 weeks. Group C was Supplemented with 5% zingiber officinale powder with hypercholesterolemic diet, Group D was supplemented with 5% *Trigonella foenum graecum* seed powder with hypercholesterolemic diet. Group E was supplemented with 5% *Allium sativum* cloves (Crushed) with hypercholesterolemic diet. Group F was supplemented with 10 mg of Atorvastatin in 1 Kg of hypercholesterolemic diet.

Ginger, Fenugreek and Garlic were procured locally from bazaar. These were sun dried, powdered and stored until required for diet preparation. All chemical used for study were of analytical grade (ANALAR). The ingredients were mixed thoroughly in warm water and then baked in the oven. The diet was prepared separately for each group according to the diet chart.

At the end of study period rats were exposed to anaesthesia and blood samples collected from the heart into specimen tubes. These were centrifuged; serum was separated and kept into labeled apendoff tubes in deep freezer till used for estimation of total cholesterol, triacylglycerols, high density cholesterol and liver enzymes.

The values within the group were analyzed by student 'T' test, whereas the values between the groups were analyzed by Analysis of variance (ANOVA). SPSS version 18 was used for calculation. P Value < 0.05 is taken as statistically significant.

RESULTS

The rats obtained from animal house of AL-Tibri medical college were kept under standard environment ($25 \pm 1^\circ\text{C}$), relative humidity 40-60% and 12/12 hour light / dark cycle) for 8 weeks experimental period. The rats were given free access to food and drinking water during the entire experimental period.

In hypercholesterolemic rats the Total cholesterol (TC), Triacylglycerols (TAG), Low density Lipoproteins (LDL) and LDL/HDL ratio were increased but statistically non-significantly, where as HDL level was decreased in hypercholesterolemic rats as compared to normal control rats. Moreover the serum enzymes level of Alanine amino Transferase (ALT), Aspartate amino Transferase (AST) and Alkaline phosphatase (ALP) were increased in hypercholesterolemic as compared to normal control rats.

Table 1 and Figure 1 shows the comparison of lipid profile in different groups of rats after taking supplementation with 5% *Zingiber officinale* (C), Fenugreek (D) and *Allium sativum* (E) with hypercholesterolemic diet and atorvastatin 10mg/kg of diet (Group F). There is significant decrease of triacylglycerol of group C (*Zingiber officinale*) as compared to group D, E and F (atorvastatin 10mg /kg of diet) group. LDL-C is significantly decreased in group

F (atorvastatin 10mg /kg of diet), as compared to C (5% Zingiber officinale) D and E.

The serum lipid profile and serum enzyme activities of 5% Zingiber supplemented groups were compared with

5% Fenugreek and 5% Allium sativum and 10 mg/kg Atorvastatin group. The values are given as Mean \pm S.E.M. The number of animals is given in parenthesis.

Table No.1: Comparison of Serum lipid profile and serum liver enzyme of 5% Zingiber supplemented group with 5% Fenugreek and 5% Allium sativum supplemented groups.

Parameter	Supplementation with 5% Zingiber C (6)	Supplementation with 5% Fenugreek D (6)	P Value	Supplementation with 5% Allium sativum E (6)	P Value	Supplementation with 10 mg /kg Atorvastatin F (6)	P Value
TC (mg/dl)	164.66 \pm 1.92	159.66 \pm 6.03	0.989	167.16 \pm 5.02	0.999	127.00* \pm 3.91	0.001
TAG (mg/dl)	79.33 \pm 1.54	107.78* \pm 2.25	0.001	129.33* \pm 2.67	0.001	105.16* \pm 2.79	0.001
HDL-C (mg/dl)	41.16 \pm 1.60	39.83 \pm 2.03	0.998	35.66 \pm 1.85	0.356	38.50 \pm 1.62	0.942
LDL-C (mg/dl)	107.83 \pm 2.52	99.00 \pm 5.74	0.804	103.66 \pm 5.27	0.994	67.50* \pm 4.02	0.001
ALT (IU/L)	39.33 \pm 1.54	43.16 \pm 1.37	0.757	48.66* \pm 1.83	0.016	33.16 \pm 2.74	0.240
AST (IU/L)	98.33 \pm 3.65	112.66 \pm 3.92	0.090	117.00* \pm 2.67	0.011	91.83 \pm 3.66	0.847
ALP (IU/L)	247.50 \pm 10.54	256.66 \pm 5.57	0.972	263.00 \pm 2.63	0.744	230.66 \pm 5.04	0.667

*P<0.05 values are statistically significant as compared to 5% supplementation of Zingiber

Table No.2: Comparison of Serum lipid profile and serum liver enzyme of 5% Fenugreek supplemented group with 5% Allium sativum supplemented groups.

Parameter	Supplementation with 5% Fenugreek D (6)	Supplementation with 5% Allium sativum E (6)	P value	Supplementation with 10 mg /kg Atorvastatin F (6)	P value
TC (mg/dl)	159.66 \pm 6.03	167.16 \pm 5.02	0.92	127.00* \pm 3.91	0.001
TAG (mg/dl)	107.78 \pm 2.25	129.33* \pm 2.67	0.001	105.16 \pm 2.79	0.991
HDL-C (mg/dl)	39.83 \pm 2.03	35.66 \pm 1.85	0.673	38.50 \pm 1.62	0.998
LDL-C (mg/dl)	99.00 \pm 5.74	103.66 \pm 5.27	0.989	67.50* \pm 4.02	0.001
ALT (IU/L)	43.16 \pm 1.37	48.66 \pm 1.83	0.366	33.16* \pm 2.74	0.008
AST (IU/L)	112.66 \pm 3.92	117.00 \pm 2.67	0.975	91.83* \pm 3.66	0.003
ALP (IU/L)	256.66 \pm 5.57	263.00 \pm 2.63	0.996	230.66 \pm 5.04	0.186

*P<0.05 values are statistically significant as compared to 5% Fenugreek supplemented group

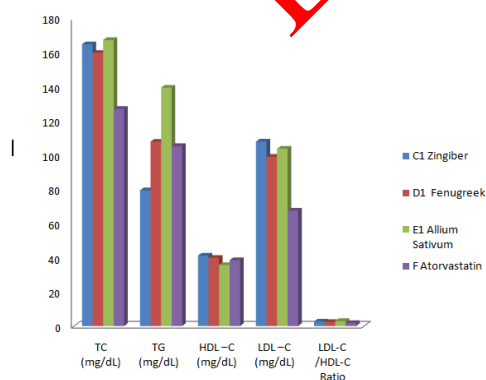


Figure No.1: Comparison of serum lipid profile with 5% Zingiber, Fenugreek, Allium sativum and Atorvastatin.

The graph shows the mean value of serum lipid profile of 5% Zingiberofficinale, Fenugreek, Allium sativum and Atorvastatin (10mg/kg of diet) supplemented rats.

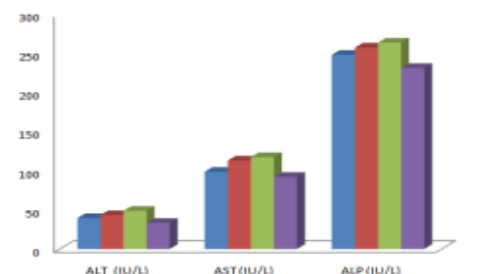


Figure No.2: Comparison of serum liver enzymes with 5% Zingiber, Fenugreek, Allium sativum and Atorvastatin.

In group F, ALT is significantly decreased as compared to D (5% Fenugreek) and E (5% *Allium sativum*). Aspartate aminotransferase (AST) level is significantly increased in group E (5% *Allium sativum*) as compared to C (5% *Zingiber officinale*). AST is significantly decreased in group F (atorvastatin 10mg/kg of diet) as compared to group D (5% Fenugreek) and E. Alkaline phosphatase (ALP) is significantly increased in group E (5% *Allium sativum*) as compared to group F (Atorvastatin 10 mg / kg of diet) as shown in Table-2 and Figure 2.

The graph shows the comparison of mean values of serum liver enzymes of 5% *Zingiber officinale*, Fenugreek, *Allium sativum* and Atorvastatin (10mg/kg of diet) supplemented rats.

DISCUSSION

Hyperlipidemia is a predisposing factor to vascular disease which eventually leads to diabetes mellitus, cardiac diseases, inflammation and other associated disorders. Antihyperlipidemic drugs are usually used for the treatment of dyslipidemia and other related metabolic disorders.

Hypercholesterolemia is treated by many drugs, of which statins are most frequently prescribed¹³. The most adverse effect of statins are toxicity to liver and muscles. The hazardous factors associated with hypercholesterolemia are renal insufficiency, hypothyroidism, liver dysfunction¹⁴ and diabetes¹⁵.

Use of plant products have been advocated as substitute for the treatment of dyslipidemia. Spices are dietary supplementary herbs widely used in Indian and Pakistani foods as flavouring agent, colouring agent and preservative from thousands of years.

Ginger, Garlic and Fenugreek are used as food supplements/ additives without toxic effects. They have the added advantage of possessing medicinal properties in general and potential benefits for patients with cardiovascular disease in particular. In the present study, the hypercholesterolemic rats had shown increased level of serum TAG, LDL-C and Total Cholesterol, and a low level of HDL-C as compared to normal control. This may be due to increased exogenous synthesis of cholesterol, due to consumption of high fat diet, and the increase in LDL-C may be because of the reduction of LDL – receptor sites¹⁶. Paul et al also had shown that total cholesterol, LDL – C and triacylglycerols were increased by the administration of Vanspati ghee¹⁷. The increase in plasma TAG with this diet is due to the over production of VLDL¹⁸.

The level of LDL- cholesterol (as calculated by Friedwald equation)¹⁹, was elevated in hypercholesterolemic rats. Administration of ginger with hypercholesterolemic diet had decreased LDL- Cholesterol, total cholesterol and triacylglycerol, but HDL- Cholesterol had been increased which shows

that ginger has a beneficial influence on cholesterol metabolism which is supported by many researchers^{17,20-22}.

The groups treated with *Zingiber* showed significant reduction in triacylglycerol compared to hypercholesterolemic group, Isa Y et al²³ had shown the up regulation of adiponectin by 6 – shogaol and 6 – gingerol, which increases the oxidation of fatty acid and subsequently level of serum triacylglycerol is decreased^{23,24}. Our finding on the effectiveness of ginger in decreasing serum triacylglycerol is in accordance of the finding of El-Rokh et al²⁵.

The serum enzymes AST, ALT were significantly decreased in all treatment groups with ginger as compared to hypercholesterolemic group in the present study. These results are in agreement with those obtained by many workers²⁶.

The present work has been done to manifest the effect of Fenugreek on lipid profile and hepatic enzymes. A significant decrease was observed in the blood level of cholesterol, Triacylglycerol, LDL-Cholesterol and an increased HDL-C in 5% and 10% Fenugreek supplemented rats as compared to hypercholesterolemic group. Similar observations were demonstrated in experimental animals by previous worker²⁷.

In the present study the 5% *Allium sativum* was supplemented in the diet of rats, had shown hypolipidemic effect as was found by Dalal et al²⁸ and has caused a significant reduction in serum total cholesterol as was found by Farnaz²⁹. HDL-Cholesterol had significantly increased in *Allium sativum* supplemented group as compared to hypercholesterolemic group in the present study as was reported by previous study³⁰.

It was observed that the level of serum triacylglycerol was significantly decreased in *Zingiber* supplemented group as compared to Fenugreek, *Allium sativum* and Atorvastatin (Table –IV-4), but Islam and Choi had found no significant difference in the lipid profile between the ginger supplemented and Garlic supplemented groups³¹.

The serum enzyme activities after 8 week treatment of hypercholesterolemic rats with *Allium sativum*, Fenugreek and *Zingiber officinale* has shown significant decrease in the activities of ALT, AST and ALP as compared to hypercholesterolemic rats. In contrast to this Gazuwa et al reported that when onion and Garlic were compared there was no significant difference in TAG, HDL-C and VLDL-C as compared to control, but animals in test group showed higher activities of transaminases as well as alkaline phosphatase, which shows that onion and Garlic caused some level of damage³².

CONCLUSION

Zingiber officinale, *Trigonella foenum graecum* and *Allium sativum* all showed hypolipidemic and

hepatoprotective effects as compared to drug Atorvastatin on hyperlipidemic rats. The LDL-C lowering effect is more prominent in Atorvastatin treated group.

It is concluded that triacylglycerol lowering effect of Zingiber is more than that of Atorvastatin, but Zingiber did not give LDL-C lowering effect as compared to Atorvastatin. So it is concluded that Zingiber has more efficacy among the three herbs in lowering serum triacylglycerol level in addition it have more potent hepatoprotective effect as compared to Fenugreek and *Allium sativum*.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Hyponatremia in Patients with Intracerebral Hemorrhage

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ABSTRACT

Objectives: To determine the frequency of hyponatremia in patients having intracerebral hemorrhage (ICH) at Nishtar Hospital Multan.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Department of Department, Nishtar Medical College and Hospital Multan from February 2016 to July 2016.

Materials and Methods: In this study, a total of 72 patients with intracerebral hemorrhage were taken who were admitted at Nishtar Hospital Multan. These patients were diagnosed on bases of clinical diagnosis and CT scan report findings such as "CT scan brain plain showing hyper dense area inside brain parenchyma were defined as Intracerebral Hemorrhage". All these patients were registered in this study, after taking informed consent from their attendants/patients. Patients with clinical and CT scan confirmation of ICH aged more than 30 years of either sex were included in this study.

Results: Out of these 72 patients with ICH, 56 (77.8%) were male patients while 16 (22.2%) were female patients and male to female ratio was 3.5:1. Mean age of these ICH patients was 49.21 ± 12.55 years (age range; 33 – 86 years). Mean age of the male patients was 48.59 ± 11.99 years while that of female patients 51.38 ± 14.61 years ($p = 0.438$). Of these 72 study cases, 44 (61.1%) were from urban areas while 28 (38.9%) belonged to the rural areas. Twenty two (30.6%) were poor, 33 (45.8%) were middle income and 17 (23.6%) were rich. Mean body mass index of our study cases was 24.92 ± 3.85 kg/m² (range of BMI; 20.5 to 36.75 kg/m²) and 33 (45.8%) were obese. In our study 39 (54.2%) were smokers and all smokers were male patients. Diabetes was present in 33 (45.8%), hypertension in 48 (66.7%), dyslipidemia in 43 (59.7%) and family history in 22 (30.6%). Mean serum sodium level in our study was 137.78 ± 8.77 nmol/L and hyponatremia was noted in 26 (36.1%) patients with intracerebral hemorrhage.

Conclusion: Our study provided the measurement in the cadavers with regards to weight of heart and aortic diameter and the thickness of the wall of aorta. It is also concluded that results obtained show significant difference between male and female hearts with regards to these parameters.

Key Words: Hyponatremia, intracerebral hemorrhage, frequency.

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INTRODUCTION

Stroke yet remains major cause of mortality among sufferers all over the world, however most of its burden is borne by underdeveloped nations. Intracerebral hemorrhage (ICH) characterized by the spontaneous bleeding in the brain parenchyma, stroke subtype leads to increased morbidity, disabilities and deaths.^{1,2} Intracerebral hemorrhage (ICH) is a kind of stroke subtype which has more tendency to early deaths or long term functional disabilities as compared with cerebral infarction or subarachnoid haemorrhage³. It may be frequent in approximately 15% of all acute stroke case presentations in emergency care¹ in

different parts of the world, however studies have reported it to be more frequent in Asian population^{4,7}

Hyponatremia is one of the most commonly occurring serum electrolyte derangement⁸⁻¹² among hospitalized patients particularly those having some neurological trauma and leads to significant morbidity, prolonged hospitalizations, more healthcare costs and mortality in such patients¹³⁻¹⁴. In patients with neurological injury it may exacerbate cerebral edema which leads to intracranial hypertension by means of fluid shifting and is a cause of poor prognosis and adverse clinical outcomes. Among patients having brain injuries, hyponatremia (particularly severe hyponatremia) has been reported to increase in-hospital mortality in as many as 50 % patients when compared with those having normal serum sodium levels. This emphasizes towards early diagnosis and timely management of this electrolyte derangement so that adverse outcomes and prolonged hospital stay can be avoided which can further complicate and worsen the patient's condition.¹⁵ Owing to the high frequency of ICH in our region and fact that hyponatremia causes further complications in such patients having neurological injuries, a study was

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conducted to determine frequency of hyponatremia in patients with ICH. There is no data available on this topic from our population of Southern Punjab.

MATERIALS AND METHODS

In this study, a total of 72 patients with intracerebral hemorrhage were taken who were admitted at Nishtar Hospital Multan. These patients were diagnosed in this cross – sectional study on bases of clinical diagnosis and CT scan report findings such as “CT scan brain plain showing hyper dense area inside brain parenchyma were defined as Intracerebral Hemorrhage”. All these patients were registered in this study, after taking informed consent from their attendants/patients. Patients with clinical and CT scan confirmation of ICH aged more than 30 years of either sex were included in this study while Patients having diagnosed coagulopathies & other bleeding disorders, patients having finding on CT scan Brain (plain) consistent with Intracerebral hemorrhage in infratentorial location, tuberculous meningitis, viral/bacterial encephalitis, ischemic stroke, patients having history of head injury or CT brain plain suggestive of space occupying lesion (SOL) were excluded from this study. Venous blood sample was drawn under aseptic conditions and immediately sent to the laboratory for serum sodium level estimation within first 24 hours of hospitalization. Serum sodium level less than 135 nmol/L was defined as hyponatremia. Data management and analysis was done using computer program SPSS version 22. Descriptive statistics was used to tabulate frequencies and percentages for categorical data while numerical data was analyzed for mean and standard deviation. Chi – square test was used to control impact of potential confounders of the study.

RESULTS

Out of these 72 patients with ICH, 56 (77.8%) were male patients while 16 (22.2%) were female patients and male to female ratio was 3.5:1. Mean age of these ICH patients was 49.21 ± 12.56 years (age range; 33 – 86 years). Mean age of the male patients was 48.59 ± 11.99 years while that of female patients 51.38 ± 14.61 years ($p = 0.438$).

Of these 72 study cases, 44 (61.1%) were from urban areas while 28 (38.9%) belonged to the rural areas. Twenty two (30.6%) were poor, 33 (45.8%) were middle income and 17 (23.6%) were rich. Mean body mass index of our study cases was 24.92 ± 3.85 kg/m² (range of BMI; 20.5 to 36.75kg/m²) and 33 (45.8%) were obese. In our study 39 (54.2%) were smokers and all smokers were male patients. Diabetes was present in 33 (45.8%), hypertension in 48 (66.7%), dyslipidemia in 43 (59.7%) and family history in 22 (30.6%). Mean serum sodium level in our study was 137.78 ± 8.77

nmol/L and hyponatremia was noted in 26 (36.1%) patients with intracerebral hemorrhage.

Table No. 1: Distribution of hyponatremia in patients with ICH in both genders. (n = 72)

Gender	Hyponatremia		P - value
	Yes (n =26)	No (n = 46)	
Male(n = 56)	24	32	0.025
Female(n = 16)	02	14	
Total	72		

Table No. 2: Stratification of hyponatremia with regards to residential status. (n = 72)

Residential status	Hyponatremia		P - value
	Yes (n =26)	No (n = 46)	
Rural(n = 28)	08	20	0.324
Urban(n = 44)	18	26	
Total	72		

Table No. 3: Distribution of hyponatremia in patients with ICH with regards to obesity. (n = 72)

Patients with Obesity (n = 72)			P-value
Obesity	Hyponatremia Yes (n = 26)	No (n = 46)	
Yes (n = 33)	19	14	0.001
No (n = 39)	7	32	
Total	72		

Table No. 4: Stratification of hyponatremia with regards to diabetes. (n = 72)

Diabetes	Hyponatremia		P - value
	Yes(n=26)	No (n = 46)	
Yes(n = 33)	17	16	0.014
No (n = 39)	09	30	
Total	72		

Table No. 5: Stratification of hyponatremia with regards to hypertension. (n = 72)

Hypertension	Hyponatremia		P - value
	Yes(n=26)	No (n = 46)	
Yes(n = 48)	20	28	0.200
No (n = 24)	06	18	
Total	72		

DISCUSSION

Intracerebral hemorrhage is often associated adverse outcomes particularly in patients having hyponatremia. Out of these 72 patients with ICH, 56 (77.8%) were male patients while 16 (22.2%) were female patients and male to female ratio was 3.5:1. Similar trends among ICH patients have been reported in different studies. A study conducted by Arshad et al¹⁶ from Bahawalpur has also reported 70 % male patients predominating over female patients which is similar to our study results. Zafar et al¹⁷ from Karachi also reported 62% male gender predominance which is similar to our study results. Rind et al¹⁸ from Jamshoro

also reported 63 % male gender predominance which is similar to our study results. Gray et al¹⁹ reported 75 % male gender predominance which is close to our study results. Mean age of these ICH patients was 49.21 ± 12.56 years (age range; 33 – 86 years). Mean age of the male patients was 48.59 ± 11.99 years while that of female patients 51.38 ± 14.61 years ($p = 0.438$). A study conducted by Arshad et al¹⁶ from Bahawalpur has also reported 55 years mean age, which is close to our study results. Anjum et al²⁰ from Karachi has also reported similar results. Zafar et al¹⁷ from Karachi also reported 56 ± 12 years mean in patients with ICH which is close to our study results. Gray et al¹⁹ reported 58.6 ± 10.4 years mean age which is close to our study results.

Obesity is also important modifiable risk factor for stroke and high frequency of obesity was noted in our study. Mean body mass index of our study cases was $24.92 \pm 3.85 \text{ kg/m}^2$ (range of BMI; 20.5 to 36.75 kg/m^2) and 33 (45.8%) were obese. Kuramatsu et al²¹ from Germany reported 24.4 kg/m^2 mean body mass index which is close to our study results.

In our study 39 (54.2%) were smokers and all smokers were male patients. Zafar et al¹⁷ from Karachi reported 28% smoking which is lower than that being reported in our study. Kuramatsu et al²¹ from Germany reported 31.8% smoking.

Diabetes was present in 33 (45.8%) in our study cases while Zafar et al¹⁷ from Karachi also reported 30 % diabetes which is in compliance with our study results. Hypertension in 48 (66.7%), dyslipidemia in 48 (59.7%) and family history in 22 (30.6%). Zafar et al¹⁷ from Karachi also reported similar results. Kuramatsu et al²¹ from Germany reported hypertension in 72.7 % in patients with ICH which is close to our study results. Gray et al¹⁹ reported 79 % hypertension which is similar to that of our study results.

Mean serum sodium level in our study was $137.78 \pm 8.77 \text{ nmol/L}$ and hyponatremia was noted in 26 (36.1%) patients with intracerebral hemorrhage. Saleem et al²² from Srinagar, Kashmir has reported 23.2% hyponatremia in patients with intracerebral hemorrhage which is close to our study results. Kuramatsu et al²¹ from Germany reported 15.6 % hyponatremia in patients with ICH which is lower than that of our findings. Gray et al¹⁹ reported 25 % hyponatremia which is close to our findings.

CONCLUSION

Hyponatremia leads to significant disease morbidity and mortality in patients with spontaneous intracerebral hemorrhage (ICH) and very high frequency of hyponatremia was noted in our patients. Hyponatremia was significantly associated with male gender, obesity and hypertension in our study. Early diagnosis followed by proper management can help to reduce prolonged hospital stay and adverse outcomes.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Needle Stick Injury: A Survey of Five Dental Colleges of Karachi

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ABSTRACT

Objective: The goal of this research is to find out the rate of needle stick injury in dental practitioners and to check the awareness level among dental health care workers of Karachi.

Study Design: Description / Cross-Sectional Study.

Place and Duration of Study: The study was conducted at the Jinnah Medical and Dental College. The data was collected from five different dental colleges of Karachi (JMDC, FJDC, DIDC, LCMD and Hamdard) from 15 November 2016 to February 2017.

Materials and Methods: A 15-item questionnaire was used to collect the data. To examine the research questions, data was collected from 180 respondents comprising of faculty and graduates of the respective dental colleges (JMDC=50, FJDC=58, DIDC=53, LCMD=8 and Hamdard=11).

The respondents filled the questionnaires in the presence of the researcher to expedite the process and to answer any potential inquiries. This study used simple random sampling procedure to gather an unbiased data from a large population. The data was stored in excel worksheet and analyzed using SPSS.

Results: Out of the 180 dental practitioners evaluated for this research, 58.88% reported with a positive history of needle stick injury. Among these 27.77 % have had the injuries multiple times. At the time of injury, 54.4% of dental practitioners were wearing gloves. 81.11% of practitioners took immunization history, 30% practitioners got their blood screening done after the injury. 86.66% dental practitioners were immunized against Hepatitis B and only 36.66% know their hepatitis B antibody titer.

Conclusion: The results of this study indicate that dental students in Karachi have some knowledge of NSIs. Nevertheless majority of them failed to recognize appropriate management and reporting of such injuries, therefore, there is a need for improvements in the clinical training, in particular more instructional time devoted to prevention and management of NSIs.

Key Words: Needle stick injury, immunization, dental health care workers

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INTRODUCTION

Accidental exposures to blood-borne pathogens following a needle stick injury is the most common occupational health accident in medical care.^{1,2} Needle stick injuries are common among dental practitioners because of their work environment.³ Exposure caused by needle stick injury, carries the risk of infection by blood-borne viruses such as hepatitis B, hepatitis C, and HIV.^{4,5,6} Other less frequent blood-borne microorganism which can be transmitted via blood exposure include Cytomegalovirus, Epstein-bar virus, Parvovirus and Plasmodium etc.

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According to WHO study the annual burden of health care workers exposed to blood borne pathogens include; 2.6% HCV, 5.9% HBV and 0.5% for HIV⁷. Nurses have the highest rate of needle stick injury among health care workers.⁸

The goal of this research is to find out the rate of needle stick injury in dental practitioners and to check the awareness level among dental health care workers. It also will help to find out the awareness of dental health care workers regarding the protocol for needle stick injury, their immunization status against HBV and to see how many infection control departments are working in the town and whether the practitioners are aware of them.

MATERIALS AND METHODS

The study was conducted at Jinnah Medical and Dental College. The data was collected from five different dental colleges of Karachi (JMDC, FJDC, DIDC, LCMD and Hamdard).

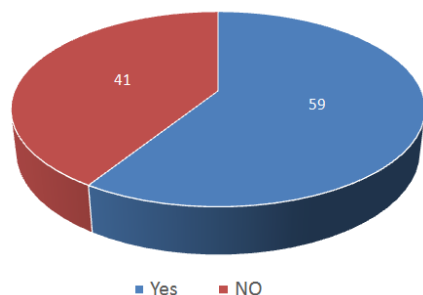
A 15-item questionnaire was used to collect the data. To examine the research questions, data was collected from 180 respondents comprising of faculty and

graduates of the respective dental colleges (JMDC=50, FJDC=58, DIDC=53, LCMD=8 and Hamdard=11).

The respondents filled the questionnaires in the presence of the researcher to expedite the process as well as to answer any potential inquiries. This study used simple random sampling procedure to gather an unbiased data from a large population. The data was stored in excel worksheet and analyzed using SPSS.

RESULTS

Out of the 180 dental practitioners evaluated for this research, 58.88% reported with a positive history of needle stick injury. Among these 27.77% have had the injuries multiple times. Multiple injuries occurred as frequently as 8.8% in a month to 11.66% within a year. Most prevailing cause of injury was individual carelessness in 31.66% of practitioners, other causes being poor disposal. Further on we found out that at the time of injury 54.4% of dental practitioners were wearing gloves and also that depth of injury was mostly superficial. Among these injured dental practitioners, 25.55% were injured by a new needle.



Fire No.1: Needle stick injury

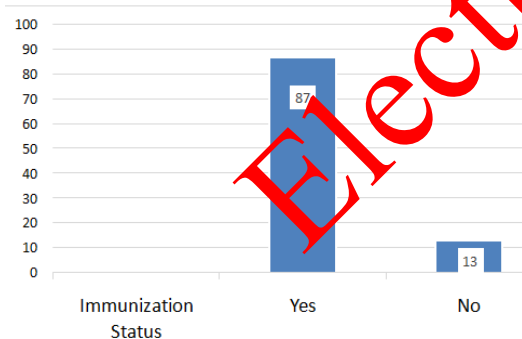


Figure No.2: Chart Immunization status

Upon further questioning, it was recorded that the protocol of needle stick injury was not known by all dental health care workers. As a result, only 81.11% of practitioners took immunization history, 30% practitioners got their blood screening done after the injury, only 22.77% practitioners received medical attention after the injury and 45.55% practitioners did not even make their patients undergo screening. To top it all, 52.22% dentists had no awareness about infection control department. It has been documented that 86.66% dental practitioners were

immunized against Hepatitis B and only 36.66% know their hepatitis B antibody titer.

This study thus proves that needle stick injury is a neglected topic in this part of the world. Therefore practicing dentists should be constantly sent reminders about prevention and measures to be taken after the injury.

DISCUSSION

The incidence of NSIs in this study was 58.8%, which when compared with other countries like in France it was 24%,⁹ in USA it was 30–33%,^{10,11} in UK it was 12–33%¹² and in Singapore it was 35%.¹³

Although blood contacts with skin and mucous membranes may be reduced through use of traditional barriers, such as gloves which reduces the inoculum of blood when the needle pass through glove, these barriers are not effective in preventing injuries with sharp instruments. Like in our study, gloves were worn by 54.4% dental practitioners whereas, 38% were not wearing gloves at the time of injury.

Injuries in a dental college are due to many causes. Some are related, directly or indirectly to patient treatment. Others occur during preclinical laboratory exercise or in a dental laboratory. In our study 3.3% reported the cause to be poor disposal, individual carelessness in 31.66%, whereas 16.11% could not remember and there were 7.2% dental practitioners who stated there were some other causes of injury besides the ones mentioned above. The dental practitioners always carry this fear of contracting infections like HIV, HBV and HCV. The impact of NSI can be severe and carry a burden of insecurity of losing the career and sometimes life.¹⁴ This leads to underreporting of the injuries which is well documented in literature.¹⁵

Vaccination rates compared favorably with those seen in other studies (percent of vaccination). Previous investigation of NSIs among Australian medical and dental students showed their hepatitis B vaccination rates to be 98% and 95%, respectively.¹⁶ Whereas our study showed that 86.67% of operators were immunized. Such a result would be particularly desirable, as hepatitis B is one of the major infectious disease threats for health care workers. This study showed that 8.33% of operators were not immunized against HBV. This is a serious deficiency which need strict monitoring and reinforcement. These non-vaccinated students carry 6-30% risk of becoming infected with the blood borne virus due to NSI.¹⁷ This is evident from our data that 47.16% of the operators have had needle stick injury multiple times which increases their risk of infection by many folds.

The results of this study revealed that post-exposure management was completely inadequate. 92.77% of practitioners were aware of the NSI protocol, still 40% of them did not receive any medical attention after exposure. Majority of them did not get their or

patient's screening after injury. It is important that such protocol and post-exposure incident services be introduced to students at the time of their orientation before they begin their clinic experiences. Access to such programmes should be readily available and rapid so that the time between exposure and post-exposure prophylaxis is as short as possible.

The prevention of NSIs remains a key in minimizing the risk of transmission of blood-borne viral infections. To that end, there is a need to invest resources into educating students on the proper use of devices, focusing on administration of local anesthetic, recapping the needle, changing the anaesthetic carpule, proper disposal of sharp instruments and cleaning of instruments, as these factors contributed to a significant proportion of injuries among dental professionals in this study. These measures, if reinforced in dental school, will have a greater chance of being followed once the individual moves into private practice.

CONCLUSION

The results of this study indicates that dental students in Karachi have some knowledge of NSIs. Nevertheless majority of them failed to recognize appropriate management and reporting of such injuries, therefore, there is a need for improvements in the clinical training, in particular more instructional time devoted to prevention and management of NSIs. In addition, to education, competence based training should be considered. They should also be made aware of the current procedure and protocol and need support and counselling by their Awareness Control Department.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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A Non-Randomized Clinical Trial: Effect of Smoking on Isoniazid Metabolism by N-Acetyltransferase in Tuberculosis Patients

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ABSTRACT

Objectives: To find out effect of smoking on isoniazid metabolism in tuberculosis patients.

Study Design: Non-Randomized Clinical Trial study.

Place and Duration of Study: This study was conducted at the Gulab Devi Chest Hospital, Lahore from September to December 2016.

Materials and Methods: 40 volunteers were included in this study, who were equally divided in four groups as healthy smokers, healthy non smokers, tuberculosis smokers and tuberculosis non smokers. Collection of blood samples was done after three hours of isoniazid dose (300mg) after overnight fasting to avoid food interactions. Concentration of isoniazid and its metabolites were determined using gas chromatography mass spectrometry test.

Results: No statistically significant difference in isoniazid metabolites/isoniazid ratio was established (p value < 0.05). This shows that the metabolism of isoniazid by N-acetyltransferase-2 enzyme in healthy and tuberculosis patients remains same in smokers and non smokers.

Conclusions: This trial proved that metabolism of isoniazid by N-acetyltransferase-2 enzyme is independent of smoking. Isoniazid use should be encouraged and adherence should be made imperative in tuberculosis smoker patients for better outcome of tuberculosis treatment.

Key Words: Descriptive Tuberculosis, Smoking, Isoniazid, N-acetyltransferase-2.

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INTRODUCTION

Tuberculosis stands to be the commonest infection by incidence and mortality according to WHO global report 2014¹. TB is a disease that can be cured with ease. Worldwide 10.4 million new patients suffering from tuberculosis are reported annually². Burden of tuberculosis is majorly shared by developing countries with high prevalence in Asia, Pakistan ranking fifth in number³. This global disease has emerged as largest public health issue in our country as 350 people per 1 million population are having TB in Pakistan⁴. Smoking is becoming dilemma of present era affecting healthy and diseased. About one-fifth of the patients with TB, are smokers⁵. Smoking is more commonly seen in countries where tuberculosis prevalence is high⁶ and it is an independent risk factor for TB⁷.

Smoking has an adverse affect on TB treatment and can lead to the recurrence of TB infection⁸.

DOTS is recommended for tuberculosis treatment worldwide with Isoniazid as first line most widely used anti-tuberculosis drug⁹. According to the treatment guidelines available, duration of treatment for active disease is 6 months and for latent disease is 12 months¹⁰. Isoniazid, rifampicin, pyrazinamide and ethambutol constitute initial phase of treatment, with isoniazid and rifampicin, being the two main drugs, used in continuation phase¹¹. Isoniazid is degraded by N Acetyltransferase-2 enzyme¹². Likewise caffeine and aryl amines in tobacco smoke are also metabolized by NAT-2 enzyme¹³. Many drugs like antipsychotics, anti-platelets, oral contraceptive pills, beta-blockers and benzodiazepines are having effect on their metabolism by the chemicals in smoke through various pharmacokinetic and pharmacodynamic drug interactions^{14,15}.

Pakistan has increasing burden of tuberculosis patients, with smoking trends increasing day by day. Many patients spotted with tuberculosis fail to quit smoking, although getting anti-tuberculosis drug treatment including isoniazid. Since number of drug interactions are reported with smoke chemicals and also isoniazid and caffeine along with aryl amines in tobacco smoke are metabolised by same NAT 2 enzyme, we conducted

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our study to find out the impact of smoking on isoniazid metabolism.

MATERIALS AND METHODS

A cross sectional survey was carried out to identify the prescription pattern of isoniazid amongst tuberculosis patients and detailed history about their smoking habits was taken, to proceed for a clinical trial to find out the effect of smoking on isoniazid metabolism for duration of three months (Sept to Dec 2016) in Gulab Devi Hospital Lahore. Approval for this study was granted by Ethical Review Committee. Sample size of 40 individuals included the volunteers who agreed to undergo this clinical trial at that point in time. Four groups labelled as A, B, C and D were formulated, each containing 10 volunteers. Group A consisted of healthy male non smokers and group B consisted of healthy smokers. Non smoker 10 male tuberculosis patients were the part of group C while 10 male smoker tuberculosis patients were the part of group D. Ethnically all volunteers were from Punjab District of Pakistan. Consent from all volunteers was taken on consent forms. Volunteers with overnight fast were administered with 300 mg oral dose of isoniazid, ensuring next three hours of fasting to avoid occurrence of food interactions. Cubital vein of forearm was

selected as a site to collect 4ml heparinized blood using aseptic techniques three hours after drug administration. Analysis of the concentrations of INH, N-acetyl hydrazine and diacetylhydrazine was done in the blood samples withdrawn from the volunteers using Gas chromatography mass spectrometry technique. The ratios of acetylhydrazine and diacetylhydrazine to isoniazid were detected in all four groups. Collected data was then entered and analysed using SPSS version 17. Descriptive statistics (mean) were used to present the results and independent sample t-test applied to compare them.

RESULTS

No statistical significant difference is found in the ratios of acetylhydrazine to isoniazid in healthy smokers and non-smokers (p value 0.50) (Table 1). Similarly no difference is present in the ratios of diacetylhydrazine to isoniazid in healthy smokers and non smoker patients, as evident from p-value of 0.64 (Table 2). Comparison of means of acetylhydrazine/INH ratios in tuberculosis smoker and non-smoker patients was also non significant, with p-value of 0.52 (Table 3). Means of diacetylhydrazine/INH ratios when compared, showed no difference with p-value of 0.51 (Table 4).

Table No.1: Difference between means of acetylhydrazine/INH ratio in healthy smokers and non smokers (n=20)

		Independent sample t-test								
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI (keeping 5% margin of error)	
									Lower	Upper
NS	With equal variances supposed	5.4	.032	6.38	18	0.50	0.0	0.13	-0.19	0.37
	Without Equal variances supposed			6.68	16.3	0.50	0.09	0.13	-0.19	0.37

Table No.2: Comparison of means of diacetylhydrazine/INH ratios in healthy smokers and non-smokers (n=20)

		Independent sample student t-test for Means								
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Confidence Interval of the Difference at 5% margin of error	
									Lower	Upper
Sample	With Equal variances supposed	.005	0.94	0.48	18	0.64	.06	0.14	-0.23	0.36
	Without Equal variances supposed			0.48	17.9	0.64	.07	0.14	-0.23	0.36

Table No.3: Comparison of means of acetylhydrazine/INH ratios in tuberculosis smoker and non smoker (n=20)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Confidence Interval of the Difference at 5% margin of error	
									Lower	Upper
Sample	With Equal variances supposed	.509	0.49	-0.7	18	0.52	-0.08	0.13	-0.35	0.18
	Without Equal variances supposed			-0.7	17.8	0.52	-0.08	0.13	-0.35	0.18

Table No.4: Comparison of means of diacetylhydrazine/INH ratios in tuberculous smokers and non smoker (n=20)

		Independent sample test for Means								
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Confidence Interval of the Difference at 5% margin of error	
									Lower	Upper
Sample	With Equal variances supposed	0.15	0.71	-0.7	18	0.51	-0.11	0.17	-0.5	0.24
	Without Equal variances supposed			-0.67	17.9	0.51	-0.11	0.17	-0.5	0.24

DISCUSSION

Our findings suggest that statistically smoking has no remarkable effect on metabolism of isoniazid by NAT-2 enzyme. This study was a clinical trial to find out the effect of smoking on metabolism of isoniazid among smokers and non-smokers tuberculosis patients. Isoniazid though being the main stay of treatment in initial and continuation phase of anti-tuberculosis treatment, was not studied earlier for the effect of smoking on its metabolism. In this study, we identified the ratios of isoniazid metabolites (acetylhydrazine and diacetylhydrazine) to Isoniazid in smoker and non-smoker healthy and tuberculosis patients and compared them using independent sample t test, to assess the effect of smoking on isoniazid metabolism. On analysis it was found with statistical significance that isoniazid metabolism remains independent of smoking in healthy and tuberculosis patients.

Many studies show clinically significant interactions with various drugs like caffeine clopidogrel, clozapine and theophylline with smoking inducing CYP1A2 enzyme¹⁶. Murphy et al studied effect of smoking on caffeine which showed noteworthy effect on caffeine pharmacokinetics¹⁷. In 2010, Jae Kean Ryu study showed increase in clopidogrel efficacy because of

cigarette smoking¹⁸. Previous studies are available, presenting relationship between isoniazid metabolism and NAT2¹⁹ enzyme and NAT 2 genotypes with smoking²⁰, but to best of our knowledge, no study is available which aims to establish the relation of smoking with isoniazid metabolism by NAT 2. These studies support the point that smoking interferes with drug metabolism, but our study proposed that metabolism of isoniazid is independent of smoking.

Many organizations including The International Union Against Tuberculosis and Lung Disease and The European Respiratory Society along with WHO, are putting their efforts to address the increasing burden of tuberculosis with reference to smoking and to help TB patients quit smoking²¹. Despite the relentless efforts, both by health education and pharmacological interventions, no effective outcome is witnessed in decreasing the magnitude of smoking in general population as well as in tuberculosis patients. Even those who try to quit, need longer durations and remarkable conditioning, which is practically not easy because long term behavioral change and interventions are required. So smoking tends to remain achilles heel in tuberculosis patients. This study is in strong favour of isoniazid use in both smoker and non-smoker tuberculosis patients. Other studies have concluded

,that smoking is linked with tuberculosis treatment failure²². In this trial, we tried to study one of the mechanisms, which might be responsible for poor response of isoniazid in tuberculosis smokers during treatment, which proved no difference in metabolism of isoniazid by NAT-2 enzyme in both healthy and diseased smokers and non-smokers. This study suggests, more probing is required to recognize the responsible mechanisms for treatment failures in smokers.

Limitations to our study is small sample size, which could not be increased because of less number of people, both healthy and diseased, volunteering to be the part of the study.

CONCLUSION

Adherence to isoniazid, as the main stay of anti-tuberculosis treatment, should be encouraged in all tuberculosis patients irrespective of their smoking habits. More probing is required to identify other potential mechanisms for the interaction of smoking with anti-tuberculosis drugs to improve the treatment outcomes.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Ameliorative Role of Jamul (*Syzygiumcumini*) against Chromium Induced Histopathological Reproductive Anomalies

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ABSTRACT

Objectives: Heavy metals are global environmental pollutants and one of them chromium (Cr); frequently used in Pakistani traditional sweets without medical authentications; may induce reproductive anomalies.

Study Design: Observational Study.

Place and Duration of Study: That study was conducted at the Medicine Deptt Sh. Zayed Hospital, Lahore and Department of Biology, Punjab University Lahore from Oct-2016 to Dec-2016.

Materials and Methods: A randomized study was conducted on 30 male mice (*Musmusculus*), maintained for 15 days as, G-1 (C) control, G-2 (Cr)K₂Cr₂O₇ (50ppm for 10 days ad-libitum) and G-3 (Cr-J) as G-2 but received Jamul (*Syzygiumcumini*) fruit pulp extract (JFE) 0.2ml/12h for next 5 days (oral gavage). At 16th days, animals were sacrificed and testes were processed for micrometrical and histopathological study.

Results: Cr exposure significantly ($p \leq 0.001$) reduced testicular weight, produce necrotic changes in seminiferous tubules (ST) along with vacuolization. The CSA of ST was increased while Spermatogonia and spermatozoa were decreased. There were apoptotic and exfoliated cells while some ST showed desquamation and multinucleated giant cells. The parrot beak headed (PBH) spermatozoa were common in testicular smear of Cr group.

Conclusions: Histopathological examination of the specimens showed Cr compounds are highly toxic, while JFE ameliorate toxicities by inhibiting oxidative stress and metal chelating ability.

Key words: necrotic, apoptotic, exfoliated, desquamation, chromium.

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INTRODUCTION

Pakistan is rich in medicinally important flora; about 600-700 plants species have metal chelating properties with potential health implications than synthetic drugs¹. Natural antioxidants have more ameliorative abilities against the histopathologies of toxicants² dietary intake of Cr in U.S. was 50µg/d, Food and Nutrition Board recommendation is 20-25µg/d (females) and 30-35µg/d (male) for humans³. Cr boost the sexuality, muscular performance and working capabilities but Gunton⁴ claim that Cr supplementation does not positively improve the glucose tolerance and insulin sensitivity.

Beaumont⁵ notice the cancer mortality due to presence of hexavalent chromium (Cr⁺⁶) in drinking water in China. The environmental pollutants are the causative agents of oxidative stress and their main targeting is central nervous and reproductive systems. Exposure to free heavy metal ions and radicals produced from the industrial effluents damage and reduce antioxidant melatonin activities in testes⁶. Cr⁺⁶ are more toxic than Cr⁺³, because of reducibility properties of Cr⁺⁶ to Cr⁺³ in cells. Their serial conversion becomes cytotoxic, genotoxic and carcinogenic. Oral administration of Cr⁺⁶ affect lipid peroxidation within membranous organelles especially mitochondria to release cytochromes⁷. K₂Cr₂O₇ exposures inhibit the function of polymerase during replication and DNA repairing processes. Lipid peroxidation and oxidative stress inhibit the proliferation of cell and accumulate the cell in G₂ phase of mitosis further it may initiate apoptosis, shrinkage and cellular injuries⁸.

Oxidative anomalies are regulated by p53 and tyrosine kinase; which regulate testosterone. Multinucleate formations of young spermatids in rat testes results from a failure of intercellular bridges during spermiogenesis⁹. Temporary ligation of the testicular artery cause the formation of multinucleated spermatogenic cells involves karyokinesis devoid of

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cytokinesis which degenerate and germ-cell loss at spermatocyte stage¹⁰.

Medicinal plants contain carotenoids, vitamin C, anthocyanin and polyphenols which diffuse into blood and enhance the anti-oxidative activities to reestablish the cellular capacity, prevent leakage of cytochromes and restored the mitochondrial membranes¹¹. Plant steroids are recommended as dietary modifiers of serum lipids; analogous to human cholesterol. Vit-C attenuates $K_2Cr_2O_7$ induced nephrotoxicity and alterations in renal brush border membrane enzymes while Vit-E maintains a balance in metal ions during exposure to heavy metals¹².

Syzygium cumini also known as Jamun or Jambul, contain ellagic acids, β -sitosterol, vit-C, gallic acid, anthocyanins and malvidin-diglucosides used as anti-hyperglycemic^{13,14}.

Cr is toxicant to humans in Pakistan where contaminated sewage water used for cultivation so it was decided mammalian model mice should be allowed to consume Cr in drinking water, and their rehabilitation should be studied by cheapest local fruit Jamul.

MATERIALS AND METHODS

Thirty male albino mice (25-30g) were maintained under controlled conditions with free water access and standard diet, equally divided as G1:C; control, G2: -Cr; 50ppm $K_2Cr_2O_7$ for 10 days in drinking water and withdrawal for 5 days, G3: Cr-J; as G2 but given JFE by gavage (0.2 ml/12h) for next 5 days. Animals were sacrificed at 16th day by cervical dislocation and testes were HE-stained and micrometry as protocols¹⁵. The results were expressed as mean \pm SD and evaluated by ANOVA/Duncan's multiple comparison tests.

RESULTS

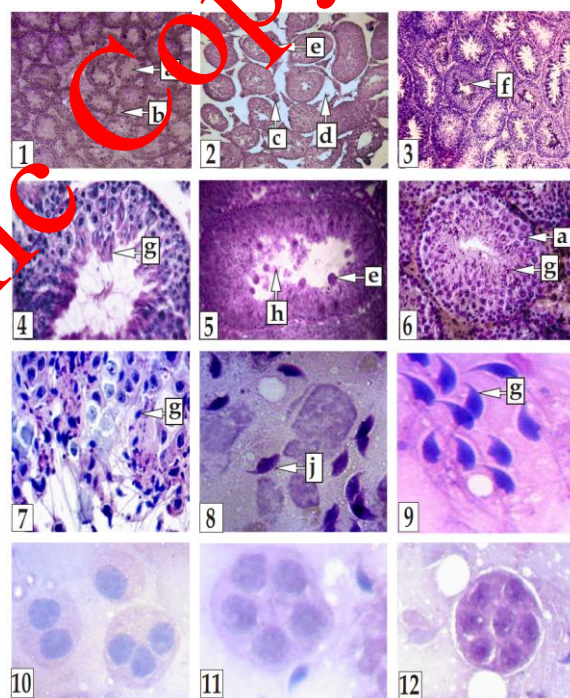
Histological and Morphometric analysis:

Testes histological sections in control group specify clear boundary of ST. Spermatogonia and spermatocytes are regularly distributed in whirls and inner most area filled with spermatozoa; heads and prominent tail were visible (Fig: 1, 4, 7). Cr exposure cause ST epithelium disruption, marked reduction in spermatozoa, dilatation of intercellular spaces, detachment of Sertoli cells, necrotic Leydig cells (Fig: 1, 2, 4, 5). ST showed cytoplasmic vacuolation of atrophied Sertoli cells, shrinkage and pyknotic nuclei of spermatogonia and primary spermatocytes (Fig: 2-c).

There were prominent apoptotic and exfoliated cells in Cr group (Fig: 5-e,h), while some ST showed desquamation and destruction of nuclei with multinucleated giant cells (Fig: 11,12). Spermatids losing their location and attachment oriented in different directions between the spermatogenetic cells along with tail-less sperm (Fig: 8-j). Cellular debris fill ST lumen with reduction of germinal lineage and dilated basement membrane (Fig.

2, 5-h). JFE ameliorate the histopathological alterations of Cr exposure with signs of restoration and rejuvenation. Spermatogonia, spermatocytes and spermatids were increased, interstitial tissues rearrange and re-establish the intertubular junctions as evidenced by normal spermatozoa in testicular smear (Fig: 9, 3-f, 6-a,g).

Highest mean CSA of ST at 100 \times , mean number of Spermatogonia/area ($264\mu^2$) at 400 \times , highest mean PBH/area, mean attached and dislocated Spermatozoa with tail length, middle piece thickness was recorded. Cr group have majority of tail-less heads of PBH, large number of spermatozoa and head of sperm were more elongated. Significant reduction of Spermatogonia and enrichment of undifferentiated dislodged spermatozoa were observed. Primary spermatocytes, PBH spermatozoa, CSA of PBH head, PBH tail length, attached embedded were decreased, but CSA, PBH middle piece thickness and testicular weight were increased Cr group (Table 1).



Figures: ST-mice testes (100x, 400x, 1000x, 1000x+oil emulsion). 1, 4; Control, 2, 5; Cr-treated, 3, 6; Cr-J, 7, 10; Testicular-smear of Control, 8; smear Cr-treated, 9; smear Cr-J, 11, 12; multinucleated spermatocytes Cr-treated. a; ST, b; interstitial space, c; Leydig's cell, d; interstitial tissue, e; apoptosis, f; spermatozoa, g; PBH- tail, h; debris, j; tail-less sperm head.

DISCUSSION

Environmental chemicals exposure in the induction of various diseases is significant¹⁶. Heavy metal concerning to reproductive toxicity in male is one of the areas of current issue and reproductive changes are

under the impact of neurotransmitters while Cr^{+6} interact and interrupt the feedback interaction. That study probes the effects of Cr (50ppm) on male mice, instead of 100ppm in drinking water accordingly Holstein and Eckmann¹⁷.

Table No. 1: Histomorphometry, Body and Testicular Weight of Mice

Parameters	Groups		
	C	Cr	Cr-J
CSA of ST (μ^2)**	27183.49±478.04 ^a	29974.05±2373.01 ^b	25702.75±633.91 ^a
*Spermatogonia/area **	65.55±5.31 ^a	30.67±3.51 ^b	49.97±7.81 ^c
*Primary spermatocytes/area***	75.94±7.56 ^a	25.05±2.78 ^b	47.36±5.68 ^c
*PBH-spermatozoa/area**	51.26±5.87 ^a	20.55±4.12 ^b	22.81±0.38 ^b
*PBH CSA head (μ^2)**	14.31±0.63 ^a	8.31±0.65 ^b	13.76±1.92 ^a
PBH tail length (μ)	85.57±10.69 ^a	76.81±11.89 ^a	86.69±2.45 ^a
*PBH Middle piece. DM (μ)**	0.09±0.56 ^a	0.56±0.97 ^b	0.93±0.14 ^a
*Attached spermatozoa/area***	72.25±3.39 ^a	14.09±6.54 ^b	23.45±2.69 ^c
*Dislodged spermatozoa/area**	3.00±1.78 ^a	44.37±12.70 ^b	3.15±1.89 ^a
Mice Weight(g)**	27.99±0.39 ^a	22.78±1.70 ^b	26.99±0.33 ^a
Testicular Weight(g)**	0.07±0.29 ^b	0.08±0.49 ^b	0.04±0.80 ^a

C: Control. Cr: Chromium Exposure, Cr-J: Chromium-JFE. CSA (μ^2) of ST at 100 \times .

a, b, c, d. Duncan's Multiple Range-post hoc analysis. * Relative Abundance per /264 μ^2 at 400 \times . Means \pm SEM, n=10, μ = μm , *: $p \leq 0.05$ -0.01, **: $p \leq 0.001$, ***: $p \leq 0.0001$, ANOVA: two factors without replication.

Cr^{+6} damage testes by two ways: one mediated by apoptosis and other by necrosis of Leydig cells like cadmium¹⁸. The energy deficiency due to sugar unavailability during metabolism and destruction of mitochondria in Cr^{+6} exposure groups cause the diminution of germinal epithelium and elevate desquamation. Sertoli cells necrosis leading to the supplanting spermatogenic cells, indicate the sign of oxidative stress. The tight junctions of Sertoli cells may temporarily open to permit the passage of spermatogenic cells. Sertoli cells are responsible to bind testosterone to androgen receptor and activate the spermatogenesis along with regulation of apoptosis. The loss of interstitial cells brings about the permanent loss of androgenic steroids; affects spermatogenesis and spermiogenesis. Cr exposure (2mg/kg-15days) led to

Cr accrual, leakage of Sertoli-cell junctions, with cytoplasmic vacuolations and mitochondrial deteriorations.

Abnormal sperm heads, tail-less spermatozoa, and extricate appearance indicate the possible distortions at androgen receptor during terminal differentiation and annihilation of Sertoli cells¹⁹. Normal rodent sperm contain one or more apical regular symmetrical hooks²⁰ and significant abnormality in sperm head were more recurrently in Cr^{+6} exposure animals, than control, specify possible alteration to the spermatogenic process. Analysis at micrometric level of spermatozoa specified the alterations in CSA, thickness of mid-piece, length of the tail and loss of polymerization of micro-tubular array into sperm microtubules indicate the mark of Cr^{+6} toxicities. There is damage to endothelial cells of capillaries and Leydig cells at intertubular spaces of ST, which revealed damaged blood vessels and degeneration of Leydig cells. Spermatocytes appeared to be arrested necrotic spermatocytes and germ cell shedding as debris in ST lumen accordingly²¹.

Multinucleated cells indicate impaired spermatogenesis, spermatocytes and spermatid giant cells with oligozoospermia, due to defects of intercellular bridges, germ cell degeneration and absence of G₁ and S phases or may be associated with spermatogonial stem cell apoptosis⁸. Anabolic androgenic steroids can be adapted and ameliorated by drugs and pharmacological plants products. These findings are accordingly Abdalla et al.,²³ who observed *Syzygium cumini* have **antagonistic behavior** against methylmercury induced systemic toxicity. The JFE has been found convincingly addressed the histopathological and micrometric derangement of Cr^{+6} exposures. The above mention results strongly support the use of JFE upon the pathological manifestation of environment toxicants mainly heavy metals and most specifically of Cr^{+6} exposures as immense mitigating potential due to anthocyanin, β -sitosterol and α -tocopherol. Vit-E is lipid-soluble antioxidant molecules and interjects the chain reactions of lipid peroxidation and cause the augmentation of free radical scavenging activity. JFE as blue-green algae normalized the ST and testicular weight, moderately improved the sperm head CSA and increased the length of sperm tails²⁴. Debris from ST lumen and interstitial portion removed, spermatogonia redevelop and significantly elevate the normal spermatozoa which indicate the ameliorative actions of JFE.

CSA of ST normalized specifies the ameliorative effect against testis impairments and this may be arbitrated by its potent antioxidant activities. The development of spermatozoa tail in spermatids depends upon signals provided by Sertoli cells, may activated by the JFE pharmacological components. The rehabilitated Sertoli cell keeps the spermatozoa till the completion of normal

spermiogenesis. JFE administration showed a remarkable protective effect in all aspects as evident from significant recovery from histological alterations and has ability to inhibit ROS by preventing testicular tissue peroxidation. JFE protect the Sertoli cells by stimulating Leydig cells to produce testosterone. Antioxidants in JFE work against metals and ultimately remove toxicities by diminishing their oxidative flux as efficient metal chelators and apoptosis preventing abilities. Syzygium cumini like L-carnitine capsule contain anthocyanins which can boost metabolism without any alteration in cecal microbial composition and not destroying the intestinal microbiota; essential for rehabilitation²⁵

CONCLUSION

The modern allopathic medicines have limited therapeutic options and have less successful results due to their side effects while pure herbal compounds are harmless and must be used as an alternative way to cure diseases.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Zinc Deficiency in Exclusively Breast Fed Infants Presenting in a Tertiary Care Hospital in Bahawalpur; Pakistan

Muhammad Ishtiaq, Muhammad Akhtar and Waseem Sajjad

ABSTRACT

Objective: To assesses the frequency of zinc deficiency in exclusively breast feeding infants presenting at a tertiary care hospital.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Pediatric Unit 1, BV Hospital Bahawalpur from June 2016 to September 2016.

Materials and Methods: The patients were selected by non - probability continuous sampling technique in this study. After the approval of ethical committee of hospital informed consent in the form of written was taken from the parents of infants. The demographic data, the person name, age, birth gestational age, weight were noted. Blood samples were taken from each baby and sent to a hospital laboratory to assess serum zinc level. The data was classified as gender, weight and socioeconomic status. The chi-square test was used to compare the zinc deficiency between the stratified groups. P value ≤ 0.05 was considered statistically significant.

Results: In 35% patients zinc deficiency was observed. The 42 males and 46 females were observed with zinc deficiency in our study. A statistically significant difference between sex and zinc deficiency was observed, with p value of 0.0014. With respect to weight, 166 cases were observed with weight less than 7 kg, out of which 55 were with zinc deficiency. 84 children were with weight more than 7 Kg, out of which 28 were with zinc deficiency. A statistically insignificant difference between body weight and zinc deficiency was observed, with a p value of 0.974. The 24 children have higher socioeconomic status, and 5 of them have zinc deficiency in their bodies. Out of 148 cases with lower socioeconomic status 61 cases of zinc deficiency. 19 cases of middle class group had zinc deficiency. Statistically, there is a significant difference between socioeconomic status and zinc deficiency and p value is 0.141.

Conclusion: In this study, the prevalence of zinc deficiency in breastfeeding infants was 33%. Gender and socioeconomic status are important determinants of zinc deficiency.

Key Words: Zinc deficiency; Exclusive breastfeeding; low birth weight

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INTRODUCTION

Zinc is an important mineral that involve in many functions for energy and metabolism. One of its important role is to support the body's immune system.¹ Zinc included in the essential protein and functional structure of the active domain of the enzyme. Zinc plays an important role in many biochemical pathways and affects many organ systems, including the skin, gastrointestinal tract, central nervous system, bone, reproductive and immune systems even mild to moderate zinc deficiency can damage the function of the immune system because T lymphocytes cannot show sufficient effectiveness².

Zinc deficiency is due to reduced human dietary intake, lack of absorption, increased loss or increased use of zinc.³

The lack of zinc has many manifestations, the most common of which is the increase in the frequency of diarrhea, pneumonia and malaria.⁴ The incidence of global zinc deficiency is estimated to be as high as 20.5% -62.6%. Zinc deficiency leads to poor immunity, delayed wound healing and nervous system impairment. Preterm infants may have lower level of zinc, so they are more susceptible to infection.⁵ There is a fear that six months of exclusive breastfeeding could lead to infant iron and zinc deficiency. Exclusive breastfeeding has a lot of beneficial effects on infant health and is recommended to feed infants in the first six months of life until the age of the average intake of breast milk is sufficient to meet the energy and protein needs. The zinc content in breast milk is generally considered sufficient to meet the demand for most six-months-old babies. However, this fact has not been well investigated, and zinc stock may be damaged at birth, such as births of low birth weight, lack of Zinc stores.⁶

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Zinc deficiency in 31.6% of exclusive breastfeeding infants, while another report showed that breast-fed infants had a zinc content of 88.4%.⁷

The aim of this study was to assess zinc deficiency in infants who provided exclusive breastfeeding presenting at a tertiary care hospital. Since the controversial results of 31.6% to 88.4% of zinc deficiency have been observed, there is no evidence is available on local size, and on this basis we can know the extent of the problem. This will help to update the local guidelines and may improve clinical practice.

MATERIALS AND METHODS

This cross sectional study was conducted at pediatric unit of BV hospital Bahawalpur, from June 2016 to September 2016. In this study two hundred infants were included who met the inclusion criteria. The patients were selected by non - probability continuous sampling technique in this study.

Healthy infants of six months (+/- 10 days) born at full term i.e 37 weeks of gestational age who were exclusively on breastfeeding came for routine follow-up or vaccination were included. Infants born with poor weight (less than 2.5 kg), severe malnutrition (height body weight less than 2SD) and non-exclusive breastfed infants were excluded from the study.

After the approval of ethical committee of hospital informed consent in the form of written was taken from the parents of the infant. The demographic data, the person's name, age, birth gestational age, weight and were noted. Blood samples were taken from each baby and sent to a hospital laboratory to assess serum zinc level. The data were classified as gender, weight and socioeconomic status.

All the information was expressed in the form of special design. Data was entered and analyzed by SPSS V.20. The mean and standard deviation of quantitative variables such as age, body weight and serum zinc level were calculated. We also calculated the frequency and percentage of qualitative variables for gender and zinc deficiency. The chi-square test was used to compare the zinc deficiency between the stratified groups. P value \leq 0.05 was considered statistically significant.

RESULTS

Total 250 patients were observed. The ratio of male to female was 1.5:1, the 66% were males and 34% were females. The mean gestational age of the patients was 39.53 +/- 1.20 weeks; the minimum age was 38 weeks while the maximum age was 41 weeks. The mean body weight of the patients was 7.25+/- 1.4Kg. The mean zinc value was 13.31+/- 7.37ug / dl., and the minimum & maximum values for zinc were 4 μ g / dl and 88 μ g / dl, respectively.

The 23 (9.5%) had higher socioeconomic status, 148 (59%) had lower socioeconomic status & 78 (31.5%) from middle class (Table 1). In 35% of patients we

observed zinc deficiency (Figure 1). The 42 male patients and 46 females were observed with zinc deficiency in our study. A statistically significant difference between sex and zinc deficiency was observed, with a p value of 0.0014 (Table 2).

With respect to weight, 166 cases were observed with weigh less than 7 kg, out of which 55 were zinc with deficiency. 84 children were with weight more than 7 Kg, out of which 28 had zinc deficiency. A statistically insignificant difference between body weight and zinc deficiency was observed, with a p value of 0.974 (Table 3)

Table No. 1: Frequency Distribution according to Socio Economic Status

Socio-economic Status	Frequency	Percentage
High Class	23	9.5
Middle Class	78	31.5
Low Class	148	59

Table No.2: Comparison of Zinc Deficiency in both genders

Zinc Deficiency	Male	Female	Total	P Value
Yes	42	38	80	0.0014
No	124	46	170	
Total	166	84	250	

Table No.3: Comparison Zinc deficiency according to Body Weight

Zinc Deficiency	Birth Weight		Total	P Value
	< 7 Kg	\geq 7 Kg		
Yes	55	28	83	0.974
No	111	56	167	
Total	166	84	250	

Table No.4: Comparison Zinc deficiency in different socioeconomic status

Zinc Deficiency	Socioeconomic Status			Total	P Value
	Low	Middle	High		
Yes	61	19	5	85	0.141
No	87	59	19	165	
Total	148	78	24	250	

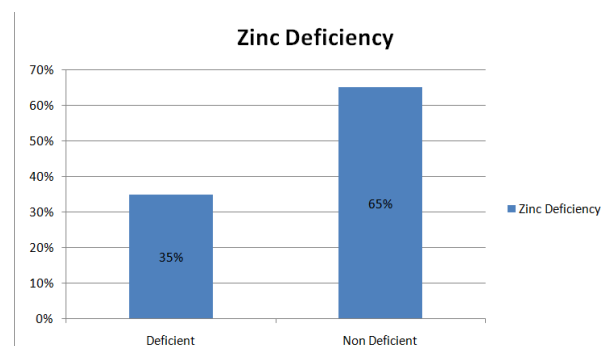


Figure No.1: Frequency of Zinc Deficiency

The 24 children have higher socioeconomic status, and 5 of them had zinc deficiency in their bodies. Out of 148 cases with lower socioeconomic status 61 cases of zinc deficiency. 19 cases of middle class group had zinc deficiency. Statistically, there is a significant difference between socioeconomic status and zinc deficiency and p value is 0.141 (Table 4).

DISCUSSION

When the demand for zinc exceeds than supply, deficiency of zinc will occur in children. Malnutrition, premature delivery, total parenteral nutrition (TPN) & burns may lead to increased demand for zinc. Malabsorption syndrome can lead to a reduction in the supply of zinc to the children^{8,9}.

This study was conducted to assess the frequency of zinc deficiency in breastfeeding infants visiting a tertiary care hospital. Many European countries adopted WHO recommendations during exclusive breastfeeding, initially six months. While other countries suggest free feeding between 4 and 6 months.¹⁰ According to the results of this study, the prevalence of zinc deficiency in exclusively breastfed infants was 35%. Most of the patients in our study (59%) were belonging to low socioeconomic status. The average zinc value was 13.31 / -7.37ug / dl. The results showed that gender and socioeconomic status were significantly different with zinc deficiency; p values were 0.014 and 0.141, respectively.

A study showed that the prevalence of global zinc deficiency was estimated 31% & ranging from 4% - 73%. The prevalence of zinc deficiency in the United States and Europe was low (4% - 6%). South Africa and Central Africa (37-62%), North Africa and Eastern Mediterranean (25-52%), South Asia and Southeast Asia (34-73%) found a high incidence. According to the study, 31.6% of Exclusive breastfeeding infants had zinc deficiency.

The authors concluded that the prevalence of zinc deficiency infant in this population was high and require a strategy to prevent from deficiency. Another study reported that zinc deficiency was 88.4% in infants who were exclusively on breastfeeding. A study was conducted by Wessels et al.¹¹ showed that about 37.3% of the global population had a risk of insufficient zinc intake. The prevalence of zinc intake was ranging from 7.5% in high-income areas to 30% in South Asia. In the region, zinc intake in individual countries is estimated to be unequal. Southeast Asia, sub-Saharan Africa and Central America have the greatest risk insufficient zinc intake.

In low and middle income countries, the average incidence of child growth retardation for children less than 5 years of age between 2003 and 2007 was 30.3%.¹² Although the broad consensus is that zinc deficiency is common in the world, the actual prevalence is not known. According to WHO, about

800,000 deaths each year from zinc deficiency, with more than 50% being infants and children under five years of age. In some cases, a general estimate of the prevalence rate has been reported that was 20%^{13,14}. According to the national food balance sheet, similar global zinc intake was observed

CONCLUSION

In this study, the prevalence of zinc deficiency in breastfeeding infants was 33%. Gender and socioeconomic status are important determinants of zinc deficiency. Those babies who are exclusively on breastfeeding and from high-risk groups must be provided with zinc supplements.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Clinical and Demographical Profile of Patients Suffering from Adhesive Capsulitis

Muhammad Usman Anjum¹, Adil Umar Durrani², Khurram Nadeem⁴ and Arshad Wahab Shah³

ABSTRACT

Objective: To study the clinical and epidemiological characteristics of patients presenting with adhesive capsulitis,

Study Design: Observational / descriptive study,

Place and Duration of Study: This study was conducted at the Shahina Jamil Teaching Hospital, Abbottabad from January to December, 2016,

Materials and Methods: All patients with both genders, between 20-60 years of age and suffering from adhesive capsulitis were included in the study. Frozen shoulder was diagnosed on the basis of history, physical examination and a normal radiograph by an experienced clinician. Patients with local chronic disease or infection .e.g. osteoporosis, osteomyelitis, local skin infection or malignancy or history of trauma or abnormal radiograph were excluded from the study.

Results: There were 158 patients in this study. Out of 158 patients, 51.27 % were female and 48.73 % were males showing higher preponderance of female gender. Majority of patients, 57 (36.07%), were between the ages of 41-50 years followed by 53 patients, (33.54%), in the age group of 51-60 years. Collectively 69.61 % of patients of adhesive capsulitis were between the age of 41 to 60 years showing its higher predilection for older age groups. Their mean pain score was 9.82. Regarding the duration of the disease, most of the patients, 76 (48.10%), had their disease started in less than six months while 68 patients, (43.04%), had their disease for 7-9 months.

Conclusion: Adhesive capsulitis is a clinical condition which predominantly affects females. Diabetic patients have higher risk of this condition. This is a gradually progressive condition in which initially there is pain followed by stiffness and restriction of movements of affected joint and then, resolution. Prompt diagnosis and treatment is of paramount importance in the management of this condition.

Key Words: adhesive capsulitis, frozen shoulder

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INTRODUCTION

Adhesive capsulitis, also known as frozen shoulder, is a common orthopedic condition which is associated with substantial morbidity and hence, impairs the quality of life.¹ This condition primarily affects women and those between 40 to 60 years of age while peak age is 56 years.^{2,3} The overall prevalence among general population is 2-5%.⁴ Pain and stiffness in affected shoulder gravely hampers with the daily activities which in turn impairs quality of life as well as seriously affects the productivity because of absence from work.⁵ The condition may affect single shoulder followed by other a few years later or it can affect both shoulders simultaneously.⁶

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There is a strong association between adhesive capsulitis and some clinical conditions .e.g. diabetes mellitus, rheumatic and heart diseases and its prevalence among diabetic patients is believed to be as high as 11-30%.⁵

Adhesive capsulitis could be primary or secondary. Primary frozen shoulder is believed to be idiopathic in origin, does not have any identifiable cause, no history of trauma and normal radiological examination.⁷ Secondary frozen shoulder is usually associated with other conditions, chiefly with history of trauma or surgery and this has believed to have poorer prognosis.^{1,3} This condition begins with a painful phase where the pain increases with movement and affects patient's sleep followed by a stiff phase where movements get restricted. Then there is a final recovery phase where movements and function of affected joint is restored.^{8,9} It is believed that the initial synovial inflammatory reaction is responsible for causing pain and is followed by a fibrotic reaction which restricts movements at the joint.^{1,3}

Data in this area is scarce in our area. Therefore, we have performed this study to determine the clinical and demographical characteristics of the patients who were suffering from adhesive capsulitis.

MATERIALS AND METHODS

This descriptive study was conducted in Shahina Jamil Teaching Hospital, Abbottabad, from January to December, 2016. It was a purposive non probability sampling. All patients with both genders, between 20-60 years of age and suffering from adhesive capsulitis were included in the study. Frozen shoulder was diagnosed on the basis of history, physical examination and a normal radiograph by an experienced clinician. Patients with local chronic disease or infection e.g. osteoporosis, osteomyelitis, local skin infection or malignancy or history of trauma or abnormal radiograph were excluded from the study. Data was recorded in a pre-structured performa. Data was entered, organized and analyzed using Statistical Package for Social Sciences (SPSS version 21).

RESULTS

There were 158 patients in this study. Demographic and epidemiological characteristics of the study participants were given in Table 1. Out of 158 patients, 51.27 % were female and 48.73 % were males showing higher preponderance of female gender. Majority of patients, 57 (36.07%), were between the ages of 41-50 years followed by 53 patients, (33.54%), in the age group of 51-60 years.

Table No.1: Demographic and clinical profile of study participants, (n = 158)

Gender wise distribution:		
Gender	Number	Percentage
Female	81	51.27%
Male	77	48.73%
Total	158	100%
Age-wise distribution:		
Age	Number	Percentage
20-30 years	9	5.69%
31-40 years	39	24.68%
41-50 years	57	36.07%
51-60 years	53	33.54%
Total	158	100%
Duration of adhesive capsulitis:		
Months	Number	Percentage
4-6 months	76	48.10 %
7-9 months	68	43.04 %
10-12 months	14	8.86 %
Total	158	100%
Mean duration of adhesive capsulitis, (months):		6.83 ± 1.97
Pain scores:		
Mean ± S.D	9.82 ± 4.46	

Collectively, 69.61 % of patients of adhesive capsulitis were between the ages of 41 to 60 years showing its higher predilection for older age groups. Their mean pain score was 9.82. Regarding the duration of the

disease, most of the patients, 76 (48.10%), have their disease started in less than six months while 68 patients, (43.04%), had their disease for 7-9 months while mean duration of disease was 6.83 ± 1.97 .

DISCUSSION

Frozen shoulder is a common clinical condition which preferentially affects middle aged women. It is characterized by an initial painful phase which is followed by a progressive fibrotic reaction leading to reduced movements in the affected shoulder joint. Some clinical conditions especially diabetes significantly increases the life-time risk of developing this condition.¹⁰ It seriously hampers the daily activities of the patient affecting their daily routine. It is diagnosed clinically and shoulder radiography helps in its diagnosis.^{11, 12}

Our study has shown that majority of our study population composed of female patients, 51.27 %. This finding corroborated with other studies. Sharma et al reported that majority of their study participants were females, 58%, with mean age of 53 years.⁵ Similarly, there was a preponderance of female gender in a study conducted by Bidwai et al.⁴ Cho et al have also reported that 58% of their study population composed of females in their Korean subjects.⁷ Most of our patients, 36.07%, were between the ages of 41-50 years followed by 33.54% in the age group of 51-60 years. Collectively, 69.61 % of patients of adhesive capsulitis were between the ages of 41 to 60 years showing its higher predilection for these age groups. Cho et al have also showed that majority of their Korean patients, 43%, were between 50-60 years of age while 21.2% were between 40-50 years of age. Collectively, 64% of patients were between 40-60 years of age.⁷

Mean pain score was 9.82 ± 4.46 in our study while it was reported to be 3 (IQ range 1-5) by Bidwai et al.⁴ Regarding the duration of the disease, most of the patients, 48.10%, had their disease started in less than six months while 43.04% had their disease for 7-9 months. The mean duration of disease was 6.83 ± 1.97 months in our study. This was similar to what Sharma et al have reported in their study. According to them, median duration of disease was 7 months.⁵ Similarly, according to Cho et al, the mean duration of disease was 8.9 months in Korean patients.⁷

CONCLUSION

Adhesive capsulitis is a clinical condition which predominantly affects females. Diabetic patients have higher risk of this condition. This is a gradually progressive condition in which initially there is pain followed by stiffness and restriction of movements of affected joint and then, resolution. Prompt diagnosis and treatment is of paramount importance in the management of this condition.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Effect of Quinolones on Sperm Count and Motility in Male Albino Rats

Quinolones on Sperm Count and Motility

Rubina Iqbal¹, Muhammad Zahid² and Saud Iqbal³

ABSTRACT

Objective: To determine the effects of quinolones on sperm count and motility in male albino rats.

Study Design: Experimental study

Place and Duration of Study: This study was conducted at the Pharmacology Department of Post Graduate Medical Institute, Lahore for the total duration of 84 days from May 2011 to July 2011.

Materials and Methods: Eighty male albino rats were randomly divided into A, B, C and D groups each group having 20 albino rats. These groups were further subdivided into A1, A2, B1, B2, C1, C2, D1 and D2 having 10 albino rats in each group. Ciprofloxacin, ofloxacin and enoxacin dissolved in distilled water were given at 135mg/kg/day, 72mg/kg/day and 12.5mg/kg/day to groups A, B & C respectively for 12 weeks. Distilled water was given to group D being a control group for the same time period. The animals in subgroups A1, B1, C1 and D1 were sacrificed on 42nd day and samples were taken from epididymus. The caudal epididymus was dissected out and very small incision was made in the caudal epididymus. Seminal fluid was then squeezed on to the microscope slide. Epididymal sperms were assessed by calculating motile spermatozoa per unit area and expressed as percent motility. Epididymal sperm count were made by using haemocytometer and were expressed as million per ml of suspension. Rats in subgroup A2, B2, C2 and D2 were kept alive till 84th day after stopping drugs at 42nd day to find out if there was any reversible change in sperm count and motility after discontinuation of the treatment.

Results: Significant decrease in sperm count motility was observed as compared to the Control group. It was further noted that the values did not return back to normal even after the discontinuation of the treatment.

Conclusion: Quinolones reduce sperm count and motility and should be used carefully for long term therapy.

Key Words: Fluoroquinolones, seminal fluid, sperm count, epididymus

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INTRODUCTION

Infertility affects approximately 15% of couples of reproductive age, and with nearly half of these cases resulting from male factor infertility this area of research is of great interest to both physicians and research scientists¹.

There are variety of prescription medications that can lead to male infertility, often temporary but sometimes permanently. These medications include, antidepressants, antihypertensives, H₂ receptor antagonists, disease modifying anti rheumatoid drugs, anti-cancer drugs and antibiotics. The antibiotics are often prescribed to deal with a variety of bacterial infections, often they are only taken for short period of time. Adverse effects on fertility are reversed after

discontinuing the medication. Some of the antibiotics may be prescribed for longer time period which are suspected to interfere with the male fertility. These include nitrofurantoin, aminoglycosides, minocycline, macrolides, sulfasalazine, and quinolones².

The fluoroquinolones are synthetic broad spectrum antimicrobial agents which are effective orally for a wide variety of infectious diseases. They are very potent agents having bactericidal activity against E. coli, and different species of Neisseria, Enterobacter, Shigella, Campylobacter and Salmonella. Several new quinolones have activity against anaerobic bacteria³. The fluoroquinolones are very frequently prescribed for many clinical conditions. They have broad spectrum of antimicrobial activity and are considerably more potent for the infections of urinary tract⁴. They are effectively used for prostatitis caused by sensitive bacteria and in sexually transmitted diseases like gonorrhoea. Ciprofloxacin, ofloxacin and enoxacin cure most of the patients with typhoid or enteric fever that is caused by Salmonella typhi. They are also used in respiratory tract, bone, joint and soft tissue infections. These may be used as part of multiple drug regimens for the treatment of multiple drug resistant tuberculosis and atypical mycobacterial infections⁵.

The rate of multiplication of germ cells is very high that makes the reproductive system very sensitive to the toxic chemicals. Chemotherapy causes toxic effects on

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male gonad^{6,7}. The toxic effects on reproductive system causes genetic damages which can be transferred from one generation to another. Keeping in view the mentioned facts it is very important to consider these genotoxic and cytotoxic effects of different agents⁸. It is noticed from previous years that there is marked decline in male fertility. Misuse of important drugs like antibiotics is one of the factors that caused this decrease in male fertility, such as ciprofloxacin, ofloxacin and enoxacin which come under the heading of fluoroquinolones⁹. Thus; in this study effects of ciprofloxacin, ofloxacin and enoxacin on sperm count and motility were evaluated.

MATERIALS AND METHODS

For the total duration of 84 days. Eighty male Albino rats, 7 weeks of age, weighing between 200-300 grams each were obtained from University of Veterinary and Animal Sciences Lahore. Ethical approval for animal study was taken from Ethical Committee of Post Graduate Medical Institute, Lahore. Animals were randomly divided into A, B, C and D groups having twenty albino rats each. These groups were further subdivided into A1, A2, B1, B2, C1, C2, D1 and D2 having 10 albino rats each in each group. Ciprofloxacin, ofloxacin and enoxacin dissolved in distilled water were given at doses of 135mg/kg/day, 72mg/kg/day and 12.5mg/kg/day to groups A, B & C respectively for 12 weeks. Group D served as control and was given 0.5ml distilled water orally for the same time period. Ciprofloxacin tablet of 500mg was dissolved in 5ml of distilled water. So, one ml contained 100mg of ciprofloxacin. Insulin syringe was used which has 100 sub divisions per ml and each sub division of 0.01 ml contained 1mg of ciprofloxacin. Then dosage for each albino rat was calculated according to the body weight according and given orally:

$$\text{e.g.} \quad \frac{135}{1000} \times X \times \text{b.w}$$

Ofloxacin tablet of 400mg was dissolved in 4ml of distilled water so one ml contained 100mg of ofloxacin. Then dosage for each albino rat was calculated according to the weight as follows and given orally:

$$\text{i.e.} \quad \frac{72}{1000} \times X \times \text{b.w}$$

Enoxacin tablet of 400mg dissolved in 4ml of distilled water so one ml contained 100mg of enoxacin. Then dosage for each albino rat was calculated according to the weight as follows and given orally:

$$\text{i.e.} \quad \frac{12.5}{1000} \times X \times \text{b.w}$$

Standard doses were used as calculated by the above mentioned formulae. Standard doses are converted into mg/kg to adjust the dose according to the weights of the

animals. The animals in subgroups A1, B1, C1 and D1 were sacrificed on 42nd day and samples were taken from epididymus. The caudal epididymus was dissected out. Very small incision was made in the caudal epididymus. Seminal fluid was then squeezed on to the microscope slide. Epididymal sperms were assessed by calculating motile spermatozoa per unit area and expressed as percent motility where as sperms were counted were by using haemocytometer and expressed as million per ml of suspension. Rats in subgroup A2, B2, C2 and D2 were kept alive till 84th day after stopping drugs at 42nd day to find out if there was any reversible change in sperm count and motility after discontinuation of the treatment. The tests were carried out in the Pharmacology Department of Post Graduate Medical Institute, Lahore. Statistical analysis was done by using SPSS version 16. ANOVA was used to compare the sperm count and motility in different groups and P value <0.05 was taken as significant.

RESULTS

The number of sperm (10×6) in group A1 was 27.50 ± 4.90 , in A2 was 30.24 ± 7.746 , in B1 was 24.24 ± 3.24 , in B2 was 26.05 ± 5.58 , in C1 was 27.37 ± 6.31 , in C2 was 26.96 ± 6.05 , in D1 was 56.70 ± 9.56 , in D2 was 56.68 ± 11.83 . The average number of sperm (10×6) in control group was higher as compared to experimental groups sacrificed at 42nd and 84th day, p-value < 0.05. The pairs experimental vs control i.e A1 vs. D1, A1 vs. D2, A2 vs. D1, A2 vs. D2, B1 vs. D1, B1 vs. D2, B2 vs. D1, B2 vs. D2, C1 vs. D1, C1 vs. D2, C2 vs. D1, and C2 vs. D2 were statistically significant while the rest of the pairs were insignificant.

The motility in A1 was $32.51 \pm 3.70\%$, in A2 was $31.67 \pm 7.93\%$, in B1 was 24.46 ± 4.71 , in B2 was 23.84 ± 4.60 , in C1 was 27.40 ± 7.00 , in C2 was 25.25 ± 3.78 , where as in control sub groups, in D1 was 54.68 ± 4.78 and in D2 was 51.81 ± 8.83 . So, the mean motility was statistically higher in control group as compared to experimental groups sacrificed at 42nd and 84th day, p-value < 0.05. The pairs A1 vs. A2, A1 vs. C1, A2 vs. C1, B1 vs. B2, B1 vs. C1, B1 vs. C2, B2 vs. C1, B2 vs. C2, C1 vs. C2, and D1 vs. D2 were statistically insignificant while all other pairs were significant in this study.

DISCUSSION

The fluoroquinolones are synthetic broad spectrum antimicrobial agents which are effective for a wide variety of infectious diseases. The therapeutic and adverse effects of fluoroquinolones have been well documented. However, the result of our experimental study revealed that prolonged administration of therapeutic doses of fluoroquinolones such as ciprofloxacin, ofloxacin and enoxacin promoted reproductive toxicity in rats. The reduction in sperm count and motility are the evidence for this toxicity.

It was seen by wait et al. (1989) that fluoroquinolone such as ciprofloxacin causing inhibition of oxidative drug metabolism has no anti-steroidogenesis effects¹⁰. Our study is congruent with the study of Zobeiri et al (2013) who proved that long time Ciprofloxacin administration in mice caused major alterations in Germinal Epithelium (GE) intracytoplasmic biochemistry leading to loss of physiological function and ultimately result in fertility problems. Ciprofloxacin is able to imbalance serum levels of gonadotropins and testosterone levels by affecting Leydig cells¹¹. Khaki et al (2009) showed that Ofloxacin caused negative effects on testis architecture and germinal cells damages in rats, that can ultimately lead to infertility¹². In a study male patients when given 250mg ciprofloxacin twice daily did not show difference in sperm quality and was without effect on spermatogenesis¹³. Our study is again in accordance with the study of King et al who proved that at pharmacologic concentration, ciprofloxacin adversely affected human sperm motility in vitro¹⁴.

It has been reported that decrease in sperm count and motility are valid indices of male infertility. It is also stated that the disruption of seminiferous epithelium is indicative of male reproductive hazard. Therefore our experimental results suggest a gonadotoxic potential of fluoroquinolones. One of the reason for this toxicity could be explained on the basis that fluoroquinolones interfere with the energy production process required for sperm vitality and motility¹⁵. A study conducted by Demir et al., (2007) had shown similar results that ciprofloxacin treatment for 10 days in rats resulted in marked reduction in sperm count and motility¹⁶. Nagai A et al (2002) have also reported that two weeks treatment with enoxacin is sufficient to detect toxic effects on reproductive organs in rats¹⁷. In another study showed that ofloxacin at a dose of 70 mg /kg per day had almost the highest potential in terms of impairment of the rat testicular function¹⁸.

The present study indicated that administration of fluoroquinolone for 42 consecutive days resulted in marked reduction in sperm count and motility as compared to respective control group ($P < 0.001$) which is significant. Effect on sperm count was equal in all the experimental groups while ciprofloxacin caused the least reduction in spermatozoa motility. This is in agreement with that of Abdullrah et al and Khaki et al^{19,20} who reported that ciprofloxacin administration for 15 days and 60 days respectively in rats caused a marked reduction in sperm counts and motility and it is seen that these changes, persist as such even after 42 days of withdrawal of drugs having P value < 0.001 which is significant. These findings are in consistent with the current study.

It is evident that even after discontinuation of the drugs after 42nd day of treatment the sperm count and motility

did not return back to the normal levels. This seems to be due to necrosis of the interstitial leydig cells^{21, 22}.

CONCLUSION

The present study concludes that the use of quinolones results in reduction of sperm count and motility; however, more research work is required to find out the toxicity and exact mechanism operating at cellular level which suppresses the synthesis of sperms. This study however adds concern to the widespread and indiscriminate use of fluoroquinolones and recommends that these drugs should be used with great caution.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Effect of Parental Physical and Psychological Aggression on Academic Achievement of Secondary School Students

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ABSTRACT

Objective: The current study was conducted to explore the different forms of Parental Aggression and its impact on Academic Achievement of secondary school students.

Study Design: Observation / description study.

Place and Duration of Study: This study was conducted at the high schools at secondary level in three districts viz. Abbotabad, Haripur, and Mansehra of Hazara Div., Khyber Pakhtunkhwa, Pakistan from Oct. 2013 to March 2014.

Materials and Methods: This study included 1438 of secondary school students. The data was collected through a pre-formed questionnaire to probe aggressiveness of parents towards their children. Data was analyzed using Mean, Standard Deviation, and multiple regression model. SPSS 20 version was used for the purpose of analysis. After establishing the validity of the research instrument through expert opinion, a pilot study conducted on 100 students. It established the reliability of the instrument.

Results: Results of the study indicated high mean level of physical aggression (3.96 ± 1.23) and psychological aggression (3.79 ± 1.08). Further, parental physical aggression has significant negative effect on academic achievement of students followed by the significant negative effect of parental psychological aggression on academic achievement of students at secondary level. Furthermore, academic achievement of male students was significantly hampered by both parental physical and psychological aggression while the academic achievement of female students significantly negatively predicted by psychological aggression of parents only.

Conclusion: Both physical and aggression employed by parents on their children significantly hampers their academic achievement.

Key Words: Academic Achievement, Physical Aggression, Psychological Aggression.

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INTRODUCTION

It is a universal fact and a vast collection of research findings that a quality home environment is decisive for the development of the individual. Home environment determines the multitude of meanings from personal identity point of view along with designating a dwelling¹. One aspect of developing the personal identity is determined by parental disciplinary practices. Among the research conducted on the parental practices specifically from disciplinary method point of view, parental aggression has remained the most controversial topic². Questions have been mostly raised about either positive or negative effects of parental aggression in the form of corporal punishment³. Some of the professional argue that corporal punishment is imperative and considered as "sometimes necessary" as 90% of the parents use it sometimes to regulate the behavior of their children⁴.

While others opine that both physical and psychological aggression have their damaging effects if they rise beyond control⁵. They can cause long term as well as short term effects such as depression, aggression and academic achievement⁶. The other aspect of parental practice is psychological.

Psychological aggression is "a communication intended to cause the child to experience psychological pain. Emotional abuse, verbal/ symbolic aggression, emotional maltreatment, psychological maltreatment, is the terms interchangeably used for psychological aggression⁷. This communicative act may be active or passive or verbal or nonverbal" e.g., name calling or nasty remarks, smashing something like door. This type of practice encompasses the techniques which interrupt the psychological world of the child by the use of verbal/symbolic or both types of aggression⁸ like humiliation, guilt induction, and love withdrawal for the purpose of obeying the desires. Such parental practices have predicted the internalizing problems like depression, anxiety, and loneliness as well as maladjustment in both childhood and adolescence⁸. Such internalizing problems like anxiety and maladjustment can cause aggressive behaviors within the family.

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These techniques equally affect their academic achievement. Students' academic achievement is negatively affected by many factors. Such factors include poverty, living in violent neighborhoods, deviant peers, lack of safe child recreational areas, and exposure to media violence, lack of social support, and bad parenting. Growing up in a culture of fear and hate, as in many ethnic minority communities around the world, may be the most extreme version of an aggression-fostering environment. Parents are often described as "controlling" or "authoritarian," are typically been found to predict poor academic achievement⁹. An extensive article review also 14 illustrates the relationship among parenting styles and adolescent school achievement. Harsh parenting such children cannot concentrate on their studies which in turn lead to poor school performances and bad results¹⁰. An investigation examining family conflict as a major risk factor for poor academic performance among first year indicate that higher family conflict prior to college enrollment was related to lower first-semester GPA¹¹.

Very few studies have been conducted on effects of parental aggression in Pakistan because conducting research on this issue is considered prohibited due to which such cases go unreported¹². For example, on the basis of parental report indicated that 42.30% of the children have conduct problems¹³. While the existence of emotional and behavioral problems were reported to be 34.4% among children and teachers placed 34.8% of the children in "abnormal" category¹⁴. But very recently Senate's functional committee on human rights adopted the Criminal Law (Amendment Bill), 2015 for the purpose of protection of children¹⁵.

On the basis of the available literature the current study was conducted to explore the parental aggression towards their children and their consequent impact on academic achievement at secondary level.

Although protection of children from Physical aggression and psychological aggression (Psychological abuse) is included in child's protection rights, it is still considered less serious as compared to sexual abuse. Since parental psychological abuse has become a global concern due to its long lasting effects on healthy development of adolescents including their academic performance, it is essential to provide reliable information about the effect of parental aggression on academic achievement of their children at secondary level. This research is expected to highlight the intensity of parental Aggression on their children and its effect on academic achievement. The results of this research will highlight the unreported as well as suspected parental aggressive behaviors and their effects on academic achievement of children at secondary level.

MATERIALS AND METHODS

This survey study was conducted in Abbotabad, Haripur, and Mansehra Districts of Hazara Division. Detail of the research is given in the paragraphs.

Sample of the study: This research endeavor consisted of 1438 students from grade 10 selected from District Abbotabad, Haripur, and Mansehra of Hazara Division. Of these selected students, Public sector represented 50.4% whereas private sector representation was 49.6%. 50.1 percent were from rural area and 49.1% were from urban area. Female students constituted 50.4% of the sample while male students were 49.6%. Science students were 74% of the sample and 26% were selected from Arts group.

Procedure: Schools were randomly selected from Hazara Division, Khyber Pakhtunkhwa, Pakistan and data was collected through personal visits to the selected schools. After permission of school principals, the students were randomly selected the required data was collected. Anonymity and confidentiality was ensured to the respondents. The questionnaire was given to the participants after detailed verbal instruction. The researcher was available during the whole data collection time for the purpose of clarification and answering any question of the participants. The completion of self administered questionnaire took about 20 minutes.

Measures: A questionnaire comprised of 10 items that assessed the prevalence of parental aggression was developed as a result of review of related literature and validated as a result of expert opinion. The first four items were related to Physical Aggression, while final six items were related to Psychological Aggression of parents. The Cronbach Alpha reliability of Physical Aggression was ($\alpha = 0.86$) whereas the reliability for Psychological aggression was ($\alpha = 0.83$) respectively which was achieved as a result of pilot study conducted on 100 students. The overall Cronbach Alpha reliability of instrument as a whole was reported to be high ($\alpha = 0.937$). Respondents rated how often their family members repeated specific aggressive behaviors from 5 (never) to 1 (always). The lowest score represented highest aggressive behavior of family members.

RESULTS

To achieve the research objectives and answer to the questions, the collected information was screened to ensure the meeting of basic assumptions (like normality, homoscedasticity & linearity) of regression analysis before data analysis.

Table No.1: Description of the variables

	N	Mean	Std. Deviation
Physical Aggression	1438	3.96	1.23
Psychological Aggression	1438	3.79	1.08
Academic Achievement	1438	334.04	115.15

Table 1 highlights the mean and Standard Deviation scores of parental and psychological aggression towards their children. The mean scores indicate that secondary school students perceive their parents to be more

aggressive. These results highlight that children perceive that their parents show greater aggression in physical and psychological form. The mean and standard deviation scores of students indicate greater variability in their academic achievement.

Table No.2: Effect of parental Aggression on Academic Achievement of students

Model	Un-standardized Coefficients		Standardized Coefficients		T (sig.)	R ²	F value (α value)
	β	S. E	β				
Physical aggression	-12.792	2.446	-0.131		-5.00 (0.000)	0.017	25.00 (α= 0.000)
Psychological aggression	-11.882	2.80	-0.111		-2.47 (0.000)	0.012	18.28 (α= 0.000)
Dependent Variable: Academic Achievement							

Table 2 highlights that parental physical aggression causes 1.7% changes in the academic achievement of the students ($R^2=0.017$). The model is statistically good ($F=25.00$ and $Sig.=0.000$) at 0.05 level of significance. β value with -12.792 for physical aggression indicates that one unit increase in parental physical aggression brings 12.79 units significant decrease in academic achievement ($t=-5.00$, $\alpha=0.000$).

Table No.3: Effect of Physical Aggression on Academic Achievement of Male and Female Students

Model		Un-standardized Coefficients		Standardized Coefficients		T (sig.)	R ²	F value (α value)
		β	S. E	β				
Male	Physical aggression	-22.97	6.91	-0.24		-3.32 (0.000)	0.02	5.43 (α= 0.000)
	Psychological aggression	-15.95	9.61	-0.17		-1.26 (0.024)	0.012	18.28 (α= 0.000)
Female	Physical aggression	-8.37	7.37	-0.084		-1.12 (0.26)	0.023	8.58 (α= 0.000)
	Psychological aggression	-23.52	11.79	-0.203		-1.99 (0.04)	0.012	18.03 (α= 0.000)
Dependent Variable : Academic Achievement								

Table 2 highlights that parental psychological aggression causes 1.2% changes in the academic achievement of the students ($R^2=0.012$). The model is statistically good ($F=18.28$ and $Sig.=0.000$) at 0.05 level of significance. β value with -11.882 for psychological aggression indicates that one unit increase in parental psychological aggression brings 11.88 units significant decrease in academic achievement ($t=-2.47$, $\alpha=0.000$). As highlighted in table 3, parental physical aggression causes 2.2% of the

changes in academic achievement of male students ($R^2=0.022$) with statistically fit model ($F=5.43$, $\alpha=0.000$) at 0.05 level of significance. β value with -22.97 for physical aggression indicates that one unit increase in parental physical aggression brings 22.97 units significant decrease in academic achievement ($t=-3.32$, $\alpha=0.000$) of male students. Additionally, table 3 indicates that parental psychological aggression causes 1.2% of the changes in academic achievement of male students ($R^2=0.012$) with statistically fit model ($F=18.28$, $\alpha=0.000$) at 0.05 level of significance. β value with -15.95 for psychological aggression indicates that one unit increase in parental psychological aggression brings 15.95 units significant decrease in academic achievement ($t=-2.26$, $\alpha=0.000$) of male students.

As highlighted in table 3, parental physical aggression causes 2.3% of the changes in academic achievement of female students ($R^2=0.023$) with statistically fit model ($F=8.58$, $\alpha=0.000$) at 0.05 level of significance. β value with -8.37 for physical aggression indicates that one unit increase in parental physical aggression brings 8.37 units significant decrease in academic achievement ($t=-1.12$, $\alpha=0.26$) of female students.

Additionally, table 3 indicates that parental psychological aggression causes 1.2% of the changes in academic achievement of female students ($R^2=0.012$) with statistically fit model ($F=18.03$, $\alpha=0.000$) at 0.05 level of significance. β value with -23.52 for psychological aggression indicates that one unit increase in parental psychological aggression brings 23.52 units significant decrease in academic achievement ($t=-1.99$, $\alpha=0.026$) of female students.

Therefore, Results of the study indicate that parental aggression (Physical and psychological) has significant negative effects on academic achievement of the male students while academic achievement of female students is only significantly affected by psychological aggression from parents.

DISCUSSION

This research is an attempt to highlight the extent to which parents use aggressive practices and their damaging effects to the academics of their children. Highlighting the results of this issue is even more important in developing countries like Pakistan as there is no awareness about the issue of ensuring protection of child's rights, lack of practice on mental health services, and recognizing the damaging effects of parental aggression. Results indicate that on the average parents use more aggressive behaviors while there is greater variation in the academic achievement scores of their children. These results are consistent with the results of Malik (2001) who state that parents usually use physical abuse as a common disciplinary method. The regression analysis predicted the negative effects of parental aggression on academic achievement in

students. Children, who are exposed to parental aggression such as corporal punishment, score low on IQ tests along with other cognitive ability tests (Klebnov, 2015). Furthermore, Allen (2008)¹⁶ explored that due to parental terrorizing behaviors towards their children may become prone to anxiety which imply poor academic achievement of their children.

CONCLUSION

The present study identified that severe parental aggression (both physical & Psychological aggression) was perceived to exist by their children at their home environment. Such harsh and aggressive parenting has vulnerable consequences in terms of their academic achievement. This hampering effect is more prominent in harming the academic achievement of male students both from psychological as well as physical point of view as compared to female students where female are only significantly affected by psychological aggression from parents.

The resultant situation is that students remain unable to concentrate on their studies which in turn lead to poor performance both for male and female students.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Association of Serum Electrolyte Derangements with Severity of Dehydration in Children with Acute Diarrhea

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ABSTRACT

Objectives: To see the association of serum electrolyte derangement with severity of dehydration.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at the Department of Peadiatric Medicine, Nishtar Medical College and Hospital, Multan from March 2016 to August 2016.

Materials and Methods: Consecutive 107 children with acute diarrhea having dehydration were included in this cross-sectional study. Serum sodium and potassium levels were analyzed to see their association with severity of dehydration by applying ANOVA test using SPSS – 20.

Results: Out of these 107 children having acute diarrhea, 59 (55.1%) were boys and 48 (44.9%) were girls and their mean age was noted to be 19.12 ± 8.89 months (range; 7 months to 36 months). Mean age of the boys was 15.29 ± 7.25 months while that of girls was 23.83 ± 8.49 months ($p=0.000$) and 58 (54.2%) were aged more than 1 year. Sixty five (60.7%) were from urban areas, 82 (76.6%) had poor background, 65 (60.7%) had history of stools less than 6 during last 24 hours. Mean duration of diarrhea was 5.13 ± 2.23 days and 44 (69.2%) presented with duration of less than one week of onset of the diarrhea. Fever was present in 65 (60.7%) and associated vomiting was present in 91 (85%) our study cases. Mean serum sodium level in our study was 133.65 ± 3.18 nmol/L while mean serum potassium level was 3.82 ± 0.625 nmol/L.

Conclusions: High frequencies of serum electrolyte derangement was noted in our study and this serum electrolyte derangement (hyponatremia and hypokalemia) was significantly associated with severity of the dehydration. Severity of dehydration is a predictor of hyponatremia and hypokalemia which ultimately lead to disease morbidity and mortality, hence these patients need to be monitored appropriately for better clinical outcomes.

Key Words: dehydration, hyponatremia, hypokalemia.

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INTRODUCTION

Worldwide diarrheal illnesses are responsible for 1 out of 9 deaths among children and is categorized as 2nd most common causes of death in pediatric population. It is estimated to cause approximately 800, 000 death every year in children under 5 years of age^{1,2}. Diarrhea itself accounts for approximately 4.1% of total global burden of all illnesses. Etiological agents may include many different kinds of viruses, different bacterial pathogens and some parasites as well³. Some of these culprits may include “rotavirus A, norovirus GI and GII, adenovirus, sapovirus, astrovirus, Salmonella, Campylobacter jejuni, Shigella spp. and enterotoxigenic Escherichia coli (ETEC)”^{4,5}.

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Global statistics from different parts of the world indicate that burden of these etiological agents vary with regards to demographic distribution, personal hygienic behaviors and social stratification among community. From available data from different countries like South Asian countries, Europe, Africa, Middle & far eastern nations, South Americal countries and USA have documented different variety of enteropathogens being reported in varying frequencies and patterns⁶⁻¹³.

In children having diarrhea, co – infection with many different kinds of pathogens is also common which leads to severe illness and adverse outcomes when compared with disease caused by a single pathogen^{14,15}.

Deaths due to diarrheal diseases may be due to immediate or long term complications of the illness¹⁶. The immediate complications may include electrolyte and/or fluid derangements which leads to imbalance in acid base equilibrium in body as extracellular fluid osmolality and volumes are controlled by sodium levels in body which has a key role in water and electrolyte balance in the bodies¹⁷. Hence such biochemical disturbances may lead to hyponatremia, isonatremia and even hypernatremia particularly among children

with dehydration while other biochemical derangements may also be noted such as hypokalemia and metabolic acidosis¹⁸⁻²⁰. Dehydration remains most common and more dangerous complication of acute diarrhea in children which is associated with significant morbidity and mortality in children having acute diarrhea so evaluation of these electrolyte parameters at presentation have significant impact on the treatment protocol as well as disease prognosis²¹.

This prospective study was done to determine the association of various grades of dehydration with serum electrolyte derangement and to relate them with severity of disease as there was no local data found on this topic.

MATERIALS AND METHODS

One hundred and seven children having acute diarrhea with different grades of dehydration were taken in this cross-sectional study. The parents of these children were asked for consent after briefing them objectives of this study. Diarrhea was defined as "Passage of more than three watery stools within 24 hours, for duration of less than 2 weeks". Dehydration was graded as mild, moderate and severe as per WHO criteria. It was defined as mild "if general condition is restless, eyes look normal, drinks normally and skin pinch goes back quickly", it was defined as moderate "if general conditions is restless and irritable, with sunken eyes, drinks eagerly and is thirsty and skin pinch goes back slowly" and it was graded as severe "If the child is lethargic or unconscious, having sunken eyes, drinks poorly or not able to drink and skin pinch goes back very slowly". The children with persistent or bloody diarrhea, having associated systematic illnesses and those who got relevant electrolyte therapy were excluded from this study. A questionnaire was used to record these findings. Data regarding child's age, gender, duration of illness, no. of stools passed in a day, fever, vomiting, severity of dehydration and serum electrolyte derangement was taken and was analyzed by SPSS – 20. ANOVA test was applied to see the association of serum electrolyte derangement with regards to the severity of the dehydration.

RESULTS

Out of these 107 children having acute diarrhea, 59 (55.1%) were boys and 48 (44.9%) were girls and their mean age was noted to be 19.12 ± 8.89 months (range; 7 months to 36 months). Mean age of the boys was 15.29 ± 7.25 months while that of girls was 23.83 ± 8.49 months ($p=0.000$) and 58 (54.2%) were aged more than 1 year. Sixty five (60.7%) were from urban areas, 82 (76.6%) had poor background, 65 (60.7%) had history of stools less than 6 during last 24 hours. Mean duration of diarrhea was 5.13 ± 2.23 days and 74 (69.2%) presented with duration of less than one week of onset of the diarrhea. Fever was present in 65

(60.7%) and associated vomiting was present in 91 (85%) our study cases. Mean serum sodium level in our study was 133.65 ± 3.18 nmol/L while mean serum potassium level was 3.82 ± 0.625 nmol/L.

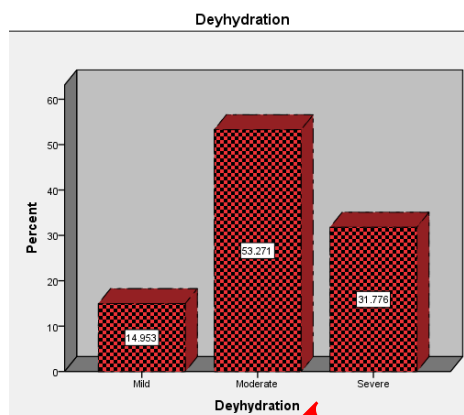


Figure No. 1: Various grades of dehydration.

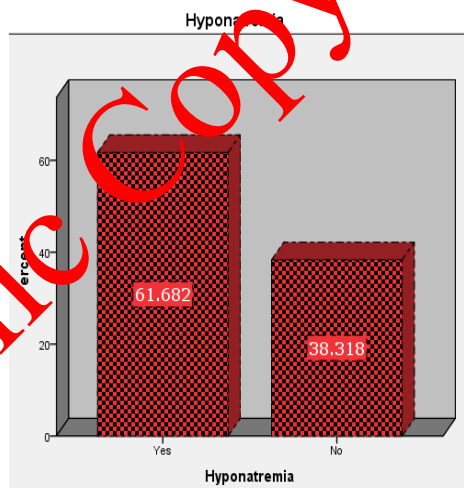


Figure No. 2: Hyponatremia in study cases.

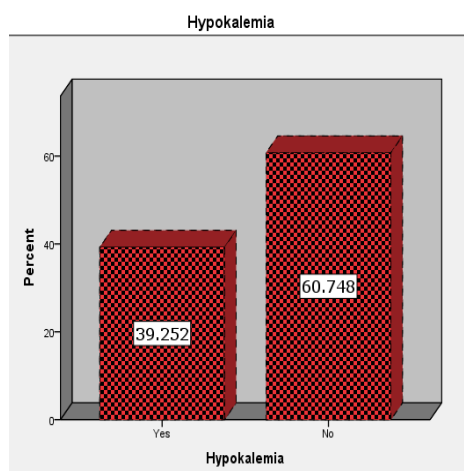


Figure No. 3: Hypokalemia in study cases.

Distribution of different study parameters with regards to severity of dehydration is given in table – 1.

Table No. 1: Distribution of various parameters with severity of dehydration.

Parameter		Mild	Moderate	Severe	P value
Gender	Male	00	49	10	0.001
	Female	16	08	24	
Disease duration	1 week	16	32	26	0.002
	>1 week	00	25	08	
Fever	Yes	16	24	25	0.001
	No	00	33	09	
Vomiting	Yes	08	49	34	0.001
	No	08	08	00	
Hyponatremia	Yes	00	32	34	0.001
	No	16	25	00	
Hypokalemia	Yes	00	08	34	0.001
	No	16	49	00	

Table No. 2: Analysis of variance (ANOVA) of serum electrolyte levels in different grads of dehydration.

Serum Electrolytes	Mild	Moderate	Severe	P value
Serum Sodium level (In nmol/L)	137.5±0.51	134.59±2.26	130.26±1.79	0.001
Serum Potassium level (In nmol/L)	4.40±0.206	4.08±0.50	3.12±0.08	0.001

DISCUSSION

Out of these 107 children having acute diarrhea, 56 (55.1%) were boys and 48 (44.9%) were girls and their mean age was noted to be 19.12 ± 8.89 months (range 7 months to 36 months). A study conducted by Bilal et al²² from Rawalpindi also reported similar results with 61 % children with acute diarrhea were boys, which is similar to our results. Okposio et al²³ from Nigeria has also reported similar results with more boys than girls as there were 57 % boys, similar to our findings. Rocha et al²⁴ from Brazil also reported male gender predominance with 53 % boys which is close to our findings. Mean age of the boys was 15.29 ± 7.25 months while that of girls was 23.83 ± 8.49 months ($p=0.000$) and 58 (54.2%) were aged more than 1 year. Bilal et al²² from Rawalpindi 1.9 ± 1.4 years mean age of the children with acute diarrhea which is close to our results. Okposio et al²³ from Nigeria has also reported 14.6 ± 10.5 months mean age in children with acute diarrhea which is close to our results. Rocha et al²⁴ from Brazil also reported 16.5 ± 17.8 months mean age which is close to our findings.

Sixty five (60.7%) were from urban areas, 82 (76.6%) had poor background, 65 (60.7%) had history of stools less than 6 during last 24 hours. Okposio et al²³ from Nigeria has also reported 70.3 % children with acute diarrhea had history of stools less than 6 during last 24 hours which is same as our study results. Rocha et al²⁴ from Brazil also reported 32.3% children with diarrhea

presented with history of more than 5 stools within 24 hours which is similar to our study results.

Mean duration of diarrhea was 5.13 ± 2.23 days and 74 (69.2%) presented with duration of less than one week of onset of the diarrhea. Bilal et al²² from Rawalpindi has also reported 3.2 ± 1.7 days mean duration of diarrhea which is close to our results. Okposio et al²³ from Nigeria has also reported similar results.

Fever was present in 65 (60.7%) and associated vomiting was present in 91 (85%) our study cases. Okposio et al²³ from Nigeria has also reported fever in 58.9 % children with acute diarrhea while vomiting in 83.8 % which is same as that of our study results. Rocha et al²⁴ from Brazil also reported fever in 63.8 % while vomiting was present in 88.7 % children with diarrhea which is close to our study results.

Mean serum sodium level in our study was 133.65 ± 3.18 nmol/L and hyponatremia was present in 61.6 % our study cases. while mean serum potassium level was 3.82 ± 0.625 nmol/L and hypokalemia was present in 42 (39.3%) our study cases. Bilal et al²² from Rawalpindi has also reported 52.5 % hyponatremia and 55 % hypokalemia hence indicating majority of patients having serum electrolyte derangement which is in compliance with our findings. Okposio et al²³ from Nigeria has also reported 60.5% hyponatremia while hypokalemia was present in 35.1 % which is same as that of our study results.

Dehydration was mild in 14.9 %, moderate in 53.27 % and severe in 31.8 % our study cases. In our study, ANOVA revealed that there was significant association between severity of dehydration and serum electrolyte derangement ($p = 0.001$). Okposio et al²³ from Nigeria has also reported mild dehydration in 22.2%, moderate in 61.6% and severe in 16.2 % which is similar to our study results. Okposio et al²³ from Nigeria has also observed increasing serum electrolyte derangement with increasing severity of the dehydration which is similar to our study results.

CONCLUSION

High frequencies of serum electrolyte derangement was noted in our study and this serum electrolyte derangement (hyponatremia and hypokalemia) was significantly associated with severity of the dehydration. Severity of dehydration is a predictor of hyponatremia and hypokalemia which ultimately lead to disease morbidity and mortality, hence these patients need to be monitored appropriately for better clinical outcomes.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Association of Anti-Tissue Transglutaminase Antibodies with Intestinal Damage in Celiac Disease

Tayyaba Mubeen, Muhammad Aamir Adnan, Anam Bilal and Muhammad Sulaiman Saeed

ABSTRACT

Objective: To study the prevalence of celiac disease in different age groups ranging from 07 months-22 years in Multan and its periphery and the role of anti-tissue transglutaminase antibodies in the diagnosis of celiac disease.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Nishtar Medical College and Hospital Laboratory Multan from January 2016 to June 2016.

Materials and Methods: This study was conducted on 178 patients received at Nishtar medical unit III, both male and females, from the age group 07 months to 22 years with the suspicion of celiac disease (CD). All duodenal biopsy cases, in whom anti-tissue transglutaminase antibody test was conducted prior to duodenal biopsy, referred to Nishtar medical college and hospital laboratory Multan from the January 2016 to June 2016 were reviewed. All data was entered and analyzed by using statistical software SPSS version 23.1. Mean \pm SD calculated for numerical data and categorical data was presented as frequency and percentages. Chi square test was applied to see effect modification and p value ≤ 0.05 considered as significant.

Results: Out of 178 cases that had been reviewed, 96 (53.93%) cases fulfilled the diagnostic criteria of CD, 76 (42.70%) patients had non specific enteritis and duodenitis and 6 (3.37%) patients were suggested a repeat biopsy as celiac disease could not be ruled out. Out of these 96 cases, 35 (36.46%) had infiltrative hyperplastic stage marsh type 2 on histopathology, 34 (35.42%) had 3a type and 27 (28.12%) had 3b type according to Marsh criteria. Out of these 96 patients, 49 (51%) had positive anti-tissue transglutaminase IgA antibodies. 24 (48.98%) patients who had high titers ranging from >60 - >800 fell under 3b Marsh Type, 16 (32.65%) patients had titers ranging from >25 -300 had Marsh Type 3a, 09 (18.37%) patients had titers ranging from >10 -40 had Type 2 on histopathology.

Conclusion: Celiac disease may present at any age but predominantly in young age groups. Celiac disease is not a rare disease in Multan and its periphery. Duodenal biopsies play a significant role in diagnosis of CD as compared to serological tests. Anti TTG IgA is more sensitive and shows high titer only in severe cases of CD with Type 2 and above Marsh classification. However, Anti tissue transglutaminase IgG antibodies as compared to transglutaminase IgA didn't show any significant prevalence pattern.

Key Words: Celiac disease (CD), Anti-tissue transglutaminase (anti TTG), Gastroenterology, Marsh Classification.

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INTRODUCTION

Oslo's define celiac disease in 2013 as chronic small intestinal immune-mediated enteropathy precipitated by exposure to dietary gluten in genetically predisposed individuals¹. Celiac disease CD is known as condition of raised immune response of predisposed people to wheat products like barley, rye and oats². Patients of celiac disease have to use gluten free diet throughout his life and should avoid from products that leads to difficult recovery or delayed recovery to normal morphology³. Families of such patients should also aware of gluten free diet and effects of celiac disease..

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Among histological disorder of intestinal mucosa in response to gluten free diet are divided into three phases known as gluten sensitive spectrum. This gluten sensitive spectrum has been designed by Marsh III and these phases described as raised amount of lymphocytes infiltrate in region of lamina propria was labeled as Marsh I to hypertrophy of villus with hyperplasia Marsh IIc⁴. IgA anti-gliadin antibodies is a famous screening test for diagnosis of celiac disease and it can be measured via ELISA and EMA (anti-endomysium antibodies). These two markers estimated by measuring indirect immune fluorescence and measured a sensitivity and specificity range from 31% to 100% and 57% to 100% and from 85% to 100% and 95% to 100% for AGA and EMA, respectively.⁵⁻⁷ But results of many studies are not in favour of AGA and EMA and claimed poor efficacy and reliability in clinical side. So, some new and advance scoring and diagnostic tests required⁸⁻¹⁰.

In 2005 Dieterich et al.¹¹ reported that tissue transglutaminase enzyme is also a component of human

body and it can be located through ELISA. He also reported sensitivity 90% and specificity 90 to 92 %^{12, 13}. There is no study in favour of correlation evidence of this test (anti-tTG) and degree of damage but all above of this screening marker is a daily advised as a diagnostic investigation, since a lack correlation with slight histological damage may affect correct diagnosis. So, the aim of this study was to evaluate the prevalence of anti-tTG in different degrees of intestinal damage of celiac patients and whether there is a correlation between values of anti-tTG and increased degree of histological damage¹².

MATERIALS AND METHODS

We conducted a cross sectional study of 178 duodenal biopsy cases at Nishtar medical unit III, and reviewed at Nishtar medical college and hospital laboratory, Multan, from January 2016 to June 2016, those individuals in whom anti tissue transglutaminase antibody test was performed.

Anti-tissue transglutaminase antibody test was performed by ELISA method and samples were collected before performing duodenal biopsies. Anti-tissue transglutaminase antibody results were expressed in terms of titers by calculating observed values with cut off values. Cut off value was 10. All cases with results less than 10 were considered negative. And those with results more than 10 were considered positive. Upper gastrointestinal endoscopies were performed and multiple duodenal biopsies from distal part of duodenum were taken for confirmation of CD in all the cases reviewed. Histopathology results were expressed according to Marsh Classification criteria of CD.⁸ All data was entered and analyzed by using statistical software SPSS version 23.1. Mean \pm SD calculated for numerical data like age and categorical data was presented as frequency and percentages like ender and grade of Marsh classification. Chi square test was applied to see effect modification and p value \leq 0.05 considered as significant.

RESULTS

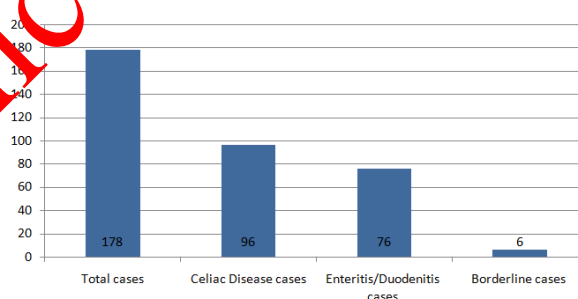
In our study, among the 178 cases, 96 (53.93%) were found to have celiac disease, 76 (42.70%) had nonspecific enteritis and duodenitis, while there were 6 patients who had mild focal increase in lymphocytes in sub epithelial region of their mucosa and increase anti tissue transglutaminase IgG level on ELISA who were suggested a repeat biopsy as CD could not be ruled out in those patients (graph-1).

Among the 96 cases who were found to have celiac disease, 57 (59.4%) were male patients and 39(40.6%) were female patients. Among different age groups ranging from 07 months to 22 years, children up to the age of 15 years were seemed to be more affected with CD. The mean age was found to be 5.5 ± 2.8 years.

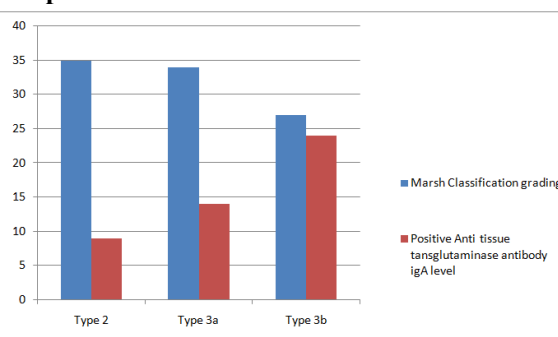
Out of these 96 CD cases, 35 (36.46%) had infiltrative hyperplastic stage Marsh Type 2 on histopathology, 34 (35.42%) had Marsh 3a Type and 27 (28.12%) had 3b Type according to Marsh criteria. Out of these 96 patients, 49 (51%) had positive anti tissue transglutaminase IgA antibodies, 24 (48.98%) patients who had high titers ranging from $>60 \rightarrow 800$ fell under 3b Marsh Type, 16(32.65%) patients had titers ranging from $>25 \rightarrow 300$ had Marsh Type 3a, 09(18.37%) patients had titers ranging from $>10 \rightarrow 40$ had Type 2 on histopathology (graph-2).

Out of the 178 patients who had anti TTG antibody ELISA test, 46 patients had positive anti tissue transglutaminase IgA level and these 49 were diagnosed as CD on duodenal biopsy and by giving a trial of gluten free diet, all these patients showed a reverse of their symptoms. 49(51%) out of 96 diagnosed cases of CD had positive anti-TTG IgA levels, while 57 patients showed a positive anti tissue transglutaminase IgG level. Out of these 57 cases, 39(68.43%) patients had villous atrophy on histopathology and they responded to a gluten free diet, while 16(28.07%) patients had nonspecific enteritis/duodenitis on histopathology and didn't show any improvement to gluten free diet and 02(3.5%) patients were suggested a repeat biopsy.

Prevalence of celiac disease



Graph No.1: Prevalence of Celiac disease



Graph No.2: Type of Marsh grading

DISCUSSION

In this study it is reported that celiac disease is an abnormality of small intestine which disturbs the absorption capacity of villi and hyperplasia of crypts develop, this condition ultimately leads to the malabsorption of and generation of IgA antibody and

IgG antibody in response of gluten food. Against of this problem availability of gluten free diet is a common issue in our environment¹⁰.

This study showed that almost 53.93% cases are suffering from celiac disease, with males more prone to the disease. In addition, CD may present at any age but predominantly in young age groups with children aged up to 15 years, with the mean age of 5.5 ± 2.8 years, were seemed to be more affected with the disease as we reviewed data at Nishtar medical college and hospital laboratory which is mainly referred by Children Hospital Multan so it largely consists of young age groups. In many western studies, the disease mainly affects children but in recent studies the true prevalence of celiac disease increases over time.¹⁰ However, in our study we conclude that celiac disease is not a rare disease in Multan and its periphery among children.

Duodenal biopsies play a significant role in the diagnosis of CD as compared to serological tests.^{6,7,8}

Histopathology is the gold standard in the confirmation of diagnosis along with a trial of gluten free diet.^{11,12}

Our data showed that Anti TTG IgA antibody level is more sensitive than anti tissue transglutaminase IgG antibody test,^{13,14} as it shows a 100% correlation with the disease but only in severe cases of CD with >2 Type Marsh classification on histopathology. With the intake of gluten as the severity of villous atrophy increases, likewise the anti -TTG IgA level increases in the serum of the affected individual.

It is therefore suggested that screening strategies to detect the level of anti-tissue transglutaminase IgA and IgG antibody should be addressed before duodenal biopsy in suspected cases but mucosal biopsy should be performed in all cases with low anti TTG antibody titers for confirmation as many patients with CD has low titers. However, Anti tissue transglutaminase IgG antibodies against transglutaminase IgA didn't show any significant prevalence pattern.^{13,14} As out the 57 patients with positive titers, 39 (68.43%) had villous atrophy on histopathology and showed response to gluten free diet while the remaining 18 (31.57%) were not found to have CD. The level of the anti TTG IgG antibody are less specific to CD, however people who are IgA antibody deficient, their IgG levels could be a helpful tool for diagnosis.^{15,16,17}

Small bowel biopsy is also a diagnostic test for celiac disease but Barkers et al¹⁸ suggested that small bowel biopsy is not necessary investigation for diagnosis of raised titer tTG in celiac disease and its subtypes. Later on Vivas et al recommended that duodenal biopsy should be avoided in children who's tTG antibody is definitely positive¹⁹. European Society for Gastroenterology also updated their protocols for diagnosis of celiac disease after 20 years and decided to omit this diagnostic technique (small bowel biopsy) from the diagnostic criteria in patients, whose EMA was confirmed. Zanini et al²⁰ also suggested that ULN

5 times more than normal shows duodenal atrophy and in these patients duodenal biopsy for diagnosis of celiac disease is a dangerous decision and also observe that tTG greater than 90 U/ml means 97.2% sensitivity for Marsh II.

The prevalence of celiac disease in Iran is similar to many western countries and results of these studies shows that screening test of tTG is helpful for the diagnosis of celiac disease even in patients of much raised titers of serum antibodies (five to ten fold raised than normal). Its confirmation must be done with EMA and other clinical and laboratory evidences.

CONCLUSION

Celiac disease may present at any age but predominantly in young age groups. Celiac disease is not a rare disease in Multan and its periphery. Duodenal biopsies play a significant role in diagnosis of CD as compared to serological tests. Anti TTG IgA is more sensitive and shows high titer only in severe cases of CD with Type 2 and above Marsh classification. However, Anti tissue transglutaminase IgG antibodies as compared to transglutaminase IgA didn't show any significant prevalence pattern.

Recommendation

- Therefore, celiac disease is prevalent in our surroundings but we recommend further studies with large data to find out the true prevalence of this disease.
- All those patients with malabsorption and gastrointestinal abnormalities should go for anti-tissue transglutaminase IgA level detection tests for the correct diagnosis before invasive procedures unless the patient is IgA deficient.
- Though duodenal biopsy and evidence of histological changes in intestinal mucosa along with a strict trial of gluten free diet are the basic diagnostic criteria's of CD and should be performed in all suspected cases to detect all the undiagnosed cases.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Medicine Prescription Trends and Knowledge Related to Prescriptions among Medical Students of Faisalabad

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ABSTRACT

Objectives: To assess the knowledge and attitude of medical students regarding prescription of medicine

Study Design: Cross Sectional study.

Place and Duration of Study: This study was conducted at the Department of Community Medicine, University Medical & Dental College, Faisalabad December 2015 to July 2016

Materials and Methods: It was a cross-sectional study conducted at Department of Community Medicine University Medical & Dental College, Faisalabad, from December 2015 to July 2016. Study participants were approached through simple random sampling and sample size was 384 medical students of medical colleges of Faisalabad. After obtaining consent from institutional review board, a structured questionnaire was used for data collection.

Results: Out of 384 medical students in the study, 83% were male and 69% were from final year. Medicines prescribed by the medical students were for headache (32.8%) followed by generalised pain (31.3%). Most common medicines prescribed were painkillers (32%) and antibiotics (28.9%). A highly significant difference was observed between prescription trends between male and female students, male students (67.5%) were more likely to prescribe medicines as compared to female students ($p=0.000$).

Conclusion: The knowledge about medicine prescription was mainly gained during lectures and from prescription books. Likelihood of prescribing medicines was observed in majority of students and majority felt confident in prescribing medicines. This indicates that practice of giving medicine prescription is highly prevalent in medical students.

Key Words: Prescription, Medicine, Knowledge, Attitude, Medical Students

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INTRODUCTION

The ability to prescribe commonly used medications safely and effectively is a core competency of the newly qualified physician. New graduates are often required to prescribe many times each day on the hospital drug chart and write most of the prescriptions of the hospital. Have the requirements of this task in recent years for several reasons that an expanded national formulation, a greater number of drugs per patient (poly-pharmacy), patient performance, higher, more vulnerable elderly patients, more therapeutic regimens. Complex, increased patient demand for information and increased threat of litigation.

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Prescription errors are common in UK hospitals. A study from a London university hospital acknowledged errors 135 per week, a quarter of which was potentially serious, with most third- or fourth-year officers¹. The National Patient Safety Agency database is > 50,000 annual reports of acute and general hospital drug incidents². A report by the Audit Committee has suggested that adverse drug events were responsible for the deaths of 1,100 hospital patients in 2001 in the UK, a five-fold increase over the last 10 years³. There is evidence that inadequate training in such cases often contributes^{4,5}. An analysis of 88 serious medication errors at a British hospital has suggested that skill deficits and "knowledge" a factor in 60% of cases were⁴.

Several studies have suggested that provision of education aimed at improving performance and reducing prescription errors may⁶⁻⁹. It is not surprising that the General Medical Council (GMC), which regulates basic medical training, knowledge and skills identified in connection with the use of medications that are necessary for all UK medical students at the time of graduation¹⁰. However, there was widespread concern that these goals are not met, in part because of recent changes in the medical curriculum, which focuses on traditional scientific disciplines such as pharmacology

and clinical and therapeutic pharmacology (CPT)¹¹⁻¹³ reduced. This position was most often expressed by those who may be perceived to have a conflict of interest, and was challenged by the GMC¹⁴⁻¹⁵.

MATERIALS AND METHODS

It was a cross-sectional study was conducted at Department of Community Medicine University Medical & Dental College, Faisalabad, from December 2015 to July 2016. Data was collected from a sample of 384 medical students through simple random sampling. Sample size was calculated using Open-epi software. Institutional review board approval was obtained before starting data collection.

A structured questionnaire was used as a data collection tool. The questionnaire was divided into 4 main sections namely socio-demographic data, knowledge and attitudes about prescription of medicine. Data analysis was done using SPSS version 20.0. Frequencies and percentages were reported. While a scoring system was used for analysis of knowledge and attitude of the respondents. The scores for knowledge and attitude were categorized based upon the median. Scores that fall below median were categorized as poor and scores above median were categorized as good scores for knowledge and practices.

RESULTS

A total of 384 medical students were included in the study. Eighty three percent of the respondents were males (320/384). And majorities of the participants (69%) were from final year MBBS. Fifty nine percent (228/384) respondents resided in urban areas. Details of demographic data of respondents are given below in Table 1.

Table No.1: Demographic Characteristics

	Variables	Frequency (n)	% age
1	Gender		
	Male	320	83.3
	Female	64	16.7
2	Study Year		
	4 th year	119	31
	Final year	265	69
3	Hometown		
	Rural	156	40.6
	Urban	228	59.4
4	Father's profession		
	Medical	58	15.1
	Non-medical	158	41.1
	No response	168	43.8
5	Mother's profession		
	Medical	25	6.5
	Non-medical	157	40.9
	No response	34	8.9
	Housewife	168	43.7

Out of 384 respondents 255(66.4%) responded that they prescribe medicines to other people. Only a few (7.3%) respondents reported that patients suffered from side

effects because of their prescriptions. A similar proportion of respondents (66.4%) also reported that they treat themselves and 11.7% reported that they suffered from side effects because of self medication. The most common illness for which medicines were prescribed was headache (32.8%), followed by generalized pain (31.3%). Most common medicines prescribed were painkillers (32%), followed by Antibiotics (28.9%). Forty three percent of the respondents (123/384) reported that not knowing the brands was the commonest mistake that was being made while prescribing medicines. Pharmacology course and prescription books were the most frequently used sources of information reported by students. Detailed information on prescription of medicines is reported in Table 2 below.

Table No.2: Prescription of Medicine

	Variables	Frequency (n)	%age
1	Prescribe medicine to others		
	Yes	255	66.4
	No	129	33.6
2	Patients developed side effects		
	Yes	28	7.3
	No	356	92.7
3	Treat own self		
	Yes	255	66.4
	No	129	33.6
4	Developed Side effects		
	Yes	45	11.7
	No	339	88.3
5	Common Health Conditions		
	Fever	95	24.7
	Pain	120	31.3
	Weakness	28	7.3
	Headache	126	32.8
	Other	15	3.9
6	Common Medicines Prescribed		
	Painkillers	123	32
	Antibiotics	111	28.9
	Antipyretics	60	15.6
	Antihypertensive	54	14.1
	Anti diabetics	36	9.4
7	Common error in Prescription		
	Not knowing the brand names	167	43.5
	Not knowing what to prescribe	63	16.4
	Wrong treatment duration	79	20.6
	Not asking patients about allergies	75	19.5
8	Source of Prescription Information		
	Professor	63	16.4
	Pharmacology Course	120	31.3
	Prescription Books	120	31.3
	Classmates	81	21

Majority of respondents (42.2%), agreed to the fact that medicine prescription studied in class is major source of motivation for giving prescriptions. Sixty two percent (239/384) of respondents reported that they felt confident while prescribing medicines. Forty three percent (167/384) respondents disagreed to the fact that overlooking side effects while prescribing medicines is normal. Fifty eight percent respondents (225/384) reported that changing medicine dose during the course is good for achieving better results. Thirty eight percent (147/384) respondents reported that they feel confused because of different names given to the same medicine formula. Only a small percentage of participants (14.1%) agreed to the fact that consulting doctors for minor health issues is a waste of time and money. Majority of students (36.2%) reported that they consult previous prescriptions before prescribing new medicines. Forty nine percent respondents (191/384) reported that prescribing nutritional supplements by students is a normal practice. While only a small percent of students (15.9%) agreed to the fact that they prescribed expensive drugs to patients. Table 3 below shows the detailed results.

Table No.3: Attitude of Medical Students Towards Drug Prescription

	Statements	Agree	Neutral	Disagree
1	Prescribe medicines recommended during class	162 (42.2%)	70 (18.2%)	152 (39.6%)
2	Feel confident	239 (62.2%)	66 (17.2%)	79 (20.6%)
3	Over looking side effects	54 (14.1%)	163 (42.4%)	167 (43.5%)
4	Change medicine dose for better results	225 (58.6%)	138 (35.9%)	21 (5.5%)
5	Switch medicines for better results	250 (65.1%)	85 (22.1%)	49 (12.8%)
6	Confused with different names of same medicine	147 (38.3%)	132 (34.4%)	105 (27.3%)
7	Waste of money and time	54 (14.1%)	57 (14.8%)	273 (71.1%)
8	Consult previous prescriptions	139 (36.2%)	127 (33.1%)	118 (30.7%)
9	Prescribe nutritional supplements	191 (49.7%)	117 (30.5%)	76 (19.8%)
10	Prescribe expensive medicines	61 (15.9%)	151 (39.3%)	172 (44.8%)

A chi square test of association was carried out to find out the association between independent variables and dependant variable (likelihood of prescribing medicine). A highly significant difference was observed between the prescription trends between male and female students, male students (67.5%) were more likely to prescribe medicines as compared to female students ($p=0.000$). Final year students were more likely to prescribe medicines as compared to students of

fourth year ($p= 0.003$). Students who gained prescription information from pharmacology course were more likely to prescribe medicines as compared to students who gained information from other sources ($p=0.026$). Detailed results are explained in table 4 below.

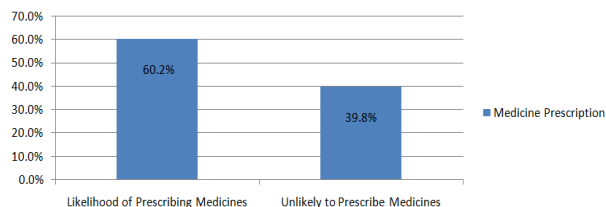


Figure No.1: Medicine Prescription

Table No.4: Association between attitude towards medicine prescription and independent variables

Variable	Unlikely to Prescribe Medicines	Likelihood of Prescribing Medicines	χ^2 Results
1 Gender			
Male	106(33.5%)	206(66.5%)	$\chi^2 = 43.2$, df= 1, P=0.000
Female	49(67.2%)	25(33.8%)	
2 Study Year			
1 st year	83(69.7%)	36(30.3%)	$\chi^2 = 64.3$, df= 1, P=0.003
Final year	70(26.4%)	195(73.6%)	
3 Prescription Information			
Professor	13(20.6%)	50(79.4%)	$\chi^2 = 78.5$, df= 3, P=0.026
Pharmacology Course	42(35%)	78(65%)	
Prescription Books	66(55%)	54(45%)	
Classmates	27(33.3%)	54(66.6%)	

DISCUSSION

A cross sectional study highlighted the common trends and practices of medical students regarding prescription of medicine and side effects related to prescribed medicines. This student also highlighted the common mistakes of medical students during prescription of medicine.

Pharmacology course and prescription books were the most frequently used sources of information reported by the students. Almost half of the students consult previous prescriptions before prescribing new medicines. A similar study conducted and its results found that the students got knowledge about medicines through the brochures 183 (52.3%) followed by previous prescriptions 61 (17.4%) and pharmacist 60 (17.4%)¹⁶.

The most common medicines prescribed by the medical students of the Nigeria were antimalarial (38.24%) and paracetamol (20%) while in our study, the most common medicine prescribed by medical student was painkillers (32%) and antibiotics (28.9%)¹⁷.

In our students, the most common medicines prescribed for the conditions by the medical students were for

headache (32.8%) followed by generalized pain (31.3%) while a study conducted in Mexico regarding medicine prescription and the most common medicines prescribed by the students were for infection (n = 37, 56%), followed by pain (n = 24, 38%)¹⁸.

A study conducted in Brasilia regarding quality of prescription and lack of information about pharmacological treatment, side effects, and administration route were the major deficiencies observed. On another hand in this study, the most common mistake of medical students during prescription did not know the brand name of the medicine¹⁹.

They got knowledge regarding medicine and prescription was from pharmacology course and prescription books. A study conducted in Nepal revealing that the students of both courses acquire prescribing skills to a limited extent during preclinical phase. Prescribing errors were found both in physician and drug related components²⁰.

Thirty eight percent (147/385) respondents reported that they feel confused because of different names given to the same medicine formula and a study conducted by Grissinger and results were the dual trademarks for a single product are particularly problematic when one of the product names is well established before the new product is launched²¹.

CONCLUSION

The present study highlighted the attitude of medical students towards medicine prescription. Majority of students were likely to give prescriptions. The knowledge about medicine prescription was mainly gained during lectures and from prescription books. Likelihood of prescribing medicines was observed in majority of students and majority felt confident in prescribing medicines. This indicates that practice of giving medicine prescription is highly prevalent in medical students. This activity should be constantly looked after so that safe use of medicines and authenticated prescriptions could be provided to patients. Professors and instructors can play a vital role in educating students; students should be encouraged to take part in practical activities but they should not be allowed to prescribe medicines on their own.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Drug Prescription Pattern in a Tertiary Care Hospital in Pakistan

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Sarosh Daud¹ and Mohammad Faisal Hashmi²

ABSTRACT

Objective: To determine the drug prescription patterns and frequency of polypharmacy in the outpatient department of a tertiary care hospital in Lahore.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Medical and Surgical outpatient Departments of Shalamar Hospital Lahore from January to March 2017.

Materials and Methods: A desired sample of 400 prescriptions was selected using multistage sampling technique, with 200 prescriptions each from medical and surgical outpatient departments. Prescribing trends of drugs were reviewed and compared to the available WHO prescribing indicators.

Results: Average number of drugs per encounter in this study was 3.56 with 48% of prescriptions having more than 3 drugs. Antibiotics and analgesics were prescribed in 34.3% and 62.8% of the encounters respectively. Percentage of prescriptions containing only oral medication, injectables and topical drugs was 79.3%, 2.8% and 17.8% respectively. None of the prescriptions had drugs with generic names. Statistically significant difference in the prescribing trend of analgesics was noticed between medical and surgical prescriptions with p value of <0.001.

Conclusion: Polypharmacy and prescribing brand names, instead of generic names of the drugs, continue to be the major problems in tertiary care hospitals of Pakistan. These inappropriate prescription trends need to be addressed by observation of WHO guidelines for drug prescription to avoid unwanted consequences.

Key Words: Prescribing pattern, Polypharmacy, Generic names, Tertiary Care Hospital.

Citation of article: Ansar A, Iftikhar S, Mir WA, Kazmi T, Daud S, Hashmi MF. Drug Prescription Pattern in a Tertiary Care Hospital in Pakistan. Med Forum 2017; 28(5):138-141.

INTRODUCTION

Drugs and medicines are amongst the most cost-effective treatment interventions to-date and different countries spend considerable proportions of their health budgets on medicines, ranging from 10-20% in developed countries and 20-40% in developing countries¹. In 2007, Pakistan spent a total of PKR 112,000 million (US \$ 1,844 million) on medicines and the per capita pharmaceutical expenditure was PKR 683 (US \$11.3). This made 1.29% of the GDP and was 46.28% of the health expenditure for that year². Since medicines constitute such a large part of healthcare expenditure, adoption of rational and appropriate prescribing trends, is imperative. Evidence dictates that developing countries are not using medicines appropriately accounting it to greater than 50%, leading to a waste of already limited resources¹.

Despite the continued efforts and technical guidelines of World Health Organization (WHO), irrational drug prescription remains a problem of paramount intensity in both developing and developed countries^{3, 4, 5}. Polypharmacy, excessive use of antibiotics and injectables and use of drugs of dubious efficacy are the main problems encountered in drug prescription in developing countries.³ Several studies based in Pakistan have portrayed a similar picture.⁴ Studies done in public hospitals in the Punjab province of Pakistan have demonstrated average number of drugs per encounter and average number of antibiotics prescribed to be well outside the range specified by WHO.^{6, 7} Shalamar Hospital is a Private Teaching Hospital located in Lahore city of Punjab, Pakistan. It is a 500-bedded multi-disciplinary hospital which provides services to about 500,000 patients annually, including Outdoor, Indoor and Emergency patients.⁸ This study aims to explore the drug prescription pattern in the Outpatient department of Shalamar Hospital.

MATERIALS AND METHODS

This cross sectional study was carried out at the medical and surgical outpatient departments of Shalamar hospital Lahore over a period of three months (Jan-March 2017). Ethical review board of Shalamar Institute of Health Sciences granted approval for the study protocol. Sample size was estimated using Open

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Epi software, taking 5% margin of error, 80% power of study, expected frequency of probable factor as 43%³ from a total population of 30,000 (average number of patients utilizing outpatient services per month). The calculated sample size came out to be 372 which was rounded off to 400. Multistage sampling technique was used to take the desired sample from the total population. At first step, medical and surgical OPDs were selected from a total of ten running OPDs through convenient sampling, followed by selection of 200 prescriptions each from medical and surgical OPDs through random sampling. Data collection form was prepared by investigators keeping in view WHO prescribing drug indicators.⁹ Informed consent was taken from all the physicians whose prescriptions were to be reviewed. The data for this study was collected from online prescribing system being operated at Shalamar hospital. Data collected was entered and analyzed using SPSS version 20. Analysis of data was done according to WHO prescribing indicators namely: i) average number of drugs per prescription, ii) percentage of drugs prescribed by generic name and iii) encounters with an antibiotic prescribed, iv) encounters with an injection prescribed and v) percentage of drugs prescribed from essential drug list of institution. Results were presented using descriptive statistics (frequency and percentages). Difference in the drug prescribing patterns among medical and surgical OPDs was analyzed using Chi-square test.

RESULTS

To find out drug prescription pattern in a tertiary care hospital, all 400 prescriptions generated from the outpatient department of Shalamar hospital were reviewed successfully as per sample size and entry was done in the data forms for this study. Each prescription contained drugs, out of which 33.5% prescriptions had 3 drugs, followed by 29% prescriptions having 4 drugs (figure 1).

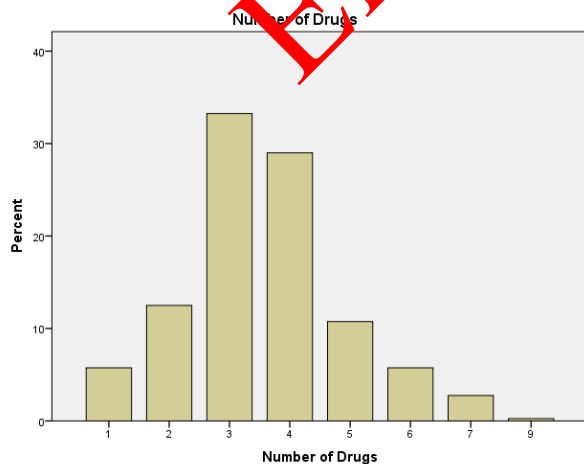


Figure No.1: Histogram showing Number of drugs on prescription

Table No.1: Drug prescription trends in a tertiary care hospital of Lahore (n=400).

Prescribing Indicators	Frequency	%age
Poly-pharmacy	Yes (>3drugs)	192
	No (\leq 3drugs)	208
Antibiotics Prescribed	Yes	137
	No	263
Number of Antibiotics prescribed	Nil	263
	1	110
	2	27
Analgesics Prescribed	Yes	251
	No	149
Number of Analgesics Prescribed	0	149
	1	161
	≥ 2	90
Oral medication only	Yes	319
	No	81
Prescriptions with injectables	Yes	11
	No	389
Prescriptions with topical drugs	Yes	71
	No	329

Table No.2: Speciality-wise drug prescription pattern (n=400)

Speciality	Polypharmacy		Total	P-value
	Yes (>3)	No (\leq 3)		
Medicine	102	98	200	0.23
Surgery	90	110	200	
Total	192	208	400	
	Antibiotics prescribed			
	Yes	No		
Medicine	60	140	200	.073
Surgery	77	123	200	
Total	137	263	400	
	Analgesics Prescribed			<0.001**
	Yes	No		
Medicine	93	107	200	
Surgery	158	42	200	
Total	251	149	400	

**P-value highly significant

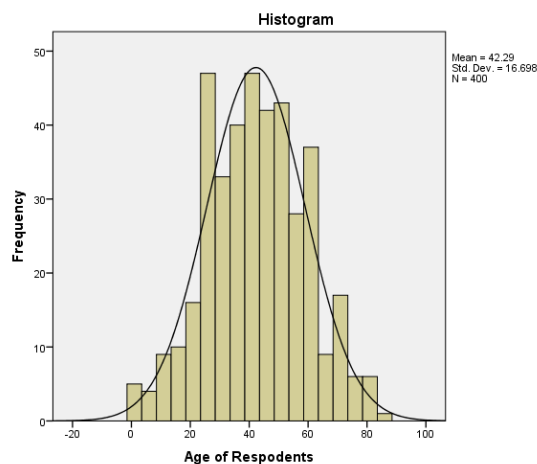


Figure No.2: Age of patients visiting out-patient department

More than 3 drugs were prescribed in 192 prescriptions (48%). 34.3% of prescriptions had antibiotics prescribed, out of which 80.2% had only one antibiotic prescribed. Analgesics were present in 251 prescriptions (62.8%), with 161 prescriptions containing only one analgesic. Percentage of prescriptions containing only oral medication, injectables and topical drugs was 79.3%, 2.8% and 17.8% respectively (Table 1). Significant difference in prescribing trends of analgesics between medicine and surgery was evident from p-value of <0.001 (Table 2). Mean age of patients visiting general out-patient department was 42.29 ± 16 (figure 2).

DISCUSSION

A prescription is a useful tool in order to study attitude of a prescriber towards the diseases and various practices of health care delivery systems running in the community³. This study describes the prescribing practices being carried out at Shalamar Hospital, a private sector tertiary level care facility. This study resulted in an average of 3.56 drugs per encounter in contrast to the recommended WHO reference values of 1.6 to 1.8 drugs per encounter mentioned in WHO prescribing indicators. T. Igbiki and F. Joseph carried out a study in a tertiary hospital of Nigeria to evaluate the prescribing patterns of clinicians in general outpatient units. In their study, average number of drugs per encounter was 3.04, and greater than 60% of prescriptions had three drugs, which is closer to our study's 62.3%.³ Niti R. Mittal and S. Malhotra in India performed a similar study, demonstrating average number of drugs per prescription to be 3.6 with 78% of encounters containing more than three drugs.¹⁰ Similar high figures for average number of drug prescriptions are mentioned in different studies of Cambodia, Nepal and Burkinafaso among clinicians in various institutions.^{11,12,13}

Polypharmacy is the prescription of >3 drugs to a single patient. A systematic review of rational drug use in Pakistan conducted at University of Lahore showed prevalence of polypharmacy in Pakistan to be 34%⁴, whereas our study showed it to be 48%. This figure is comparable to the Nigerian study's 43.2%³. Polypharmacy is notorious for causing drug interactions and affecting compliance. Medication adherence is affected adversely resulting in poor treatment outcomes. Grymonpre RE and fellows in Winnipeg demonstrated association between number of drugs and drug related adverse patient events¹⁴.

Recommended practice for physicians is to use generic names for prescribing the drugs and not any brand or trade name^{15,16}. But in our study, not a single encounter had drugs prescribed with generic names due to online prescribing system and list of drugs available in brand names. Drug prescription by brand names should be negated as it decreases the cost effectiveness of drugs

both for patients and pharmacies. Moreover, prescription with generic name also prevents unwanted events like drug duplication and confusion of taking the wrong drugs, bearing similar brand names but having different salts.³ However, overall trend of prescribing drugs using generic names is very low with disappointing figures of 15.1%, 10% and 4.4% mentioned in various studies in Saudi Arabia, India and UAE respectively^{17,5,18} with a few reports from Bangladesh and Cambodia standing out with high figures.¹⁹

Non-judicious antibiotic use is a large scale problem in developing countries. Literature has shown it to lead to the emergence of antibiotic resistance, hence causing an increase in the use of more expensive antibiotics, even for treating common infections. Different studies have demonstrated wide range of variability in antibiotic prescription in South Asia, ranging from 9.6% in an Indian study to 57.2 % in a Peshawar-based study.^{20,21} Similarly, a study by Hoger et al showed encounters having antibiotics with a range of 47.5% to 100%.²² In this study, 34.3% of prescriptions were with antibiotics, being greater than the reference of 20.0 to 25.4% set by WHO, but still lower than the incidence of antibiotic prescription shown in previous countries in Pakistan.²¹ This could be attributed to an improvement in the antibiotic prescription behaviours of physicians over the years.

Analgesics make the largest portion of the drugs prescribed in any medical facility, and our study also displayed this trend with 62.8% of encounters with analgesics prescribed. Results of other studies done in Nigeria, showing 64.3% and 41%, are also compliant with our result.¹⁹ Such a high practice of prescribing analgesics could be due to patient's demands as well as physician's instinct to instantly relieve the patient's pain.

Prescriptions with injectables constituted 2.8% of the total prescriptions reviewed, which was less than the set reference of 10.1% to 17.1% by WHO. This is also in contrast to the results of studies done in Sudan and Uganda.²² This low percentage of injectable prescription in this study is because of the reason that prescriptions were only taken from running out patient departments and not from the emergency department, where injectables are frequently prescribed. Increased awareness about blood borne diseases and other risks associated with injectable use might also be a contributor to the low prescribing trend of injectables. In Shalamar Hospital, online prescribing system is in use, therefore the drugs prescribed were in accordance with the local formulary provided.

In order to study the differences among drug prescription patterns present in medical and surgical specialties, cross tabulation was done with application of chi square test. It was found that out of total 200 medical prescriptions, 102 had more than three drugs,

whereas 90/200 surgical prescriptions had more than three drugs. Chronic nature of diseases dealt in medical out-patient departments could be held responsible for this difference. Antibiotic use was seen more in surgical outpatient departments, with 77 prescriptions having antibiotics as compared to the antibiotics in only 60 medical prescriptions. However, statistical significance of both these differences couldn't be established.

Statistically significant difference was found regarding analgesic prescription between the two departments, with 158 surgical prescriptions having an analgesic prescribed, compared to 93 medical prescriptions with an analgesic (p value <0.001).

CONCLUSION

This study demonstrates judicious use of antibiotics and injectables as compared to previous trends but polypharmacy and high rate of prescriptions with trade/brand names, continue to be the points of greater attention. There is a need for periodic check on the prescribing trends in order to bring them in accordance with WHO prescribing indicators.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Chronic Liver Disease as a Risk Factor for Type 2 Diabetes Mellitus

Zaheer Hussian Memon¹, Muhammad Nouman Sheikh¹ and Nasrullah Aamir²

ABSTRACT

Objectives: To determine the chronic liver disease as the risk factor for Type 2 diabetes mellitus.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Medicine Department of Indus Medical College Tando Muhammad Khan from May 2016 to October 2016.

Materials and Methods: Patients after diagnosis of chronic liver were included. In the selected cases complete clinical examination routine laboratory investigations were carried out. Cases less than 50 years of age either gender were selected. Patients with history of obesity, smoking, alcohol consumption, diabetic family history and with history other risk factors of the diabetes were excluded from the study to see the frequency of diabetic mellitus development in the patients with chronic liver disease. Complete data regarding age, gender, residential status, socioeconomic status, virological frequency and glycemic status were noted in the proforma.

Results: Mean age of the patients was 42.12±5.33 years. Male were found in the majority 60.81%. HCV was the most common in 81.08% of the patients. Diabetic mellitus was found in 22.97% of the patients, while 77.3% patients were noted without diagnosis of diabetic mellitus. In this study out of 17 diagnosed cases of type 2 diabetes mellitus 11 were HCV infected patients and 2 were HBV infected while 2 cases were with coinfection of HBV and HCV.

Conclusion: We concluded that HCV related chronic liver disease is the frequent risk factor for the development of diabetic mellitus.

Key Words: HBV+HCV, chronic liver disease, diabetic mellitus

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INTRODUCTION

The liver is the major focuses for insulin and its counter administrative hormones, like as glucagon. Chronic liver disease (CLD) is regularly connected with intolerance of the glucose and diabetes. Chronic liver disease is extremely predominant in the general U.S. populace and incorporates 2% of grown-up Americans (5.3 million) infected by HCV and HBV and an expected at least 31% with non-alcoholic fatty liver disease (NAFLD).^{1,2} CLD occurrence is linked with big impairment in the glucose homeostasis. Estimatedly in 80% of the chronic liver disease cases, glucose intolerance had seen, and frank diabetes is occurred in the 30–60%.^{3,4} On its etiology chronic liver disease had big impact on glucose metabolism in liver. Currently, it is event for dispute whether type 2 diabetes mellitus in lack of the obesity and the hypertriglyceridemia might be cause for CLD.

Diabetic mellitus which develops as a complication of cirrhosis of the liver and also known as (hepatogenous diabetes).⁵ IR in adipose tissues and muscles and hyperinsulinemia appear to be the pathophysiological bases of diabetes in CLD. Disabled response of the islet β -cells in pancreas and IR in liver is additionally contributory components. NAFLD, cirrhosis due to alcohol, chronic HCV and hemochromatosis are all the more habitually connected to diabetic mellitus.⁵ IR expands the disappointment of the treatment response in cases having chronic HCV and improvement of the fibrosis. Diabetic mellitus in the cases with cirrhosis might be subclinical. Hepatogenous diabetes is clinically not quite the same as that of type II diabetic mellitus, since it is less much of the time related with microangiopathy and cases more frequently ill by the cirrhosis complications.⁵ Contingent on etiology, the level of hepatic damage and diagnostic criteria, the revealed occurrence of intolerance of the glucose changes from 60 to 80% and that of diabetes from 20 and 60%.^{6,7} It is realized that from the early phases of CLD, IR and intolerance of glucose might be found in the greater part of these cases.⁸ Diabetes shows clinically as the liver capacity break down, in this way hepatogenous diabetes can be considered as a marker of cutting advanced hepatic disease.⁹ Pathological mechanism causing diabetic mellitus in cases having HCV infection are as yet not surely knew, though both IR and impeded insulin discharge have been considered

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to assume a vital part in the improvement of DM.¹⁰ Type II diabetic mellitus the complex, multisystem illness with the pathophysiologically, previous studies reported multiple risk factor for diabetic mellitus progress in CLD cases.¹⁰ Therefore this study conducted to evaluate the frequency of DM in patients having only chronic liver disease.

MATERIALS AND METHODS

This was a cross-sectional study and carried out ant medicine department of Indus medical college Tando Muhammad Khan. Study duration was 6 month from May 2016 October 2016. All the patients after diagnosis of chronic liver were included. In the selected cases complete clinical examination routine laboratory investigations were carried out. All the cases less than 50 years of the age either gender or only with virological (HCV and HBV) etiology for chronic liver disease were selected. Patients with history of obesity, smoking, alcohol consumption, diabetic family history and with history other risk factors of the diabetes were excluded from the study to see the frequency of diabetic mellitus development in the patients with chronic liver disease. All the patients with history of previous antiviral therapy, liver mass and pregnant women were also excluded. Only those patients were selected agree to participate in the study. In all the selected cases complete glycemic status was work out. Complete data regarding age, gender, residential status, socioeconomic status, virological frequency and frequency of type 2 diabetic mellitus were noted in the proforma. All the data was entered in SPSS version 20. for the purpose of analysis, simple frequency percentage were calculated for the qualitative variables, while mean and standard deviation were calculated for the quantitative variables like age etc.

RESULTS

In the present series patient's mean age was 42.12±5.33 years Table:1.

Male gender was common at 60.81% as compare to female 39.19%. FIG:1.

According to the virological infection HCV was the most common 81.08% of the patients, hepatitis was found in 10.81% of the cases while 5.40% patients were with history of HCV+HBV viral infection. FIG:2.

Patients of the rural areas were found in the majority 56.75% while remaining 43.25% patients were from urban areas. FIG:3

In this study mostly patients were poor 63.51%, middle class patients were 29.79% and upper patients were only 5 out of all. Table:2.

Diabetic mellitus was found in 22.97% of the patients, while 77.3% patients were noted without diagnosis of diabetic mellitus FIG:3.

In this study out of 17 diagnosed cases of type II diabetic mellitus 11 were HCV infected patients and 2 were HBV infected while 2 cases were with coinfection of HBV and HCV. Table:3.

Table No.1: Age distribution of study population n=74

Age (mean±SD)	42.12±5.33 years
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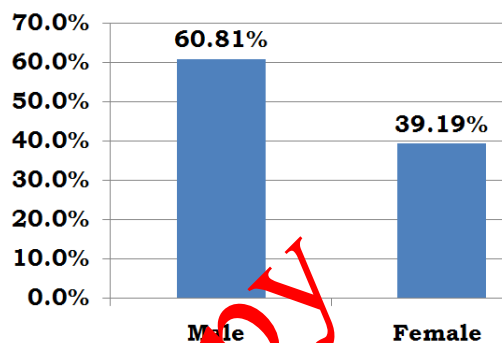


Figure No.1: Gender of the patients n=74

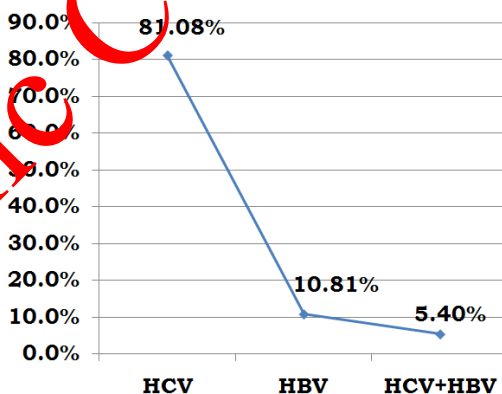


Figure No.2: Patients distribution according to HBV and HCV n=74

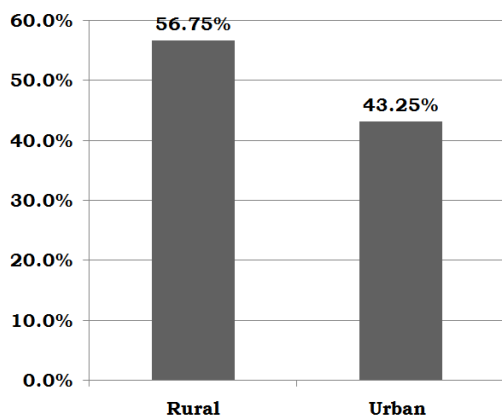
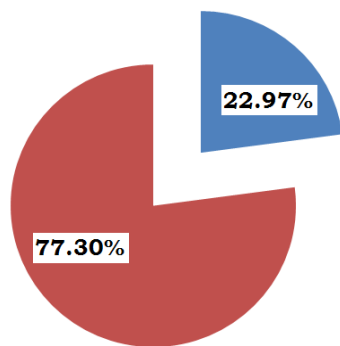


Figure No.3: Patients distribution according to residential status n=74

Table No.2: Socioeconomic status of the patients N=74

Socioeconomic status	Frequency(%)
Poor	47(63.51%)
Middle	22(29.79%)
Upper	05(6.75%)

**Figure No.4: Frequency of diabetic mellitus n=74****Table No.3: Diabetic mellitus according to HCV and HBV infection N=74**

Diabetic mellitus	HCV	HBV	HCV+HBV
Positive n=17	11	02	02
Negative n=57	48	07	02

DISCUSSION

Incidence of type 2 DM in HCV positive cases was found to be 34.4% as compared to 6% in HCV negative patients in previous studies.^{11,12} As previous studies showed that patients with HCV compared with normal population are at raised risk of Diabetes Mellitus type 2 development and thus resulting in improved risk of the chronic and acute complication of diabetes mellitus that can result in severe morbidity.^{13,14} In this study diabetic mellitus was found in 22.97% of the patients. In a study carried out at USA, showed the incidence of the Type 2 DM associated to HCV hepatitis C virus infection from 21 to 23%.¹⁵ Pakistani population based study showed frequency of type 2 DM in HCV cirrhotic patients was 31.25%.¹⁶ These studies showed prevalence slightly high from our study, this may because we had excluded patients other risk factors of diabetes as obesity and specially cases had family history of diabetic mellitus. Because type II diabetic mellitus is the multisystem disease complex, that includes the insulin secretion defect, raised glucose production in liver, and resistance in insulin action, all of these contribute to create of overt hyperglycemia, additionally over weight, old age and the genetically factor like as family history of the

all might be the contribute to creations of Type II Diabetic Mellitus, therefore these all factor making it very difficult to assess pathological role of the HCV in improvement of diabetic mellitus type II.¹⁰

In this study mean age of the patients was 42.12±5.33 years, and male were found in the majority 60.81% as compare to female 39.19%. Similarly Saleem Set al¹⁷ reported that 53.01% patients were male and 46.99% were female and their mean age was 42.71±14.29 years. On other hand Suleria SB et al¹⁸ reported that patients mean age was 53.43±4.12 years. These compared studies showed mean age greater than our study this may because, in this study patients were less than 50 years, while in these studies maximum range of the age was high as compare to our study.

According to the virological infection HCV was the most common 81.08% of the patients, hepatitis was found in 10.81% pf the cases while 5.40% patients were with history of HCV+HBV viral infection. Comparable findings were reported by Almani SA et al¹⁹ as; majority of cases 52% had history of HCV infection, 16% had HBV infection and 16% were with coinfection of HBV and HCV. On other hand Farooqui, et al²⁰ demonstrated that HCV was found in 59% patients, HBsAg in 32%, and both were found in the only 03% of the patients.

In this series patients of the rural areas were found in the majority 56.75% while remaining 53.25% patients were form urban areas, and mostly patients were poor 63.51% following by middle class patients were 29.79% and upper patients were only 5 out of all. Similarly in a Pakistani study reported those 45% patients with hepatitis B and C were 45% among urban and 55% were from rural areas.²¹

In this study out of 17 diagnosed cases of type II diabetic mellitus 11 were HCV infected patients and 2 were HBV infected while 2 cases were with coinfection of HBV and HCV. Memon MS et al²² mentioned that diabetic mellitus incidence was 31.5% from 361 HCV seropositive cases. On other hand White et al.²³ reported that high risk of diabetes in HCV infected patients. While a current data also stated that 3 times higher incidence diabetes in cases having HCV infection.²⁴ As well as, data of the previous studies and from our study show the association between HCV infection and diabetes type 2.²²

CONCLUSION

We concluded that HCV related chronic livers disease is the frequent risk factor for the development of diabetic mellitus. Patients when diagnosed with hepatitis specially HCV they should treat their hepatitis C infection as soon as possible to prevent the development of complication especially diabetic mellitus.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Determination of the Severity of Diabetic Foot Ulcer and its Awareness in Patients with Diabetes Mellitus

Anser Abbas¹, Ibtisam Ilahi² and Ruqia Bano³

ABSTRACT

Objectives: To determine the severity of diabetic foot ulcer, and awareness regarding its care in patients with diabetic mellitus

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Medicine Department of DHQ Hospital Muzaffargarh and at some private medical centers from June 2016 to December 2016.

Materials and Methods: Patients with age more than 40 years either gender or with diagnosis of diabetic foot ulcer were selected in the study. Severity of foot ulcer was evaluated by according to Wagner's classification as: grade 0 (intact skin), grade 1 (superficial ulcer), grade 2 (deep ulcer to tendon, bone, or joint), grade 3 (deep ulcer with abscess or osteomyelitis), grade 4 (forefoot gangrene), and grade 5 (whole foot gangrene). All the selected cases were interviewed regarding awareness of diabetic foot. To assess the awareness a questionnaire was used from previous published studies.^{1,8} All the data regarding demographic characteristics, severity of foot ulcer and awareness were recorded on the proforma.

Results: Mean age of the patients was 43.21 ± 5.22 years, male gender was most common 61.41%, while female were 38.59%. Almost equally patients were found according to residential status. 26.31% patients were uneducated, majority of the cases 35.08% had educational status primary to middle, metric pass were 29.82% patients, while graduate patients were only 8.77%. Majority of the cases 52.63% were found with grade II, following by 26.31% with grade III, 17.54% were with grade I and only 3.50% patients were with IV, while no any case was found with grade V. Awareness regarding diabetic ulcer very low, no any patient had complete knowledge regarding all awareness parameters, on some places some patients had average knowledge regarding care of the diabetic foot ulcers like as; taking antidiabetic treatment, daily washing the feet, trimming nails of feet and should not walking bare foot, remaining other questions very few were in the knowledge of the patients

Conclusion: We concluded that mostly severity of diabetic foot ulcer was from grade II to III. Patients had inadequate knowledge regarding care of diabetic foot ulcer.

Key Words: Diabetic foot, severity, awareness

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INTRODUCTION

Diabetes Mellitus is a disorder of chronic hyperglycemia because of relative insulin insufficiency, resistance or the both. Estimatedly 10-15% of cases diabetes creates foot ulcers at some phase in the lives. Diabetic foot (DF) ulcer issues are in charge of almost half of all diabetes associate to hospitalization.^{1,2} Diabetic foot typically begins with sensual complications as; pain, paresthesia and the numbness

which on its proper course developments to motor change like natural muscle weakness and the muscle atrophy causing alteration structure and function which prompts irregular plantar pressure that is the big risk for improvement of the plantar pressure ulcers. Loss of defensive sensation to the noxious stimuli can without of a stretch outcome in injury induced by skin or bone micro trauma or injury brought by stepping on a sharp protest or injury of the skin because of sick fitting shoes.³ A few endeavors have been made to set up arrangement frameworks that help to evaluate the disease severity. As indicated by the International Working Group on DF, an arrangement system proper for the practice clinically ought to encourage correspondence between medicinal services suppliers, impact every day administration, and give data about the healing capability of the ulcer.^{4,5} Ulcers of the foot are among most widely recognized complexities of diabetes with predominance of 4-10%. They frequently

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infected as often as possible, can be costly to treat and for the most part are the initial move towards lower extremity amputation.⁶ It has been demonstrated that 49-85% of all DF related issues are preventable if taken the suitable measurements. This can be accomplished through the combination of good care of the foot given by a multidisciplinary diabetic care group and suitable training for both individuals with diabetes and human services professionals.⁷ All diabetes cases are possibly at hazard of DF which must be avoid by development of awareness about significance of suitable self-care. Incidence of diabetes and its associated complications complication as diabetic foot ulcer is rising day by day, also at a younger age. Ulcers of the diabetic foot are the commonest reason of the amputations and also preventable.⁷ Complete knowledge, favorable attitude and associated good life style are necessary to prevent the development of diabetic foot ulcers. Therefore this study has been conducted to evaluate the severity of diabetic foot ulcers and awareness regarding it in patients having diabetic mellitus and foot ulcers.

MATERIALS AND METHODS

This was correctional study and conducted in medicine department DHQ Hospital Muzaffargarh and some private medical centers with 7 months of duration from June 2016 to December 2016. Patients with age more than 40 years either gender or with diagnosis of diabetic foot ulcer were selected in the study. Cases without diabetic foot ulcer and don't want to participate in the study were excluded. All the cases were underwent complete clinical examination. Severity of foot ulcer was evaluated by clinical examination, Doppler ultrasound, and grading of ulcer was classified according to Wagner's classification as grade 0 (intact skin), grade 1 (superficial ulcer), grade 2 (deep ulcer to tendon, bone, or joint), grade 3 (deep ulcer with abscess or osteomyelitis), grade 4 (forefoot gangrene), and grade 5 (whole foot gangrene). All the selected cases were interviewed regarding awareness of diabetic foot. To assess the awareness a questioner was used according to previous published studies.^{1,8} All the data regarding demographic characteristics, severity of foot ulcer and awareness were recorded on the proforma. Data was entered in the SPSS version 16.0 for the analysis.

RESULTS

In this study mean age of the patients was 43.21 ± 5.22 years, male gender was most common 61.41%, while female were 38.59%. Almost equally patients were found according to residential status 52.63% from rural areas and 47.37% were from urban areas. According to the educational status 26.31% patients were uneducated, majority of the cases 35.08% had educational status primary to middle, metric pass were

29.82% patients, while graduate patients were only 8.77%. Table:1.

Table No. 1: Demographic characteristics (n = 57)

Characteristics	Frequency	%
Gender		
Male	35	61.41%
Female	22	38.59%
Residential status		
Rural	30	52.63%
Urban	27	47.37%
Educational status		
Uneducated	15	26.31%
Primary to middle	20	35.08%
Metric	17	29.82%
Graduate	05	08.77%

Age (mean+SD) = 43.21 ± 5.22 years

Table No. 2: Severity of diabetic foot ulcer according to Wagner's Grading (n = 57)

Wagner's Grading	Frequency	%
Grade I	10	17.54%
Grade II	30	52.63%
Grade III	15	26.31%
Grade IV	02	03.50%
Grade V	00	00
Total	57	100%

Table No. 3: Wagner's grading of diabetic foot (n = 57)

Wagner's Grading	Frequency	%
1. Importance of taking antidiabetic treatment to prevent complications	30	52.63%
2. Daily washing the feet	25	43.85%
3. Using warm water for washing/bathing	10	17.54%
4. Checking temperature of water before using	02	03.50%
5. Drying the feet after washing	15	26.31%
6. Talcum powder usage for keeping interdigital spaces dry	10	17.54%
7. Keeping skin of the feet soft to prevent dryness	16	28.07%
8. Lotion not to be applied in the interdigital spaces	07	12.28%
9. Daily change of socks	17	29.82%
10. Trimming nails of feet straight with care	45	78.94%
11. Inspection of feet once a day by respondents	12	21.05%
12. Wearing comfortable coat shoes	18	31.57%
13. Checking the shoes from inside before wearing	20	35.08%
14. Not walking bare foot	40	70.17%
15. Warning signs for which consultation is required	45	78.94%

According to severity of the diabetic foot ulcer majority of the cases 52.63% were found with grade II,

following by 26.31% with grade III, 17.54% were with grade I and only 3.50% patients were with IV, while no any case was found with grade V. Table:2.

According to the awareness of the diabetic ulcer patients had very low awareness regarding it. results showed in Table: 3

DISCUSSION

Present study was carried out to see the severity of diabetic foot ulcers and patients awareness regarding it. In this study mean age of the patients was 43.21±5.22 years, male gender was most common 61.41%, while female were 38.59%. Our finding are correlated with others studies as Pal B et al⁹ reported that out of 53 patients, 32 patients were male and remaining 21 were female. Seema Hussain et al¹ was also found comparable findings and reported that patients mean age was 48 ± 10.8years. Voulgari et al¹⁰ and Larsson et al¹¹ also found male in majority as compare to female, this higher prevalence in our country may because male are more involved in outdoor activities as well as more risk of injuries.

In this study almost equally patients were found according to residential status 52.63% from rural areas and 27.37% were from urban areas. According to the educational status 26.31% patients were uneducated, majority of the cases 35.08% had educational status primary to middle, metric pass were 29.82% patients, while graduate patients were only 8.77%. Kishore S et al⁸ found comparable findings and reported that around 24% cases had no education, 17.2% had primary level education, 31% had received education till metric and 27.7% patients were graduate.

In this study severity of DF ulcer was assessed according to Wagner's classification and majority of the cases 52.63% were found with grade II, following by 26.31% with grade III, 17.54% were with grade I and only 3.50% patients were with IV, while no any case was found with grade V. Jar WA et al¹² reported some more severe results according to Wagner's classification as; 11 cases had grade 1 diabetic foot ulcer, 15 grade with II, 19 with grade III, 32 cases were grade IV and 21 cases were with grade V lesions. Findings of the present study slightly different from studies of Doumi E. A et al¹³ in Sudan in which stated 74.1% cases had Wagner Grade more than 3. Similar findings were seen in the study conducted by Abbas et al in MNH.¹⁴

In this study according to the awareness of the diabetic ulcer patients had very low knowledge, no any patient had complete knowledge regarding all awareness parameters, on some places some patients had average knowledge regarding care of the diabetic foot ulcers like as; taking antidiabetic treatment, daily washing the feet, trimming nails of feet and should not walking bare foot, remaining other questions very few were in the knowledge of the patients. Similarly in some other

studies reported that the lack of foot awareness in cases having diabetes,^{15,16} not much has been done to recover this condition. In another study consultation time <5 minutes for nearly 50% of the cases.¹⁷ In the study of Muhammad-Lutfi AR et al¹⁸ reported that mostly cases 58% were with inadequate knowledge regarding foot care, while 61.8% patients had very poor care practice about diabetic foot. In this study educational level very low in the patients, which is very necessary to get the knowledge regarding disease and its complications. Hasnain S et al¹ reported that 29.3% patients had good knowledge, 40% were with satisfactory awareness and 30.7% had very poor knowledge regarding care of the diabetic foot ulcer. In the literature reported that the physician's role is very essential in improvement of awareness and practices for foot ulcers in diabetic cases. In another study reported that >50% cases did not examined their feet by proper physician and 28% were without education regarding diabetic foot ulcer. Thus awareness and practices of the diabetic cases strongly correlated to the physicians' attitudes.¹⁹ These finding we also found in our study participants, but another problem is of poor socioeconomic status is very worse fall for us we found in many cases mostly in males those were very poor, they had no any other income support, and those were still working in their fields with foot ulcer and elevated glycemic status, no proper antidiabetic medication in their life's, and they had no dressings their diabetic foot ulcer mostly at their home by himself and unfortunately with contaminated process, when they were severely infected they come to the Hospitals.

CONCLUSION

We concluded that most severity of diabetic foot ulcer was from grade II to III. Patients had inadequate knowledge regarding care of diabetic foot ulcer. Diabetic foot ulcers developed mostly due to poor care and uncontrolled diabetes. Awareness programs regarding diabetic foot care education should be conducted in the community, and strategies should be developed for diabetes control and its complications particularly diabetic foot ulcer especially in poor areas of the community.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Age and Gender Profile of Chronic Obstructive Pulmonary Disease (COPD) Patients in Punjab, Pakistan

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ABSTRACT

Objectives: To determine the frequency and severity of Chronic Obstructive Pulmonary Disease in patients presenting in a tertiary care hospitals of Punjab, Pakistan

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the Department of Medicine, Services, Mayo and Shalimar Hospitals from 1st January 2015 to 31 December 2016.

Materials and Methods: This cross-sectional, population-based study was carried out in different tertiary care Hospitals of Punjab. Sample size of 3516 patients were included in the study. Patients of COPD of age >40 years were selected in the study. The end result of this exercise was formation of four categories of subject populations.

Results: Women comprised 45% of subjects while men were 55% in the screened group. There were 57% patients of age 40-49 years, 31% were 50-59 years and 12% were >60 years age. Among men 21.4% smoked cigarettes, out of which 79.1% smoked >10 pack years.

Conclusion: The frequency and severity of COPD patients is increasing in Punjab.

Key Words: Chronic obstructive pulmonary disease, COPD

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is commonly known as airflow obstruction that is irrevocable.^{1,2} In the next decade, COPD will be the 2nd killer all over the world.³ COPD is one of the main cause of mortality all over the world, particularly among smokers.⁴ For various factors, the number of disorientated COPD patients has recently increased.⁵ COPD patients are at risk for other comorbid diseases, including ischemic heart disease, coronary heart disease, heart failure and neuropsychiatric diseases.⁶ Acute or chronic tuberculosis may also be associated with COPD even in developed countries.^{7,8} The current paper is part of a larger study and concerns the prevalence of COPD in Punjab.

MATERIALS AND METHODS

This cross-sectional, observational, population-based survey of COPD was carried out from 1st January 2015 to 31st December 2016. This multicentre study was conducted in different tertiary care hospitals of Punjab. The present study was concerned with the Punjab data only, which is the largest province of Pakistan according to population size. The sample size of was 3516 was included. Subjects who were at least 40 years and whose participation in the study was agreed upon to were enrolled. Excluded were non-resident subjects of Punjab recently shifted or expatriates of less than six months, or who were mentally ill were excluded. The end result of this exercise was formation of four categories of subject populations. The first category (COPD) population fulfilled the smoking criterion and either the symptom criterion or the diagnosis criterion. The second category "possible COPD" fulfilled either the smoking criterion or the symptoms criterion or the diagnosis criterion. The third category (Non-COPD) did not fulfil any of these criteria. The fourth category (potential COPD) fulfilled at least one of these criteria that is "COPD" population and "possible COPD" population. "COPD" population was subjected to a more detailed telephone questionnaire regarding cost of disease and also severity of COPD questionnaire. Spirometry was offered to a randomly selected subgroup of subjects in the "potential COPD".

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Furthermore health status using the COPD Assessment Test (CAT) was done. Data are presented as mean with standard deviations (SD). SPSS Version 17 was used for all statistical analysis. Prevalence rates were calculated by dividing the total number of positively screened subjects by the total number of screened subjects.

RESULTS

Total 3516 people were screened and recruited in the study. Women comprised 45% of whole sample while men were 55%. There were 57% aged 40-49 years, 31% were 50-59 years and 12% were >60 years group. A total of 8.5% patients reported COPD related symptoms, out of which 1.8% had productive cough, 6.4% had breathlessness while 1.6% had both breathlessness and cough. Among women 9.2% patients had COPD related symptoms, 1.1% patients had productive cough, 8.4% patients had breathlessness alone while 2.3% had both breathlessness and productive cough. Among men 21.4% smoked cigarettes, out of which 79.1% smoked >10 pack years. In men 7.7% patients had COPD related symptoms, out of which 4.8% patients had productive cough, 5.1% patients had breathlessness while 1.3% patients had both breathlessness and productive cough. In the study sample, 62.1% patients had comorbid conditions, 6.7% patients had poor health, 54.6% had fair health, 19.1% patients were in good health while 19.6% had excellent health. About 45% patients had lung function tests done one year before while 55% patients had done lung function tests done in the last year. About 40.2% patients experienced acute exacerbations.

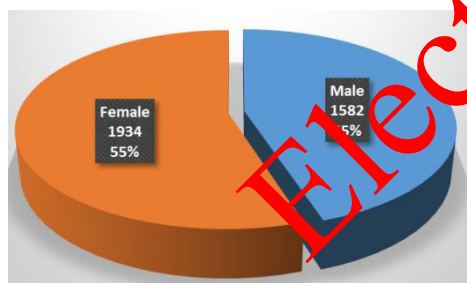


Figure No.1: Gender distribution of study population

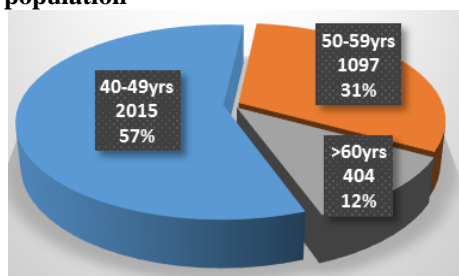


Figure No. 2: Age distribution of the study population

DISCUSSION

The increase in incidence of COPD is primarily associated with widespread of tobacco revelation and increase in air pollution in Asian countries. In Asian, the burden of COPD related comorbidities and mortality, is currently more as compared to developed countries in other regions of the world.⁹ In our study there were more male patients as compared to females, which is in contrast to already published literature which showed that females are at more risk of developing COPD as compared to men.¹⁰ The incidence of COPD was higher in men (3.54; 95%CI 3.33–3.77) than in women (2.34; 95%CI 2.17–2.52), and the overall baseline prevalence of COPD was 3.02% (95%CI 2.94–3.10).¹¹ This is probably due to cultural and social factors where smoking is seen as a predominantly male habit. The presentation in women with COPD may be entirely different.¹³ The current study shows that gender-related differences do exist in COPD patients. Understanding these differences in etiological agent and clinical picture will help early diagnosis of COPD in females.¹²

One of the major factor for COPD is tobacco smoking which is highest in developed countries. In females of the developing countries, where natural fuels are used for cooking and heating at homes, different researches have showed an association between exposure to smoke of these fuels with COPD.¹³ Major difference was observed in methodology of previous researches to find the prevalence of COPD estimates, accounting for a large amount of controversies in available evidence. From a global viewpoint, one meta-analysis of population-based studies reported a pooled prevalence for COPD, from 1990 to 2004 reported, as 9.8% males and 5.6% females.¹⁴ A very well methodologic research conducted in America spirometry showed that the age-adjusted prevalence was higher in males as compared to females in every city sampled, ranging from 11.4%-23% males and 7.5%-11.6% in females in USA.¹⁵ The prevalence of COPD in the general population is estimated to be ~1% across all ages rising steeply to >10% amongst those aged ≥40 yrs. The prevalence climbs appreciably higher with age.¹⁶

In the present study almost 57% patients were in the 40-49 age group. Again other workers have documented only 56.4% in Russia¹⁷ and 3.5% in Japan.¹⁸ More studies are needed to explain this but dietary and genetic factors may be implicated. Our smoking rate (21.4%) was less then reported by other workers in Europe (15.3%).¹⁹ The prevalence of COPD have increased to 384million in last decade, with a worldwide prevalence of 11.7% (95% CI; 8.4–15.0%). This increase is due to global demographic variabilities. The highest prevalence was seen in Americans (from 13.3-15.2% during 1990-2010), and the lowest in South East Asia (from 7.9-9.7% during 1990-2010). This

percentage increase was the highest in Eastern Mediterranean region (118.7%), afterward African region (102.1%) while in European region, it was lowest (22.5%). In 1990, about 120.9million COPD patient (13.2%) were estimated in urban area and 106.3million (8.8%) in rural areas. In 2010, there were >230million COPD cases in urban areas (13.6%) and 153.7million in rural area (9.7%). The overall prevalence in males aged ≥ 30 years was 14.3% (95% CI; 13.3–15.3%) compared to 7.6% (95% CI; 7–8.2%) in females.²⁰

CONCLUSION

The frequency and severity of COPD among Punjab patients is increasing on the consistent steep rise with significant health consequences. Smoking and pollution are the two main causes of COPD among adult population.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Patterns and Percentages of Pathological Lesions in Clinically Palpable Breast Lumps

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ABSTRACT

Objectives: To find out patterns and percentages of pathological lesions in clinically palpable breast lump(s).

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Surgical unit-I of Peoples Medical College, hospital of Nawabshah from March 2015 to April 2017.

Materials and Methods: In sample size, a total number of 230 female patients with ages from 16 to 70 years having clinically palpable breast lump(s) were enrolled after having ultrasound. While patients with suspicious lump (s) in breast were subjected to mammography before having Tru-cut (core) biopsy. Referred patients having already histopathological reports, cysts on ultrasound or patient having previous surgeries on breast were not enrolled in this study. All the data was entered in SPSS version 20 and statistical analysis was done.

Results: In total number of 230 patients, the clinically palpable lumps were most common in left breast 141 (61%) then in right breast 82 (36%) and 7 (3%) were bilateral.

Conclusions: A clinically suspicious mass should be biopsied, regardless of imaging findings. The percentages of benign breast disease pattern (67.40%) in clinically palpable lump are higher than malignant (32.60%) in present study.

Keywords: Breast lumps, Pathological lesions of breast, carcinoma breast.

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INTRODUCTION

The palpable breast masses varies from innocent to uncertain and confusing complex entities and impede women to have medical attention.¹

Every breast mass must be considered malignant until, proved otherwise, as these masses can be very abysmal and treacherous. As only in America about 230, 480 women are diagnosed with breast cancer annually, and 39, 520 women die from this disease.² Global cancer statistics show that breast cancer is the most frequently diagnosis cancer and the leading cause of cancer death among females, accounting for 23 percent of total cancer cases and 14 percent of cancer deaths in women across all population groups.³ Benign as well as neoplastic breast lesions are common in Pakistan, while due to illiteracy major strata of society does not follow self-examination or screening mammography, further

the information on the epidemiology of breast cancer is very limited in our part of world.⁴

Due to constrained resources of health care system, with lack of an early cancer detection program the majority of women presenting with advanced, symptomatic stage at our part of world, where cure becomes impossible.⁵ The scientific diagnosis with triple assessment reduce the mortality and increase the standard of the treatment.⁶ In common practice of breast surgeons, the algorithms for clinical and imaging evaluation of palpable masses are stratified by the age of the women, ultrasound below 30 years and mammography above 30 years of age. In palpable masses, image guidance may improve diagnosis accuracy, but not all cancers are detectable on mammography, hence every clinically suspicious mass should be biopsied regardless of imaging findings, as 10 to 15 percent of such lesions can be mammographically occult.⁷

A complete clinical breast examination (CBE) includes an assessment of both breasts with chest, axillae, and regional lymphatics. Benign masses generally cause no skin changes and are smooth, soft to firm, and mobile, with well-defined margins. While, Malignant masses are mostly hard, immobile, and fixed to surrounding skin and soft tissue, with poorly defined or irregular margins.⁸ Digital palpation of the breast is effective in detecting masses and can determine whether a mass is

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benign or malignant. But CBE alone is not adequate for definitive diagnosis of breast cancer.^{8,9}

This study was carried out to find out patterns and percentages of pathological lesions in clinically palpable breast lump(s).

MATERIALS AND METHODS

This cross-sectional study was carried out in surgical Unit-I of Peoples Medical College, tertiary care 1500 bed hospital of Nawabshah from March 2015 to April 2017. In sample size, a total number of 230 female patients with ages from 16 to 70 years having clinically palpable breast lump(s) were enrolled after having ultrasound. While patients with suspicious lump (s) in breast were subjected to mammography before having Tru-cut (core) biopsy. The informed written consent was obtained from each patient as per study policy. Only solid lump (s) found on ultrasound were under taken for Tru-cut biopsy under local anaesthesia using 14- to 18- gauge cutting needle and two to four slender cores of tissue were taken for histopathology, which was done by expert pathologists. Referred patients having already histopathological reports, cysts on ultrasound or patient having previous surgeries on breast were not enrolled in this study. A pre-formed structured proforma was used to note the demographic profile, site, size, consistency of lump(s), status of axillary lymph nodes, and ultrasonic, mammographic and biopsy reports along with stages of disease in cases of malignancy. All the data was entered in SPSS version 20 and statistical analysis was done.

RESULTS

In total number of 230 patients, 93 (40%), 80 (35%) and 57 (25%) were in age groups of 16-30, 31-40 and 40-70 years respectively. 190 (82%) were married. The clinically palpable lumps were most common in left breast 141 (61%) then in right breast 82 (36%) and 7 (3%) were bilateral.

Table No. 1: Pattern of pathological lesion

	Frequency No.	Percentage
Fibroadenoma	98	42.60%
Intraductal carcinoma		
- Early.	51	22.10%
- Late.	24	10.50%
Fibrocystic disease	24	10.50%
Phylloides Tumours	09	3.91%
Mastitis / Inflammatory Lesions	10	4.34%
Duct Papilloma	02	0.86%
Fat Necrosis	05	2.17%
Cyst & Lipoma	02	0.86%
Epithelial Hyperplasia	02	0.86%
Duct Ectasia	03	1.30%

Upper and outer quadrant was the most commonly involved quadrant of breast for 122 (53%) cases in this study.

While, the pattern of various pathological lesions with frequencies and percentages in these patients are shown in table no. 1.

Regarding fibroadenoma, 98 (42.60%) were in younger and reproductive population of this study. The cancer patients in age group 31 – 40 and 40 – 70 were 18 (7.82%) and 57 (24.78%) respectively and infiltrating ductal carcinoma was the most common sub – pattern in 62/75 (83%) patients, then was 9/75 (12%) mucinous and remaining 4/75 (5%) were with medullary carcinoma. Among breast cancer patients 5/75 (6.66%), 28/75 (37.34%), 30/75 (40%) and 12/75 (16%) were in TNM stages of I, II, III and IV respectively.

The percentages of benign breast disease pattern (67.40%) in clinically palpable lump are higher than malignant (32.60%) in present study.

DISCUSSION

The present study has discovered various patterns of pathological lesions in clinically palpable breast lumps with the combined results from triple assessment to have 100 percent diagnostic accuracy. Apart from objectives of this study, it also have been revealed that benign masses are easily diagnosed on ultrasound than malignant masses and this observation is in line with findings reported by Mansoor et al.¹⁰ Clinically palpable breast lumps have potentially been posing a serious challenge with urging on immediate evaluation in this apprehensive era of breast cancer.¹¹ This study noted for greater number of benign and less number of malignant cases in line similar to Dominguez et al.¹², Meena et al.¹³ and Sohail et al.¹⁴

In this study the percentages of the breast lumps were more in younger age groups in comparison to other studies.^{11,15}

The pattern and percentage of benign breast lumps in the present study with fibroadenoma (42.60%) fibrocystic disease (10.50%), phylloides tumours (3.91%) and mastitis (4.34%) are similar in observation by Tiwari et al.¹⁶ and Qasim M et al.¹⁷

In the present study, 32.60% of malignant lesions were common in the age group of 31-70 years. Intraductal carcinoma was the most common malignancy in our findings which correlates with other studies.¹⁸ The 51 number of women with early breast carcinoma (22.10%) was greater than late carcinoma (10.50%). This indicates that awareness of breast diseases is on increase in our society as the same is noted by Sohail et al in Pakistan.¹⁴ In this study, authors have realized that one cannot overlook the importance of triple assessment for diagnosing the breast lumps, specially in cases which are atypical or suspicious on any single isolated investigation of FNAC or imaging.

CONCLUSION

A clinically suspicious mass should be biopsied, regardless of imaging findings. The percentages of benign breast disease pattern (67.40%) in clinically palpable lump are higher than malignant (32.60%) in present study.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Recurrence Rate of Anal Fissure after Lateral Sphincterotomy at Tertiary Care Center

Habib ur Rehman Khan Toor, Gulshan Ali Memon and Qamar Raza Brohi

ABSTRACT

Objective: To determine the recurrence rate of Anal Fissure after Lateral Sphincterotomy

Study Design: Observational / descriptive study

Place and Duration of Study: This study was conducted at Peoples University of Medical and Health Sciences for Women, Nawabshah from September 2011 to 2014.

Materials and Methods: Cases with anal fissures, refractory to nonsurgical conservative treatment, were selected. Cases with other associated anorectal disorders like hemorrhoids, fistulae in ano, anorectal abscess and rectal prolapse were excluded from the study. Patients with co-morbid diseases like chronic liver disease, renal failure and cardiac failure were not considered for this study. Diagnosis was solely made on history and clinical examination. All selected cases were hospitalized and underwent lateral sphincterotomy under spinal anesthesia. After 24 hours patients were discharged from hospital after 24 hours with scheduled follow up visits and post operative complications were recorded up to two years.

Results: 140 cases were selected. Mean age was 35 years $SD \pm 7$ and range of 17-62. Male to Female ratio was almost 1:1. As a presenting symptom, pain was present in all 140 cases while bleeding was present in 82 cases. Anterior fissure was present in 17(12.2%) cases while posterior fissure was present in 123(87.8%) cases. On follow up local infection was found in 3 (2.1%) cases. There was no any case of post operative fecal incontinence but 6(4.2%) cases had incontinence of flatus. After 2 years of surgery, recurrent anal fissure was noted in only in 2(1.4%) cases.

Conclusion: The very low recurrence after lateral sphincterotomy for anal fissure strongly advocates the role of lateral sphincterotomy as the ultimate gold standard procedure, specially for the refractory cases.

Key Words; Anal fissure. Lateral sphincterotomy. Recurrence after lateral sphincterotomy.

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INTRODUCTION

Anal fissure is a painful anal condition characterized by a linear tear in lower anal canal and was first described by Lockhart-Mummery in 1934.¹ Anal fissure has a cumulative life time incidence of 0.11%.² Various hurdles delay specific diagnosis and treatment of anal diseases, including lack of education and embarrassment of both health personals and the patients, and can lead to a prolonged needless suffering.^{3,4} Although the anal fissure present with the specific symptoms of severe anal pain and bleedings streaks but still anal fissure is misdiagnosed or mistaken for other anorectal conditions of this type.⁵ The exact etiology is yet to establish but the local trauma caused by hard stool can be an initiating factor.

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Post surgical scarring at anus is also considered a predisposing factor because scarring from the previous surgery may cause either stenosis or tethering of the anal canal.⁶ Hyper tonicity of the smooth muscles of the internal anal sphincter contributes a major role in the development and progression of anal fissures as it leads to high resting anal sphincter pressure and local ischemia.⁷⁻¹⁰ The clinical features of anal fissure are pain and bleeding. Most of the time bleeding is not profuse and characteristically producing a streak on a hard stool. The pain is very severe, commonly appears at the time of defecation and persists for few hours. Because of pain, patients are afraid and reluctant to pass stool leading to vicious cycles of worsening constipation, harder stools, and more anal pain. The diagnosis of anal fissure is based on clinical history and examination. To start with, the acute anal fissure is just a tear in the anal mucosa. When acute anal fissures persists for a long time it progressed to chronic fissure that characterized by a sentinel pile. Majority of the patients seek medical advice for their symptoms. Initially acute anal fissure are managed by conservative measures like increase fluid intake, high fiber diets, warm sitz bath. Medical therapy in the form glycerol

trinitrae and nifedipine is aimed to relax the smooth muscles of internal sphincter resulting in relief of symptoms and promote healing. Botulinum toxin is also effective in relaxing internal sphincters in both acute and chronic anal fissures. After conservative therapy, acute anal fissure commonly heals with 4–8 weeks and in case of failure of conservative therapy, fissure becomes chronic, surgery is usually required.¹¹⁻¹³ Once healed, however, about 50% of anal fissures recur regardless of the method of nonsurgical treatment.¹⁴ Lateral sphincterotomy is considered the gold standard surgical treatment for refractory and chronic anal fissure. Lateral sphincterotomy is performed to cut the internal sphincter at one point of the lateral sides either 3 or 9 'o' clock position. The objective of the lateral sphincterotomy is to cut the hypertonic internal sphincter, thereby releasing tension and allowing the fissure to heal.¹⁵ After any treatment modality, recurrence of the primary disorder leave a significant impact on the effectiveness of that treatment modality. Although recurrence of anal fissure is claimed to be very low after lateral sphincterotomy but still cases of recurrence are being reported. This study is aimed to determine the recurrence rate of anal fissure after lateral sphincterotomy in our set up.

MATERIALS AND METHODS

This is a descriptive study conducted from September 2011 to September 2014 comprising 140 patients who underwent lateral sphincterotomy at surgical unit 1 of Peoples University of medical and health sciences Nawabshah. Patients were selected from surgical outpatient department (OPD). Diagnosis was established on clinical history and perineal examination. Only those cases of acute and chronic fissure were selected that already taken conservative management but could not get cure. Recurrent cases after lateral sphincterotomy were not included. Cases with other associated anorectal disorders like hemorrhoids, fistulae in ano, anorectal abscess and rectal prolapse were excluded from the study. Patients with co-morbid diseases like uncontrolled diabetes, chronic liver disease, renal failure and cardiac failure were not considered for this study. No age and gender discrimination was applied. Demographic data was recorded. All patients were investigated for basic routine investigation like complete blood count, blood glucose, urea/creatinine, HBsAg & anti HCV, LFT. Patients above 40 years of age also had chest radiograph and cardiac assessment. Pre-operatively all patients underwent anesthetist assessment. A comprehensive counseling made with the patients and an informed consent was taken. All patients were given klean enema a night before surgery. All patients underwent spinal anesthesia with saddle block. Procedure was performed in lithotomy position. Park's anal dilator was used for exposure and a small transverse incision was made at one of the lateral anal

margin either on 9 or 3 'o' clock position. Internal anal sphincter was looped out with the help of artery forceps. Sphincterotomy was done by making transverse cut with diathermy. Hemostasis was secured and wound was left open, a lubricated ribbon gauze pack was kept at operated site in anal canal for hemostasis for 24 hours. All operated cases were managed in general ward. Postoperatively patients were kept nil per oral for twelve hours and intravenous fluids were given for 24 hours along with intravenous metacolon and ranitidine. Par entral analgesics nalbuhine and NSAID were used for 24 . Post operative wound pain was recorded on visual analogue pain score. Any post operative complains like retention of urine post op bleeding and abdominal pain was observed and managed. After 24 hours anal pack was removed. Patients were discharged from hospital and were advised to take sitz baths twice a day, lactulose 30 ml 1 to 2 times a day, trionolane cream for local application and analgesics as demand for two weeks. After 1 weak all patients were allowed to continue their routine activities. Follow ups were scheduled at 1week, 3weeks, 3months, 6months, 1year and 2 year to detect and manage any early post operative complication like bleeding, infection and late complications like incontinence, anal stenosis and specially recurrence of anal fissure were noted. Statistical package for social sciences (SPSS-24) was used for data analysis.

RESULTS

140 cases were selected for this three years study conducted in surgical unit 1 PUMHS hospital Nawabshah from September 2011 to September 2014. Among those 140 cases 72 were male and 68 were female with almost equal male to female ratio. Mean age of the patients was 35 years, $SD \pm 7$ and range of 17- 62. As a presenting symptom, pain was present in all 140 cases while bleeding was present in 82 cases. Anterior fissure was present in 17(12.2%) cases while posterior fissure was present in 123(87.8%) cases. Among 17 cases of anterior fissure 16(94%) were female and only 1(6%) was male. Sentinel pile was present in 95(67%) cases. Mean operating time was 15 minutes, $SD \pm 3$ and a range of 9- 30. Post operative bleeding was found in 4(2.8%) cases. In first 24 hours after surgery 65 patients(46%) experienced post operative wound pain on scale 4, 35(25%) experienced pain on scale 5, 25(17.8%) experienced no pain i-e 0 scale, 10(7%) cases had pain on scale 2 and 5(3.6%) cases had post operative pain on scale 8-9(severe pain). On follow up local infection was found in 2 (1.4%) cases. There was no any case of post operative fecal incontinence but 6(4.2%) cases had incontinence of flatus. After 2 years of surgery recurrent anal fissure was noted in only 2(1.4%) cases.

DISCUSSION

This study of 140 cases of anal fissure shows an equal gender ratio that is comparable to Garcea [HYPERLINK](#)

"https://www.ncbi.nlm.nih.gov/pubmed/?term=Garcea%20G%5BAuthor%5D&cauthor=true&cauthor_uid=12814407" G et al¹⁶ but still it is variable from study to study world wide. Mean age was 35 years that support the fact that it is a diseases of young and middle age peoples.¹⁷ Anal fissure was present in the posterior midline in 87.8% and in the anterior mid line in 12.2% that is comparable to various studies and support the hypothesis that posterior commissure is relatively low perfused site.^{10,18} Anal fissure is a common disorder with increased tone of smooth muscles of internal anal sphincter. Most of the treatments are aimed to decrease the tone of the internal sphincter. Treatment modalities are broadly divided into non-surgical and surgical. Non surgical treatments are the change of life style especially to prevent constipation, use of laxatives and more significantly measures to decrease the hypertonicity of the internal anal sphincter. Glycerol trinitrate, nifedipine act by relaxing the smooth muscles, thereby relieves the spasm of in the internal sphincter, improving the symptoms and quality of life. Although the healing rate is near to 60% but the recurrence rate is approximately 50%.¹⁴ Botulinum toxin is another non surgical effective measure with healing rate of 60-80%.¹⁹ The effect of Botulinum toxin may wear off in 3 months and recurrence rate can rise to 42%.^{19,20} Considering the fact that the overall effect of these non surgical measure is not permanent with high recurrence rate, the sphincterotomy is rated as the gold standard for the treatment of anal fissure. The lateral sphincterotomy has a healing rate of 95%.²¹ Although the complications of lateral sphincterotomy are not too high but this procedure is not yet free from recurrence and complications. Two important complications of lateral sphincterotomy are incontinence and recurrence. In the present study, there was no any case of post sphincterotomy fecal incontinence even after 2 year follow up but there were 6(4.2%) cases that developed flatus incontinence. This is comparable to Elsebae MM (4.35%) and less than Garge P(9%)^{22,23}. Among 140 cases of this study who underwent lateral sphincterotomy, only in 2 case (1.4%) had recurrent anal fissure after 2 years follow up that is similar to most of the national and international studies demonstrating recurrent rate of 0-6%.²⁴⁻²⁶

CONCLUSION

The very low recurrence after lateral sphincterotomy for anal fissure strongly advocates the role of lateral

sphincterotomy as the ultimate gold standard procedure, especially for the refractory cases.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Relationship Between the Experience of the Operator and the Efficacy of Inferior Alveolar Nerve Block

Hasan Mehdi¹, Muhammed Junaid Lakhani², Syed Muhammad Umer Hasan³, Aisha Shekhani⁴, Maeyda Khalid⁴, Nida Malkani⁴ and Zainab Mahboob⁴

ABSTRACT

Objective: The objective of this study is to investigate the efficacy of local anesthesia in the mandible on the basis of experience of the operator.

Study Design: Clinical, Analytical, descriptive / cross-sectional study

Place and Duration of Study: This study was carried out in a private sector college, Jinnah Medical and Dental College Karachi from 13th October 2016 to 16th February 2017.

Materials and Methods: This study was performed at Oral and maxillofacial surgery department of Jinnah Medical and Dental College Karachi. The data was collected from 44 patients visiting the OPD for extraction of mandibular posterior teeth. The operators were divided into two groups, Interns (including students and house officers) and senior faculty. The data was collected for time taken for effective local anesthesia by the two groups of operators. The time taken for the anesthesia to be effective was divided into three groups (A= 1-3 minutes, B= 4-6 minutes and C= 7-10 minutes). The time was calculated when the inferior alveolar block was administered till the effective anesthesia was confirmed, which was checked by using a probe on sulcus of lower canine and asking the patient for the numbness of the tongue and lower lip on the side the block was administered. After the completion of all the information, the data was stored in excel sheet and analyzed using SPSS.

Results: The sample constituted of 54.5% males and 45.5% females. The majority of the patients were in between the ages 20-40 years. The most common comorbid was hypertension noticed in 15.9% of the patients. The results of the study showed that group A had a significant percentage of patients who were treated by senior faculty (72%) whereas group B and group C had more percentage of patients who were treated by interns (78% and 80% respectively). Therefore, the time taken for local anesthesia to be effective was more for interns than for senior faculty.

Conclusion: This study indicates that the experience of the operator does play a major role in the efficacy of local anesthesia.

Key Words: Experience, knowledge of anatomical landmarks, Local Anesthesia administration, Time evaluation, confidence

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INTRODUCTION

Effective local anesthesia is administered in preparation for various dental treatments. It expedites a pain free treatment, so that the patient's ease is maximal during

the procedure and the dentist is able to work with concentration and precision.^{1,2} Inferior alveolar nerve block (IANB) is commonly used to induce local anesthesia for various applications throughout modern dentistry.³ IANB failure rates can be substantial, reaching 15-20%, and often cannot be overcome with a repeat IANB injection.^{4,5} Inferior alveolar nerve block failure has been accompanied with inflammation, age, history of medications, pathological processes, previous surgery, error in IANB administration and psychological causes, such as fear, anxiety and apprehension.⁶

Poor technique has been reported to be the most common reason for failure of conventional IANB. It is a technique sensitive procedure, therefore the experience of the operator plays a pivotal role in the efficacy or failure of local anesthesia.

Poor technique may be due to improper mouth opening, incorrect needle placement, failure to give adequate

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time for the anesthesia to become effective. Also IANB administrators may place the needle either too anterior or posterior.⁷ Two implications can be derived which include 1) positioning the tip of the needle too far medially resulting in inadequate anesthesia. 2) positioning the tip of the needle too far inferiorly resulting in anesthesia of only the lingual nerve.^{8,9}

In order to decrease the IANB failure rate, instructions should be followed related to anatomical landmarks and pre-IANB aspiration should also be enhanced.^{3,10}

The objectives of this study were to assess the efficacy of inferior alveolar nerve block on the basis of experience of the operator and to assess the difficulties encountered during IANB administration by the operators. This study will provide a foundation for the augmentation of dental teaching curriculum, particularly administration of local anesthesia.

MATERIALS AND METHODS

This study was performed at Oral and maxillofacial surgery department of Jinnah Medical and Dental College Karachi. The data was collected from 44 patients visiting the OPD for extraction of mandibular posterior teeth. The operators were divided into two groups; Interns (including students and house officers) and senior faculty. The data was collected for time taken for effective local anesthesia by the two groups of operators. The time taken for the anesthesia to be effective was divided into three groups (A=1-3 minutes, B= 4-6 minutes and C= 7-10 minutes). The time interval that was measured started from the administration of inferior alveolar block till the effective anesthesia was confirmed, which was checked by using a probe on sulcus of lower canine and asking the patient for the numbness of the tongue and lower lip on the side of the block. After the completion of all the information, the data was stored in excel sheet and analyzed using SPSS.

RESULTS

This research was based on the efficacy of LA according to the level of operator. The data for the research was collected from a dental OPD of 44 patients out of which 54.5% were males and 45.57% were females. The majority of the patients were in between the ages 20-40 years. The most common comorbid was hypertension noticed in 15.9% of the patients. Table 1.

Moreover, there were patients with certain habits such as pan chewing and smoking. 20.5% of the patients had a habit of frequent pan-chewing, 6.8% were indulged in smoking and the remaining 6.8% were observed to be in the habit of both pan-chewing and smoking. First molars were the most frequently extracted teeth in this study accounting for 27.3%, followed by 2nd and third molar respectively. Figure 1.

The purpose of this research was to analyze time taken for the efficacy of local anesthesia on the basis of

level of operator. The time taken for the anesthesia to be effective was divided into three groups (A=1-3 minutes, B= 4-6 minutes and C= 7-10 minutes). Table 2

Table No.1: Comparison of gender with regard to morbid

Gender	Age	Co-Morbid
Male: 54.5%	0-20years: 9%	No known co-morbid: 70.5%
Female: 45.5%	20-40years: 68%	Hypertension: 15.9%
	40-60years: 23%	Diabetes Mellitus: 4.5%
Minimum=10 Maximum=80 Standard deviation=1.364		

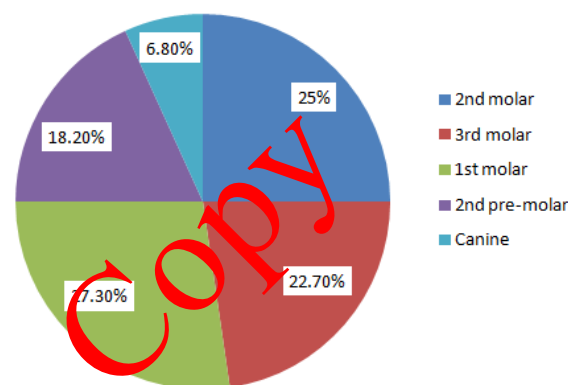


Figure No.1: Extraction of mandibular teeth.

Table No.2: Comparison of patients divided in groups with regard to their treatment

Group	Time (minutes)	No. of Patients
A	1 – 3	11
B	4 – 6	18
C	7 – 10	15

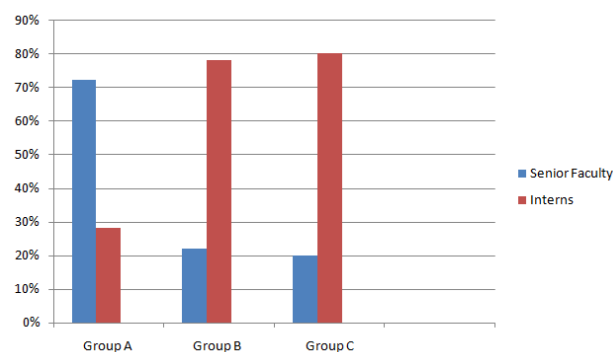


Figure 2: Time taken for anesthesia

The results of the study showed that group A had a significant percentage of patients who were treated by senior faculty (72%) whereas group B and group C had more percentage of patients who were treated by interns (78% and 80% respectively). Therefore, the time taken for local anaesthesia to be effective was more for interns then for senior faculty. Figure 2

DISCUSSION

The present study evaluated the efficacy of IANB according to the experience of the operator. There were three study groups (on the basis of time required for the IANB to be effective). Each group included both the senior faculty and interns. Group A had the shortest time interval (1 – 3 minutes), Group B (4 – 6 minutes) and Group C had the longest time interval (7 – 10 minutes).

Our results showed that a higher percentage of senior faculty was able to achieve IANB within 1-3 minutes (72%) as compared to interns 28%. Keetley and Moles reported 91.9% success rates and they relate this success to the operator experience. Study by AlHindi study reported 44.9 % of the failure of local anesthesia is attributed to the fact that the junior operators lack both knowledge and training.³

The high success rate of IANB by the senior faculty was not unexpected. This higher percentage can be attributed to the expertise and level of experience of the senior faculty, proper knowledge of anatomic landmarks and anatomic variations and the trust put in by patients while being treated by a more experienced dentist.

Similarly, a study published in August 2010, used a preclinical study model which allowed one group of students to practice IANB technique prior to practicing it on patients. This study revealed that the students with preclinical training were more calm and confident and a significant reduction in the level of pain was observed while inserting the needle as opposed to students without pre clinical training, who were more nervous. Maryam et al reported that 14% of their interns often faced failure of IANB. Also, almost half of the participants (47%) repeated the injection to achieve profound anesthesia.^{3,12}

The reliability on repeat injections maybe due to the inability of the operator to perform alternative techniques. The author also attributed IANB failure to anatomic variations which differs somewhat with the opinions of Haas and Malamed's studies, who considered it to be the second most common cause of IANB failure.^{13,14}

Subsequently, the data of the present study reflects that that there is a lack of anatomical knowledge and training with alternative techniques among students. The interns, with whom we were indulged with throughout our research, felt difficulty in identification and accessibility of anatomical landmarks, provided they had sufficient theoretical knowledge. The only identifiable reason in this case being the inadequate clinical exposure and confidence required to administer IANB.

CONCLUSION

IANB is one of the important components of general dental practice. Experience and expertise of the operator plays a strong role in the success of IANB. In order to decrease the IANB failure rate, instruction

related to anatomical landmarks, anatomical variation, and pre-IANB aspiration should also be augmented in each dental curriculum. The clinical exposure of the dental students and interns should also be enhanced.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Role of Adrenaline Sclerotherapy for Controlling Upper GI Bleeding

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ABSTRACT

Objectives: To determine the efficacy of adrenaline sclerotherapy to control upper GI bleeding

Study Design: Observational / descriptive study.

Place and Duration of Study: The study was conducted at Gastroenterology/Medical Ward, Lahore General Hospital, Lahore in collaboration with Chandka Medical College Hospital, Larkana from 1st January 2016 to 30th June 2016.

Materials and Methods: In this study a total of 100 cases of either gender between 20-60 years of age with upper GI bleed within last 24 hours were enrolled. The basic demographic data including age, gender, clinical presentation were recorded. Clinical efficacy of adrenaline was considered if there was no further upper GI bleeding upto 72 hour after endoscopy.

Results: The mean age was recorded as 38.41±11.83 years, 57% (n=57) were males and 43% (n=43) were females, efficacy of adrenaline sclerotherapy in controlling upper GI bleeding in was recorded in 66% (n=66) of the cases.

Conclusions: The efficacy of adrenaline sclerotherapy is significantly higher and encouraging for controlling upper GI bleeding and this modality may be used for effective management of upper GI bleeding.

Keywords: Upper GI bleeding, Cancer population, Adrenaline sclerotherapy, Efficacy

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INTRODUCTION

Upper gastrointestinal (GI) bleeding is known as bleeding source proximal to the ligament of Treitz. Various upper GI bleeding cases may cause iron-deficiency anemia but they may not generally present as emergency case. Upper GI bleeding cases are characterized by melena, hematemesis, hematochezia and evidence of compromise for hemodynamic e.g. shock, dizziness and syncope episodes. Usually they are caused by major haemorrhage from ulcers, Dieulafoy lesions, varices, Mallory-Weiss tears; and neoplasms. These cases are required to be admitted to Intensive Care Unit and urgently a consultant gastroenterologist may be approached. The cases presenting with massive bleeding should be observed for surgery.¹⁻⁵ Upper endoscopy is a choice as diagnostic modality while it is also considered as a choice of treatment for acute upper GI bleeding.^{6,7}

Being a potentially life-threatening condition, it needs active and appropriate management. Despite of advancement in therapeutic management, the rate of mortality has not changed i.e. 10-14% and relates to the longer life expectancy along with increased number of co-morbidities.⁸

Epinephrine is known as the popular injectate being used for injection therapy and promotes hemostasis by using local tamponade.⁹ It arrests around 80% of the bleeding.¹⁰ Initially, it reduces markedly or stops the bleeding but the bleeding may recur more than or equal to 20 minutes after therapy if the residual clot is not already formed as the epinephrine injection is absorbed and flushed into the circulation and however, its local effect, wears off.¹¹ It is the perfect initial agent as it is an easy to administer and generally reduces the rate of bleeding thereby. It is a common method of achieving hemostasis owing to its low risk, low cost and easy availability but local data is very limited assessing the efficacy of the endoscopic adrenaline use in patients presenting with upper GI bleed. However, the current trial was designed to assess the effectiveness of adrenaline for Upper GI bleeding.

MATERIALS AND METHODS

In this study a total of 100 cases of either gender between 20-60 years of age with upper GI bleed within last 24 hours were enrolled. The study was conducted at Gastroenterology/Medical Ward, Lahore General Hospital, Lahore in collaboration with Chandka Medical College Hospital, Larkana from 1st January 2016 to 30th June 2016. Informed consent of the

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patients was obtained to include their data for publication. The basic demographic data including age, gender, clinical presentation were recorded. After a detailed history and physical examination, 5 to 10ml of diluted (1:10,000) adrenaline was injected endoscopically around bleeding point by dedicated gastroenterologist. Clinical efficacy of adrenaline was considered if there was no further UGIB upto 72 hour after endoscopy. The data was analyzed for clinical efficacy by using simple frequency and percentage.

RESULTS

Age distribution of the patients was done showing that 55% (n=55) were between 12-40 years of age while 45% (n=55) were between 41-70 years of age, mean±SD was calculated as 38.74±11.52 years (Table 1). Patients were distributed according to gender, it shows 57% (n=57) were male and 43% (n=43) were females (Table 2). The efficacy of adrenaline sclerotherapy in controlling upper GI bleeding was recorded in 65% (n=65) of the cases (Table 3)

Table No.1: Age distribution (n=100)

Age (years)	No.	%
12 – 40	55	55.0
41 - 70	45	45.0

Table No.2: Gender Distribution (n=100)

Gender	No.	%
Male	57	57.0
Female	43	43.0

Table No.3: Efficacy of adrenaline sclerotherapy in controlling upper GI bleeding (n=100)

Efficacy	No.	%
Yes	65	65.0
No	35	35.0

DISCUSSION

Our data regarding efficacy of adrenaline sclerotherapy for controlling upper GI bleed is in agreement with previous data showing that Argon plasma coagulation (APC), injection sclerotherapy using 1:10,000 adrenaline, endo-clips and heat probe effectively controlled the bleeding in 75.9,¹¹ 75,¹² 87¹³ and 97¹⁴ percent of patients respectively, the findings of these studies support our results. However, some of the above studies showing higher efficacy than ours.

Another study by Chung et al¹⁵ revealed that injection with 1:10000 adrenaline alone reduces active bleeding in majority of the cases, however, rebleed rates was not recorded in his study. Wardehoff and Gros¹⁶ revealed that injection of the sclerosant polidocanol decreases the risk of rebleed in cases presenting with major stigmata of recent haemorrhage, while the efficacy of

sclerosants alone as a management for active bleeding is not well cleared.

A prospective trial including 78 cases with active bleeding or non-bleed visible vessel from a peptic ulcer (PU) who administered with a mean of 16.5 ml of epinephrine, 12 cases (15.4%) had recur bleed.¹⁷

In absence of no strict criteria regarding the quantity, a total of higher volume¹⁸, about 30 mL¹⁹ may be optimized as hemostasis and associated with reduced rate of rebleeding.^{19,20}

However, a second injection is not generally applied considering the fact that it does not confer more advantage over epinephrine injection alone, but it may can potentiate epinephrine-induced mucosal injury.^{15,21}

Though we found a higher rate of efficacy of adrenaline sclerotherapy to control upper GI bleed but these findings are primary in our setup and needs some-other trials to validate this data.

CONCLUSION

The efficacy of adrenaline sclerotherapy is significantly higher and encouraging for controlling upper GI bleeding and this modality may be used for effective management of upper GI bleeding.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Hematological Changes in Patients Presenting with Pulmonary Tuberculosis

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Hamid Ullah²

ABSTRACT

Objective: To evaluate hematological changes in Pulmonary Tuberculosis (TB).

Study Design: Observational / descriptive / cross sectional study.

Place and Duration of Study: This study was conducted in Pathology Department, Hayatabad Medical Complex Peshawar from Nov 2015 to Oct 2016.

Materials and Methods: In the present study a total of 150 subjects were enrolled, out of them 100 patients diagnosed as pulmonary TB and 50 as control healthy individuals. Pulmonary tuberculosis was diagnosed by direct sputum smear microscopic examination after Ziel Nelson stain. Blood counts were performed on all these patients by hematology analyzer (CD Rubby, Abbott, USA) and ESR was also performed for all these patients by Westergren method.

Results: In the present study 35% had anemia with hemoglobin level was 10 ± 8.67 gm/dl. In 15% Patients had leucopenia with TLC was $2.5 \pm 1.567 \times 10^3/\mu\text{l}$ and 12% patients had leukocytosis TLC was $18 \pm 1.565 \times 10^3/\mu\text{l}$. 10% patients had thrombocytosis, Platelet count was $480 \pm 20.545 \times 10^3/\mu\text{l}$ and 8% patients had thrombocytopenia with platelet count was $120 \pm 118.3 \times 10^3/\mu\text{l}$. ESR were 100 ± 10 mm/1st hour for all the patients. These values were significantly changed as compared to control values.

Conclusion: The study concludes that pulmonary Tuberculosis is significantly associated with hematological abnormalities. The patients presenting with cytopenia or cytosis the physician must have suspicious of the disease and he should immediately screen the patient for pulmonary tuberculosis. This will reduce unnecessary procedure of bone marrow aspiration and will provide prompt treatment to the patient and reduced complication and spread to the community.

Key Words: Pulmonary TB, Anemia, Leukopenia, Leukocytosis, Thrombocytosis, Thrombocytopenia.

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INTRODUCTION

Tuberculosis is a major problem in the developing countries including Pakistan and it is associated with a variety of hematological presentation, so any patient presenting with anemia, thrombocytopenia or leucopenia or pancytopenia should be properly screened for Tuberculosis by rapid diagnostic assay or sputum examination in order for prompt diagnosis of the disease and to avoid unnecessary indication for bone marrow aspiration to provide prompt treatment and reduce its further complication and to prevent its further spread to the community.

Tuberculosis is a chronic bacterial infection caused by Mycobacterium Tuberculosis, present globally in the

developing countries,¹ more than two million people are infected by this disease and 48% of them occur in heavily populated area like Pakistan, China, India, Bangladesh and Indonesia. Pulmonary tuberculosis is highly infectious disease² in which single patient may infect large number of people.³ Its elimination is extremely difficult as long as poverty, overcrowding, dense population and other co-infection exists in large portion of the earth.⁴ Tuberculosis can affect lungs, lymph nodes, pleura, gastrointestinal tract, bones, joints, meninges and peritoneum.⁵ Hemopoietic system is another organ seriously affected by Tuberculosis which cause variety of changes in Hemopoietic cell lines and plasma components. These hematological changes provide useful information to the clinician in the diagnosis of Tuberculosis⁵ Hematological manifestations can vary from anemia of different types to pancytopenia, leukoerythroblastic picture; leukemoid reaction rarely disseminated intravascular coagulation (DIC) and even myelofibrosis.⁶

Pulmonary Tuberculosis is associated with a variety of hematological abnormalities. These include anemia, prolonged ESR, thrombocytosis, thrombocytopenia, leucopenia, leukocytosis and pancytopenia.⁷ Sometimes

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patient with millitary Tuberculosis present with pancytopenia with hypocellular bone marrow and other hematological alteration include anemia and thrombocytopenia⁸ pulmonary Tuberculosis is associated with high prevalence of anemia and other hematological abnormalities.⁹ Patient with pulmonary Tuberculosis has a typical presentation of thrombocytopenia as well.⁸

MATERIALS AND METHODS

The present study was carried out in the Pathology department and Medical department of Hayatabad Medical Complex Peshawar from November 2015 to October 2016.

A total 100 patients of Pulmonary Tuberculosis were studied; both adults' males and females diagnosed by direct sputum smear microscopic examination of slides. All these patients had history of prolong cough more than three weeks. Sputum samples from all the suspected TB patients taken, positive for Acid fast bacilli by direct sputum smear microscopic examination of Zeil Nelson stain slides were included in the study and those negative for acid fast bacilli were excluded from the study.

Complete blood count was performed on all these patients by hematology analyzer (Ruby cell dyne, Abbott, USA) for which 3 ml blood was collected in an EDTA tube (Purple top). All the samples were processed by the hematology analyzer for determination of hemoglobin level, platelet count and TLC. For determination of ESR, 2 ml of anti-coagulated blood was drawn into a Westergren tube up to the mark the tube was placed in a stand vertically for one hour and the reading was noted. All the data were subjected to statistical analysis using chi square test and t test level of significance was set at $P < 0.005$.

RESULTS

In out of 100 patients 35 % had anemia, hemoglobin level was 10 ± 0.867 gm/dl which was significantly lower than the control group ($P < 0.0034$). 15 % had leukopenia WBC counts was $2.5 \pm 0.5567 \times 10^3/\mu\text{l}$ which was significantly lower than the control group and 12 % leukocytosis total WBC count was $18 \pm 1.565 \times 10^3/\mu\text{l}$ which was significantly higher than the control group while rest of patients had normal value as compared to control group.

10 % patients showed thrombocytosis mean platelet counts was $480 \pm 20.545 \times 10^3/\mu\text{l}$ and 8 % patients showed thrombocytopenia mean platelet counts was $120 \pm 18.365 \times 10^3/\mu\text{l}$ ($P < 0.0045$). ESR for all the patients were raised 100 ± 10 mm/hour which were significantly raised as compared to healthy individuals ($P < 0.005$) Tuberculosis is associated with significant Hematological changes so any patient presenting with hematological abnormalities, the physician should

concentrate on the diagnosis of pulmonary Tuberculosis.

Table No.1: Frequency of Hematological changes in Pulmonary Tuberculosis.

Pulmonary Tuberculosis patients	%age	Control group	%age
Anemia	35		
Leukopenia	15		
Leukocytosis	12		
Thrombocytosis	10		
Thrombocytopenia	8		
ESR	100		

Table No.2: Mean value of Hematological parameters in pulmonary Tuberculosis.

Hematological Parameters	Mean values of pulmonary Tuberculosis	Mean value of control group
Hemoglobin level	10 ± 0.867 g/dl	13.789 ± 0.678 g/dl
Leukoopenia	$2.5 \pm 0.5567 \times 10^3/\mu\text{l}$	$7.654 \pm 1.567 \times 10^3/\mu\text{l}$
Leukocytosis	$18 \pm 1.565 \times 10^3/\mu\text{l}$	$7.654 \pm 1.567 \times 10^3/\mu\text{l}$
Thrombocytosis	$480 \pm 20.576 \times 10^3/\mu\text{l}$	$350 \pm 20.545 \times 10^3/\mu\text{l}$
Thrombocytopenia	$120 \pm 18.567 \times 10^3/\mu\text{l}$	$350 \pm 20.545 \times 10^3/\mu\text{l}$
ESR	100 ± 10 mm/1 st hour	20 ± 6.78 mm/1 st hour

DISCUSSION

Tuberculosis is a major chronic bacterial infection and in a major public health problem in the developing countries it is associated with hematological abnormalities include anemia raised ESR, leukocytosis, leukopenia, thrombocytosis, thrombocytopenia and rarely DIC and bone marrow necrosis.

In the present study 100 patients of pulmonary Tuberculosis were included in the study out of which 35% patients showed anemia 12% patients leucocytosis and 15% leukopenia and 8% patients Thrombocytopenia and 10% had thrombocytosis and 100 % patients had raised ESR.

In the present study 35 % patients had anemia, mean Hb level was 10 ± 0.867 gm/dl which was significantly lower than the control group. A similar study had been concluded by Al-Muhammad et al. on 90 patients of pulmonary Tuberculosis who reported significant anemia in TB patients¹⁰ Another study was conducted by Kamal et al on 100 patients, in which 99 % had anemia, 49 % had lymphopenia and 100 % had elevated ESR which shows similar correlation to our study that hematological changes are significantly associated with pulmonary Tuberculosis.¹¹

Others studies in this regard reported by Akpan et al. that pulmonary Tuberculosis is associated with

significant Hematological changes and include anemia, leukocytosis, leucopenia and Thrombocytosis and raised ESR and DVT as a result of hyper coagulable state.¹² Various studies are available on this subject that hematological abnormalities are common in Pulmonary Tuberculosis most common hematological changes occurring in pulmonary Tuberculosis is Anemia, decreased Hb level reported by various authors. The exact etiology is unknown but may be due to cytokines secreted by macrophages in response to tuberculosis bacilli resulting in decrease erythropoietin percolation and blockage in the reticulo-endothelial transfer of iron in the developing RBC.¹³ It may also due to anemia of chronic disease¹⁴ various cytokines are released due to activation of T-lymphocytes and macrophages like interferon gamma. (INF.gamma), Tumor necrosis factors (TNF-alpha) interleukine (IL-1) and interkine-6 (IL-6) concentrate iron in reticulo-endothelial system, limiting its availability for RBC and decrease Hemoglobin synthesis. These cytokines also inhibit erythroid progenitor cell proliferation and decrease erythropoietin production; these cytokines impair the responsiveness of progenitor cells to erythropoietin. Cytokines directly damage erythrocyte and reduce their life span.¹⁵ Thrombocytosis has also been observed in pulmonary TB which may be attribute to reactive changes occurring in chronic infection and may be due to increase level of cytokines IL-6 induce hepatic Thrombopoietin production and cause reactive thrombocytosis.¹⁸ Andreo et al also reported that mycobacterium Tuberculosis infection is associated with thrombocytosis and this effect might be due to increase level of interleukine-6.¹⁹

Thrombocytopenia has also been reported in various studies of pulmonary Tuberculosis. In our study 8% patients showed Thrombocytopenia. Kudrajpaul also reported immune Thrombocytopenia in his study. The exact cause is unknown, but it is thought that the sensitized plasma cells secrete antibodies against Tuberculosis antigen which cross react with platelet and cause their destruction. It might also be due to bone marrow infiltration by Tuberculosis and TB related intravascular coagulation.²⁰

Thrombocytopenia in TB can be very severe and may present with disseminated purpura, epistaxis, hematuria, mucosal bleeding and hemoptesis.²¹ Varied mechanisms like drugs, immune mechanisms, bone marrow fibrosis, granulomatous involvement of bone marrow and Hypersplenism have been responsible for thrombocytopenia.⁵

Leucocytosis and leucopenia has also been observed in our study, similar to other studies leukocytosis are thought to be result from immune responses to tuberculosis reported by ohaniyi et al²² while leucopenia has been observed by Hungund et al.⁵

Raised ESR has also been observed in our study which has reported by different authors in pulmonary

Tuberculosis, Elevated ESR result from production of high profile of fibrinogen and other acute phase proteins that cause stickiness of RBC to form rouleaux formation which will settle and sediment faster but this raised ESR becomes corrected after using different combination of antituberculous drugs.^{23, 24}

CONCLUSION

The study concluded that hematological abnormalities are common manifestations in pulmonary Tuberculosis, so any patient presenting with cytopenia or leukocytosis or thrombocytosis or thrombocytopenia. The physicians must maintain a high index of suspicious for diagnosis of pulmonary tuberculosis and this will reduce unnecessary procedure for bone marrow aspiration and provide immediate treatment to the patient and reduce its further spread and complications.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Domestic Violence: a Study of Depression, Battering and associated factors in Married Women in Primary Healthcare from Pakistan

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ABSTRACT

Objective: The objective of the current study was to assess depression in married women experiencing battering and the factors associated with battering.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Department of Psychiatry and Behavioural Sciences, Primary Healthcare General Practice in Sialkot from July 2016 to September 2016.

Materials and Methods: 207 consenting married women above the age of 18 screened for battering by Women's Experience with Battering Scale were administered Beck Depressive Inventory to assess depression. Demographic data sheet was completed. Results were analyzed by using SPSS v 21.

Results: Mean age of the women was 31.17 ± 11.37 years with range from 18-67 years. Almost half (47.34%) were between 18-35 years of age, 39.13% were illiterate, 44.93% had 10 years of education. Majority lived in nuclear family 65.70% Vs 34.30%. The sample had a mix of women residing in urban, semi-urban and rural areas (27.05%), (34.78%) and (38.16%) respectively. Majority of the women were from lower and middle income families (84.54%).

98 (47.34%) of the women were depressed. Depression was mild in 54 (26.09%) moderate in 29 (14.00%) and severe in 15 (7.25%) of the women. Pearson correlation showed an association of battering with lower education ($p=0.02$) and lower financial status of the family ($p=0.01$). There was no association of battering with age ($p=0.24$) number of children ($p=0.07$) type of family ($p=0.27$) or the area of residence of the married women ($p=0.47$).

Conclusion: About half (47.34%) of the married battered women were suffering from depression. Battering was associated with socio-demographic variables described in results.

Key Words: Domestic violence, Depression, Primary Care, Battering, Women, Pakistan

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INTRODUCTION

Battering was defined by Smith PH for women having continued perception of being susceptible to psychological as well as physical danger, loss of control or power who is in a partner relationship with male.¹ Domestic violence can be in different forms. It can be physical, verbal and psychological. In physical violence slapping, hitting, kicking and even beating are involved. Verbal violence can also be very damaging and

demeaning for a woman. Psychological violence in the form of continued stress, oppression and belittling the women are common. Not only inside the home, it is also common outside the home e.g. work place harassment.^{1,2,3} Studies carried out in Pakistan have reported different rates of domestic violence from 40% to 75%.⁴

An Indian study of 9998 women showed that there is association of domestic violence with psychiatric illness in women.⁵ Poor economic conditions, difficulty in relationships, low rates of education, life events which are stressful and lack of or poor social support are commonly associated with common and major psychiatric illnesses^{6,7}. In Pakistan studies done in community, primary healthcare and hospitals have reported mixed finding. In a study carried out in Lahore it was found that psychiatric illnesses are associated with domestic violence.⁸

Identifying the women suffering from domestic violence and battering is important to assess the psychological disturbance in them. The assessment of need can lead to strategies to be formulated and then implemented to ameliorate this problem. Primary

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healthcare system in Pakistan is first direct medical link with patients in most of the cases. Little information is available about battering and depression in primary healthcare in our part of the world. The objective of the current study was to assess depression in married women experiencing battering and the factors associated with battering.

MATERIALS AND METHODS

The study was conducted by Deptt. of Pschy and Behavioural Sciences KMSMC Skt in primary health care setting in the city of Sialkot, Pakistan from July to September 2016 (3 months). We followed ethical guidelines in the declaration of Helsinki. It was a cross sectional study. Non-probability convenience sampling technique was employed. Inclusion criteria was consenting married women above the age of 18 years, who were subjected to battering as measured by WEB scale score of more than 20. Excluded from the study were married women suffering from severe physical or psychotic illness, delirium or any other organic or substance related problem effecting functioning of the brain. Data was collected by a psychologist who had more than one year practical clinical experience of working with psychiatric patients. A data sheet was designed to collect the demographic details. Urdu translation of the WEB and BDI were used.

Battering was defined by Smith PH for women having continued perception of being susceptible to psychological as well as physical danger, loss of control or power who is in a partner relationship with male. Women's experience with battering scale (WEB) is 10 item questionnaire.¹ Its Urdu translation was used. WEB scale is reliable and valid to measure battering. It is easy to use. Its measurement is not bound by any time frame and it measures the prevalence well enough. It differentiates battered and non-battered women. It is scored on a Likert scale from a range of 1 to 6. The minimum score is 10 and maximum score is 60. It is scored in two ways. In first method higher score on the scale means more experience with battering. In second method a total score of ≤ 19 means no battering while a total score of 20 or more means battering. We used second method to use a total score of 20 or more on WEB scale to screen married women with battering. The cronbach's alpha for our study was .82. Beck depressive inventory (BDI)⁹ was used to assess depression. Its Urdu translation was used. BDI has been used extensively in research all over the world. It has 21 items. Each item is scored from a range of 0 to 3. Minimum score of BDI is 0 while maximum score is 63. Its cut off score is 13. A score of 14-19 means mild depression, 20-28 means moderate depression while a score of 29-63 is considered as severe depression. The cronbach's alpha for our study was .84.

Written informed consent was taken after describing the purpose and title of the study. WEB scale was

administered first and women who scored more than 20 on this scale were further interviewed and administered sheet for demographic details and BDI. During the study it was noted that women were hesitant to tell their personal contact details and exact residential address, so these were omitted from the study. They were assured of the confidentiality of their data and as special case scenario they were assured that their data will be deleted in all forms (soft copy in computer and hard copy in the form of pro-forma and questionnaires) after completion of the study. The data was deleted as promised from the participants. After collecting data from the first participant, every 4th married women was approached. If the women did not meet the inclusion and exclusion criteria, data was collected from the next eligible participant and the process was continued. For the women who were illiterate, data collector read out all the questions and answers and entered the responses according to the consent of the participant.

Data was analyzed on SPSS v 21. Mean \pm SD was applied for continuous variables. For categorical variables frequencies and % were assessed. For Pearson correlation p-value was set at <0.05 .

RESULTS

There were 207 married women included in the study. Mean age of the women was 31.17 ± 11.37 years. Their age ranged from 18-67 years.

Table No.1: Characteristics of married women experiencing battering n= 207

Variable	Frequency	Percentage
AGE		
18-35	98	(47.34%)
36-55	72	(34.78%)
>55	37	(17.87%)
EDUCATION		
Illiterate	81	(39.13%)
Up to 10 years	93	(44.93%)
More than 10 years	33	(15.94%)
NUMBER OF CHILDREN		
≤ 3	112	(54.11%)
>3	95	(45.89%)
TYPE OF FAMILY		
Nuclear	136	(65.70%)
Joint/extended	71	(34.30%)
RESIDENCE		
Urban	56	(27.05%)
Semi-urban	72	(34.78%)
Rural	79	(38.16%)
FINANCIAL STATUS OF THE FAMILY		
Low	94	(45.41%)
Middle	81	(39.13%)
Upper	32	(15.46%)

Almost half 47.34% were between 18-35 years of age, while 34.78% were between the age of 36-55 and 17.78% were above the age of 55 years. 39.13% were illiterate, 44.93% had up to 10 years of education and only 15.94% had more than 10 years of education. 54.11% had 3 or less children while 45.89% had more than 3 children. Majority were living in nuclear family 65.70% Vs 34.30%. The sample had a mix of women residing in urban, semi-urban and rural areas (27.05%), (34.78%) and (38.16%) respectively. Majority of the women were from lower and middle income families (84.54%) while only 15.46% belonged to upper family income group. (Table 1)

Table No.2: Frequency of depression in married women experiencing battering n=207

Severity of depression	Frequency	Percentage
Mild	54	(26.09%)
Moderate	29	(14.00%)
Severe	15	(7.25%)
Total	98	(47.34%)

Of the 207 married women who experienced battering, 98 (47.34%) were suffering from depression at the time of assessment. Depression was mild in 54 (26.09%) moderate in 29 (14.00%) and severe in 15 (7.25%) of the women. Rest of the 109 (53.66%) of women had no depression at the time of assessment. (Table 2)

Pearson correlation test was applied. A p value of <0.05 was considered to be significant. The results showed an association of battering with lower education ($p=0.02$) and lower financial status of the family ($p=0.01$). There was no significant association of battering with age ($p=0.24$) number of children ($p=0.07$) type of family ($p=0.27$) or the area of residence of the married women ($p=0.47$). (Table 3)

Table No.3: Variables associated with battering

Sr. #	Variables	1	2	3	4	5	6	7
1	Age	-	.06	-.12	.16	.38	-.19	.24
2	Education		-	.24	.37	.08	.33	.02*
3	Number of children			-	.18	-.31	.21	.07
4	Type of family				-	-.15	.35	.27
5	Residence					-	.25	.47
6	Financial status of the family						-	.01*
7	Battering							-

*significant $p<0.05$

DISCUSSION

The results from our study done in primary health care show that out of the 207 married women who experienced battering, 98 (47.34%) were suffering from

depression at the time of assessment, while a study carried out in primary healthcare in Lahore found that 30.35% of the 650 women who participated in the study had depression.⁸ A study carried out in a tertiary health care set up in Karachi revealed rates of 62%.¹⁰ The difference in rates might be due to methodology and the instruments used in collecting data. Lahore and Karachi are metropolitan cities while Sialkot is a medium sized city, this may be the factor in different rates of depression. The women in primary healthcare came to general practice setup while higher rates in Karachi may be due to the fact that women included in the study were from the psychiatry department of a large tertiary care hospital.

Our research found an association of domestic violence in the form of battering with lower education. A large number of studies report similar findings from community to primary healthcare and also in tertiary health care.^{4,5,8,10} Lower education is associated with higher violence in many studies carried out in developed and developing countries which corroborates our findings.^{11,12} A study from India reports better outcome when both the husband and wife have higher education.⁵ Another study from New Zealand reported low education to be predictor of abuse by partner in relationships.¹³

Lower financial status of the family was associated with domestic violence and battering in our study. Poverty may lead to socio-economic difficulties and strain in marital relationship leading to aggression, violence and battering.^{11,12,14} The findings from our study are corroborated by a study from India.¹⁵ There was no association of age of women with battering in our study. There are mixed finding on this issue in the literature. Some studies report younger women experience more violence while other studies report that there is no association of age of women with domestic violence and women of all ages suffer from some or other form of domestic violence.^{2,3,16} There was no association found with area of residence of the women with experience of domestic violence and battering. Our findings are corroborated by other studies.^{2,3} There was no association of number of children with battering. Other studies have reported similar findings.¹⁷ There was also no association of battering and domestic violence with the type of family in which women were living. Other studies report similar findings.^{11,12,17}

Women who were found to be suffering from depression were provided cost-effective treatment at the same general practice in the form of counseling and psychotherapy. Primary care GP was sensitized to the issue of domestic violence and depression. The physician prescribed cost-effective medicines for depression where it was needed. A mental health specialist was consulted for management of women in refractory cases. Our study has some strengths and limitations. The strengths of the study are that it was

carried out in primary healthcare in a medium sized city in a semi urban set up. There was representation of rural, semi-urban and urban women in the study. The instruments used were easy to understand and brief needing little time to be completed by the women who participated in the study. The study has its limitations. Study design was cross-sectional and it was carried out in only one general practice so the results may not be generalized to the whole population. In future prospective studies are needed.

CONCLUSION

Of the 207 married women who experienced battering, 98 (47.34%) were suffering from depression at the time of assessment. Battering in married women was associated with lower education and lower financial status of the family. There was no association of battering with age, number of children, type of family or the area of residence of the married women.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Infective Organism and Antibiotic Sensitivity Analyzed in Chronic Suppurative Otitis Media Patients in Mirpur, AJK

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ABSTRACT

Objective: To analyze the bacteriological isolates and antibiotics sensitivity for each bacteria causing ear infection resulting in CSOM. A main objective of the study is to avoid excess and incorrect prescription of antibiotics resulting in antibiotic resistance in study area.

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the Divisional Headquarter Teaching Hospital Mirpur AJK from April 2012 to December 2014.

Materials and Methods: Seventy patients of Chronic Suppurative Otitis Media were evaluated on the basis of bacteriological investigation, culture and sensitivity along with Patient's parameters like age, clinical features (ear discharge and pain) were documented in the outpatient department of ENT. Informed consent was taken from all the patients. Sample was taken via sterile swabs which were obtained from discharging ear/ears and cultured both aerobically and anaerobically. Sensitivity pattern of causative organism was established according to standard protocols. The antibiotic sensitivity of the confirmed organisms was performed by disk diffusion method (Baurer *et al.*, 1966; Ahmed *et al.*, 2008).

Results: Data analysis of CSOM cases during the current study revealed that major CSOM prevalence 70% was in age <30 years and *Staphylococcus aureus* (67%) was the dominant agent causing CSOM in the study area, followed by the *Pseudomonas aeruginosa* (17%). *Staph. aureus* which accounted 57% of chronic otitis media in the study area found 100 sensitive for Ciprofloxacin, Moxifloxacin, Cefixime and Sulzone. While Doxycycline, Rocephin are more than 90% sensitive and Sparfloxacin, Gentamicin, >80% sensitive and Meropenem, Clarithromycin, Cephadrine found >70% sensitive for *Staph. aureus*.

Conclusion: Study mainly focused on major causative agents and mean prevalence age for CSOM so that prompt treatment and prevention strategy could be developed in the study area to prevent complications with CSOM.

Key Words: Chronic Suppurative Otitis Media, *Staphylococcus aureus*, sensitivity.

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INTRODUCTION

Excess and inaccurate prescription of antibiotics resulting in increased bacterial resistance. Several studies have revealed treatment indication, antibiotic choices and period of antibiotic therapy are incorrect in 50% cases generally^{1,2}.

Chronic Suppurative Otitis Media (CSOM) is defined as the inflammation of middle ear or mastoid cavity causing perforation of tympanic membrane leading to recurrent or persistent ear discharge³.

The infection reaches the middle ear through the Eustachian tube⁴. CSOM and its complications are among the most common presentation encountered by ENT specialists and general practitioners, most cases resulting from either untreated or under treated Acute Suppurative Otitis Media. In 1990's, CSOM and its complications particularly brain abscess caused an alarming situation leading to 28000 deaths⁵. It has high incidence and chronicity due to peculiar anatomy of middle ear and repeated infections through Eustachian tube. Other factors which lead to chronicity include bacterial resistance; prolong treatment, lack of compliance and also ototoxicity with both topical and systemic antibiotics⁶.

Chronic Suppurative Otitis Media (CSOM) is prevalent worldwide⁷ and the prevalence of chronic Otitis media cases in the general population of South East Asia is approximately 5.2% according to the World Health Organization report published in 2004. The prevalence is between 2&17% in India, Bangladesh and various countries in Africa. CSOM is the most common cause of preventable hearing loss in Pakistan and It is a major problem in other developing countries as well.^{8,9}

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Most common micro organisms found in CSOM are *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Proteus mirabilis*, *Klebsiella pneumoniae*, *Escherichia coli*, *Aspergillus* spp and *Candida* spp. varying in various geographical areas⁸ while anaerobic bacteria include bacteroid spp¹⁰.

Traditionally CSOM was classified as "Safe" (tubotympanic) and "Unsafe" (Atticoantral) disease. As bone erosion was an inherent pathological feature in unsafe disease so it was also called as erosive middle ear disease^{11,12}.

In developing countries, CSOM causing deafness in more than one third of the population has profound impact on society, and is believed to be responsible for intellectual and educational problems in children by causing deafness in more than two thirds of them¹³. Frequent upper respiratory tract infections and poor socio economic condition, poor hygiene, under nutrition and misuse of antibiotics may lead to the development of CSOM^{14,15}. and the prevalence of complications is comparatively higher leading to any disability or even death¹⁶. The other important factors associated with its occurrence are overcrowding, failure towards infection control, and lack of trained staff in controlling infections in hospital. Knowledge of the pattern of local micro-organisms causing CSOM and their antibiotic sensitivity is therefore essential for an accurate and cost effective treatment.¹⁷ Therefore, the main objective of this study was to identify the root cause, pathogenic bacteria along with their antibiotic sensitivity in CSOM patients in Mirpur AJK.

MATERIALS AND METHODS

CSOM patients attending the OPD Clinic of Ear, Nose and Throat (ENT) specialist at Divisional Headquarter teaching hospital, who had no antibiotic treatment for the previous three days, were referred to the pathological Laboratory for bacteriological investigation, culture and sensitivity.

A total of 70 patients were included in the study, history regarding the age, duration of ear discharge and especially any antibiotic treatment received. Though clinical examination was done to rule out acute otitis media and otitis externa. Sterile cotton swabs were used to collect pus from discharging ears. Patients were of both genders and from all age groups. Inclusion and exclusion criteria were set as follows: Patient of any age, patient of any sex, ear discharge of more than 3 months duration were included. Discharge of less than 3 months duration, discharge with intact tympanic membrane (otitis externa) and patient receiving antibiotics at presentation were excluded.

The ear/ears discharge was collected on two swabs with a sterile swab stick, one used for microscopy and the other for culture from each patient and the samples were aseptically cultured on MacConkey agar, Blood and Chocolate agar plates within three hours. The

plates were incubated aerobically and Chocolate agar plates were incubated an-aerobically in a candle jar, moisturized with soaked cotton at 37°C for 24-48 hours. The colonies were identified by colony morphology and Gram stain. The Gram negative organisms were confirmed by setting biochemical tests following the World Health Organization Manual for Laboratory Investigations of Acute Enteric Infections 1987 and the Gram positive bacteria by Gram stain, catalase and coagulase enzyme reaction tests.

The antibiotic sensitivity of the confirmed organisms was performed by disk diffusion method (Baurer *et al.*, 1966; Ahmed *et al.*, 2008). One ml of each identified bacterial isolate was prepared from an overnight culture and adjusted to 0.5 McFarland Standard. A sterilized wooden swab was soaked in each culture and used to streak on Mueller-Hinton agar (MHA) plates and allowed to dry at room temperature. Commercially available sterile discs at specific concentrations of Ampicillin (30ug), Augmentin (30ug), Ofloxacin (5ug), Cephalexin (30ug), Cephadrine (30ug), Ceftriaxone (30ug), Cefotaxime (30ug) and Erythromycin (10ug) were placed aseptically on the pre streaked agar plates with sterilized forceps. *E. coli* ATCC 25922, sensitive to all these drugs, was used as a control and the sensitivity of the antibiotics was recorded by measuring the zone of inhibition around the discs for each of the isolated cultures in millimeters (mm).

The interpretation of the measurement for sensitive and resistant bacteria was made according to the manufacturers' standard zone size. Percentage resistance and sensitive zone sizes were calculated using the formulas $PR = \frac{a}{b} \times 100$ and $PS = \frac{c}{d} \times 100$. Where PR is percentage resistance; a is number of resistant isolates; b is number of tested isolates; PS is percentage sensitivity; c is number of sensitive isolates and d is number of tested isolates against antibiotics.

RESULTS

70 patients attended ENT department of Divisional Head Quarter Teaching Hospital in Mirpur, AJK were studied for Chronic Supportive Otitis Media. Main focus of the study was to observe the growth pattern and bacteria isolated responsible for infection in the study area. Data analysis revealed, out of 70 (100%) cases of CSOM 13(19%) cases were below 10 years age, 21(30%) were between 10-20 years age, 19(27%) of CSOM cases were between 20-30 years, 10 (14%) cases were between 30-40 years of age while 4(6%) and 3(4%) of cases were from 50 and 60 and 60+ age respectively. CSOM major case burden is in early 30 years of life in the study area (table 1 and figure 1).

Cases distribution by ear involvement: Among the 70 (100%) cases included in the current study right ear was involved in 44% of the cases, 41% involved left ear and only 15% of cases having involved both the ears (figure 3).

DISCUSSION

Staph aureus was isolated from 40/50% of CSOM cases and most leading cause of CSOM followed by the followed by the *Pseudomonas aeruginosa* (15%) while *Streptococcus pyogenes*, *Proteus mirabilis* and *E. coli* accounted for 4%, 3% and 4% respectively.

As for antibiotic sensitivity is concerned Ciprofloxacin, Moxifloxacin, Cefixime and Sulzone. While Doxycycline, Rocephin are more than 90% sensitive and Sparfloxacin, Gentamicin, >80% sensitive and Meropenum, Clarithromycin, Cephadrine found >70% sensitive for Staph. aureus.

Second leading cause of CSOM in study area was *Pseudomonasaeruginosa* which found sensitive for Meropenum in 8/73%, Sulzone 7/64%, Tazobactam 6/55%, Imipenem 5/45%, Piperacillin 4/36% and Polymyxin 4/36% cases

CONCLUSION

Misuse of antibiotics develops resistance. This study concludes; promptly and timely management of CSOM reduces the chances of permanent damage to hearing, identified the common causative organisms of CSOM and their sensitivity pattern against various antibiotics.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Study of 100 Cases of Strokes for Infarction and Hemorrhage in Swat

Abdul Ahad, Bacha Amin Khan and Momin Khan

ABSTRACT

Objectives: The main objective of this study conducted was to compare the incidence of cerebral infarction and hemorrhage in one hundred patients of stroke over a time span of one year in Swat.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, Saidu Teaching Hospital Saidu Sharif Swat from January 2015 till January 2016.

Materials and Methods: Hundred patients were selected for this study and their data recorded including history of smoking or any medical disorder, especially Diabetes mellitus, previous cerebrovascular accident, transient ischemic attacks, history of previous cardiac events such as coronary artery disease, angina, Myocardial infarction. Vital monitoring was performed at the time of presentation and 24 hourly thereafter.

Results: Among selected patients 62% were males and 38% were Females.

18% patients were in age group 51- 60 year, 32% patients were in age group 61- 70 year, 24% patients were in age group 71- 80 year, 78% of patients were having cerebral infarction, while cerebral hemorrhage was found in 22% of patient. Hypertension was the most common risk factor among these stroke patients. Average blood pressure was 160 / 100.

Conclusions: Common cause of stroke is cerebral infarction while the leading risk factor found is Hypertension in patients with stroke.

Key Words: Hypertension, Stroke, Cerebral infarction, cerebral hemorrhage

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INTRODUCTION

Stroke, also called as Cerebrovascular Accident, is a condition in which blood supply to the brain is disturbed resulting in rapid decline in functions of brain. The underlying pathophysiology is decreased blood supply to the brain cells due to narrowing or blockage of brain arteries (thrombotic or embolic) or leakage of brain vessels¹.

Stroke is a major concern worldwide. It is the commonest cause of adult disability and the second major cause of death globally². In developing countries, there was about 10% decrease in stroke between 1990 and 2010³. Stroke is the leading cause of morbidity in the United States and has declined from third to fourth leading cause of mortality⁴. Currently in Pakistan, no sizeable, epidemiologic or community based study is performed on stroke. According to one community based study conducted on Pushtoons living in Karachi, stroke has a prevalence rate of 4.8% in both genders⁵.

Cerebral infarction is the cause of stroke in 85 to 95% of patients while cerebral hemorrhage causes 10 to 15% of stroke in developing countries⁶.

Thrombosis and embolism are the main underlying cause for Infarction while leakage or bursting of brain arteries leads to hemorrhagic stroke. Symptoms in cerebral infarction are slow in onset and progresses over period of time while in hemorrhagic stroke these are abrupt in onset⁷. Initially patients are evaluated with complete history and thorough clinical examination, and diagnosis confirmed with computed tomography⁸. Computed tomography scan is a non invasive diagnostic medical tool which helps to differentiate cerebral infarct from hemorrhage⁹. By comparison with MRI, a CT scan would be better for detecting acute hemorrhage while MRI takes at least 48 hours in detecting acute intracranial bleeding episode¹⁰. In cerebral infarction as well as cerebral hemorrhage, hypertension is the first line risk factor¹¹. Uncontrolled hypertension attributes to 18% to 42 % cases of cerebral hemorrhage reported in Pakistan. The aim of this study was to look for the frequency of both Ischemic and Hemorrhagic stroke and to point out the major risk factors in Swat.

MATERIALS AND METHODS

100 patients of stroke with Infarction and Hemorrhage in Medicine Department of Saidu Teaching Hospital

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Saidu Sharif Swat were evaluated. This study was conducted from January 2015 till January 2016.

An inclusion criterion was patient having stroke and the underlying cause of their stroke was either infarct or hemorrhage confirmed with CT brain.

An exclusion criterion was stroke secondarily due to any blood disorder space occupying lesions or vascular problem.

Diagnosis of stroke was made on clinical basis initially and CT brain performed for confirmation. A complete history of smoking, Diabetes mellitus, any previous cardiac events such as coronary artery disease, angina, Myocardial infarction and atrial fibrillation along with history of transient ischemic attacks, previous stroke, history of drug intake taken. Vital monitoring was performed at the time of presentation and 24 hourly thereafter.

Stroke was diagnosed on basis of history, clinical signs and findings on the CT brain. Complete information was recorded in a proforma. All relevant investigations and biodata of patient is also noted in the proforma.

SPSS was used to analyze the data including the different variables such as age of the patient, gender, history of hypertension, diabetes mellitus and subtype of stroke (ischemic or hemorrhagic). The data was described as mean \pm SD for numeric variables or frequencies or percentages for categorical variables

RESULTS

The study consists of a total of 100 patients with ischemic and hemorrhagic stroke. Among selected patients 62% were males and 38% were Females. The ratio of male to female was 1.6:1.

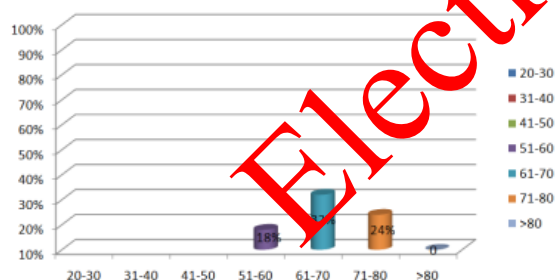


Figure No.1; Age distribution

Following was the Age distribution:

18patients (18%) were in age group 51-60year.

32 patients (32%) belonged to the age group 61-70 year.

24 patients (24%) were in age group 71-80 year

Among the 100 patients, 78(78%) had ischemic stroke and 22(22%) had hemorrhagic stroke.

Out of 78 (78%) ischemic stroke patients, 52 were male and 26 females.

Out of 22 (22%) patients with hemorrhagic stroke, 16 were males and 6 females.

All patients in this study were known hypertensive. 22% patients were smoker and 8% patient's have previous history stroke or TIA. Average blood pressure recorded was 160/100.

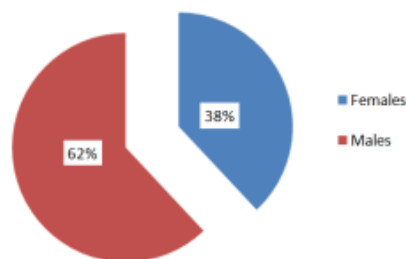


Figure No.2: Gender Distribution

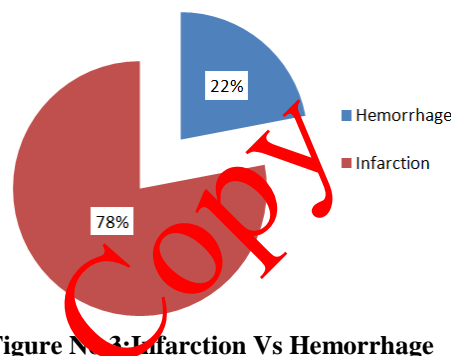


Figure No.3: Infarction Vs Hemorrhage

Table No.1: Previous history of diseases in various patients.

Diseases/Risk Factors	No. of Cases	Percentage
Hypertensive	100	100%
Smoking	22	22%
Previous Stroke	8	8%

DISCUSSION

Stroke is a global health problem. It has a significant impact on a patient, his family as well as puts financial burden on care take. Furthermore it results in health care system to become under stress. Health care budget of Pakistan already overburdened, will be facing difficulty in coping with the increasing number of stroke patients.

The most common Risk factors for stroke includes smoking, Hypertension, Atrial fibrillation, and metabolic disorders such as diabetes mellitus and dyslipidemia. Hypertension and diabetes are growing risk factors leading to cardiovascular disease and stroke¹².

Cerebral infarction, as a cause of stroke, was seen in about 80% cases in developed countries and in developing countries it was found to be 60%, where as hemorrhage was seen in 10% to 30%¹³. In one study it was observed that out of 50 cases of stroke 82% was having cerebral infarction and 18% cerebral hemorrhage¹⁴. In another study the frequency of

cerebral infarction was estimated to be 78% to 79% and that of cerebral hemorrhage 17% to 21 %^{15, 16}.

In our study 100 hypertensive patients with stroke were evaluated. 78% were having infarction and 22% were having hemorrhage as the underlying cause. All patients were hypertensive. So hypertension was considered as important risk factor for both types of stroke. Similar findings were also reported by other studies.^{6-7, 13-14, 17, 19}

In our study males were more than females, with male to female ratio of 1.6: 1, which is almost the same as reported by other studies^{9, 13, 18}. On the contrary, some studies show more females compared to males^{14, 20}.

Increasing age is a risk for stroke particularly in patients with history of hypertension. In the age of 61-70 years, higher risk of stroke has been reported^{21, 22}. This is in agreement with our study.

The major risk factor for stroke is hypertension²³ which is also in agreement with our study.

CONCLUSION

Most common form of stroke is ischemic stroke rather than hemorrhagic stroke. Hypertension is a major risk factor. Most common age is 60-80 years. Addressing hypertension significantly decreases stroke risk. Aim should be hypertension control and stroke prevention.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Assessment of Rehabilitation Practices and outcomes: A Case study on Mentally Ill Patients in Rehabilitation Unit of Punjab Institute of Mental Health Lahore, Pakistan

Seemal Vehra¹, Ejaz Mahmood Ahmed Qureshi² and Samina Zubair Chawala²

ABSTRACT

Objective: To assess the rehabilitation services for mentally ill patients and their outcome.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Punjab Institute of Mental Health Lahore, Pakistan (PIMH) from July, 2014 to October, 2014.

Materials and Methods: Semi-structured questionnaires were developed to collect data for 85 mentally ill patients (admitted in the rehabilitation unit), from caretakers working in the Rehabilitation Units, using simple random sampling technique. Demographic data was collected from hospital records.

Results: Psychiatric patients who underwent treatment for duration longer than 6 weeks in Rehabilitation Units, showed statistically significant positive responses in terms of having a friendly attitude with doctors ($\chi^2=3.542$; $p=0.059$), fellow patients ($\chi^2=8.432$; $p=0.003$) and paramedical staff ($\chi^2=5.051$; $p=0.024$). Moreover, their personal hygiene improved and they not only took interest in watching television, singing and games but also showed enthusiasm on meeting with their relatives ($\chi^2=11.484$; $p=0.001$). Their ability to quickly grasp instructions showed a significant enhancement ($\chi^2=7.083$; $p=0.007$) and their ability to use labour tools during vocational training increased ($\chi^2=8.745$; $p=0.003$). However, comparatively less eagerness was shown in block printing on clothes ($\chi^2=2.941$; $p=0.086$) and weaving clothes on 'khaddi' ($\chi^2=3.035$; $p=0.081$).

Conclusion: The study concluded that vocational and psychosocial rehabilitation had been beneficial for chronic mentally ill patients and prepared them to revert back to normal life become useful and respectable members of the society.

Key Words: Rehabilitation services, deinstitutionalization, mentally ill patients, vocational rehabilitation.

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INTRODUCTION

Rehabilitation has generally been defined as restoring something to its original state but medically it refers to the process of assisting an ill or injured person in such a way that the lost skills are restored and maximum self-sufficiency is regained. It simply means to make a person fit for community. However, the official definition of rehabilitation put forward by United States Psychiatric Rehabilitation Association states that 'Psychiatric rehabilitation promotes recovery, full community integration and improved quality of life for

persons who have been diagnosed with any mental health condition that seriously impairs their ability to lead meaningful lives.'²

According to WHO (2009), rehabilitation of people with disabilities is a process aimed at enabling them to reach and maintain their optimal physical, sensory, intellectual, psychological and social functional levels. Rehabilitation provides disabled people with the tools they need to attain independence and self-determination³.

There are four major types of rehabilitation, namely, Medicine Rehabilitation: restoration of function; Vocational Rehabilitation: restoration of capacity to earn livelihood; Social Rehabilitation: restoration of family and social relationship, and Psychological Rehabilitation: restoration of personal dignity and confident⁴.

It is now believed that psychiatric rehabilitation is highly demanding and that satisfactory results are not always achieved, but it necessitates cooperation from various sectors of societies and expertise, along with equipment and finances. However, with the availability of modern drugs and acceptance that psychiatric

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condition must be treated as an illness, the prospects of rehabilitation have increased⁵.

The concept of Deinstitutionalisation was rapidly adopted by many countries in 1960's to 1980's, whereby the long-stay psychiatric hospitals were replaced with community mental health service centres for patients with mental illness or developmental disability and were less isolated and relatively open to community. In this way the patients with mental disorders got an opportunity to live and even work in their communities rather than being confined to hospital environment⁶.

The three most common psychiatric illnesses that require rehabilitation are Schizophrenia (commonly known as split personality, in which the patient fails to comprehend what is real and lives in a fantasy world), Manic Depressive Psychosis, MDP, (variation between extreme excitement to deep depression) and Paranoid delusion (severe but baseless suspicion and false beliefs, especially of one being harmed by someone).⁷

Corrigan and McCracken (2013) stated that the ultimate aim of rehabilitation is to restore patient's self esteem, confidence and personal dignity⁸. Siris and Bermanzohn (2003) proposed two models to be employed for rehabilitation of mentally disturbed patients, namely, Treatment and Training⁹. The Treatment model, also known as the Medical model, treats the issues on the basis of disorders or defects which need to be diagnosed and rectified. On the other hand the Training model or the Educational model is based on constructively exploiting the potentials, abilities and strengths of the patients. Psychiatric rehabilitation has been reported to be closely associated with a global social movement called, 'The Recovery Movement' that aims to reverse the disgrace of Schizophrenia and promotes clinical technology which is a step ahead of the simplistic Medical Model¹⁰.

In Pakistan mental illness is on the rise, depression being the most common problem. Average overall prevalence of depression disorder and anxiety in the community population was reported to be 34% (ranging between 10 to 33% for men and 29 to 66% for women) whereas 1% of the country population suffered from schizophrenia. Prevalence of substance abuse approximated to 12%¹¹.

Keeping in view the increasing proportion of mental disorders, the significance of the effective Rehabilitation practices and the concept of deinstitutionalization, the present study was carried out on the patients admitted in the Rehabilitation Unit of the Punjab Institute of Mental Health, Lahore, Pakistan. Generally, those patients who have long stay (chronic patients) in the hospital or those who show signs of substantial improvement are shifted to the Rehabilitation Unit. The rehabilitation Unit differs from the rest of the wards of the PIMH as it allows partial interaction of the patients with the community and also

provides opportunity for vocational training. Thus, an investigation was carried out in the light of statistical analysis to assess the Rehabilitation services and their outcomes in terms of positive responses by the patients.

MATERIALS AND METHODS

Study population: The subjects of the present project were 85 chronic mentally ill patients (both male and female) under treatment in Rehabilitation Units of Punjab Institution of Mental Health, Lahore.

Inclusion criteria: Communicative and cooperative patients suffering from Chronic mental ill health.

Exclusion Criteria: Patients suffering from acute Mental health

Sampling, Data collection and analysis: With the help of a semi-structured questionnaire, information for 85 chronic mentally ill patients was collected from their caretakers (ward boys and 'ayaas'), who were all literate, with their educational status ranging from Matric to Intermediate. The reason for choosing the caretakers as respondents was that they monitor the progress of the patients closely, have frequent interaction and are familiar with their responses. Patient's demographic data was retrieved from hospital records. Information was collected using Simple Random Sampling method. The questionnaire was divided into two sections, one to obtain information regarding behavioural and psychosocial responses of the patients and the other to assess the responses to vocational environment. Although the male and female Rehabilitation units were separate, the analysis was based on overall data collected to remove gender bias. The outcome of the rehabilitation services was assessed on the basis of duration of stay of the patients in the hospital, being less or more than 6 weeks. Data analysis was carried out by using the software Epi Info-6. Chi square test was used to calculate the 'p' value.

Ethical Consideration: Written permission of the relevant authorities was sought before embarking the process of collection of data. Fully informed, understood and voluntary consent of the health authorities was obtained and the confidentiality was ensured.

RESULTS

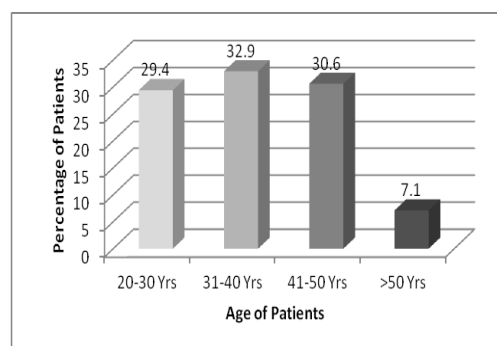


Figure No. 1: Age distribution of the patients

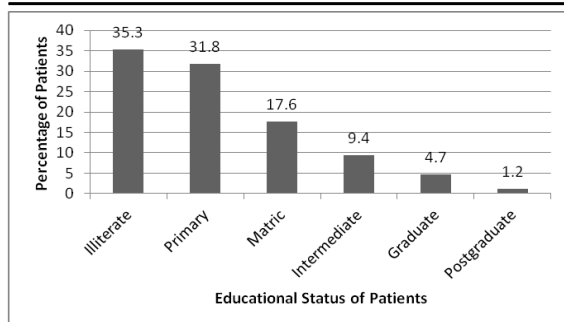


Figure No. 2: Educational Status of the patients.

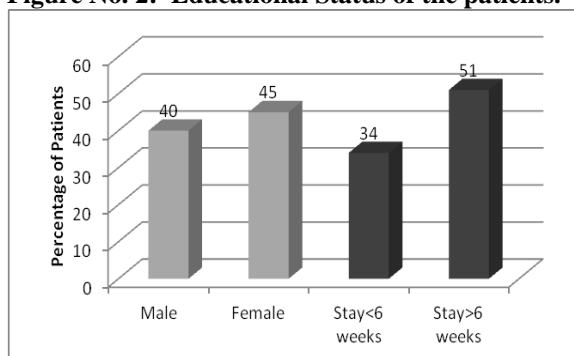


Figure No. 3: Gender distribution and duration of mental illness

The present study, carried out to assess the outcomes of the rehabilitation services extended to 85 mentally ill patients admitted in Rehabilitation Unit of Punjab Institute of Mental Health, Lahore, Pakistan, showed that majority of the patients aged between 20 to 50 years and further categorization revealed that 29.4, 32.9, 30.6 and 7.1% belonged to the age group of 20-30, 31-40, 41-50 and >50 years, respectively (Fig. 1)

As regards the educational status of the patients, 35.3% were illiterate, whereas 31.8% had acquired primary education and 17.6, 9.4, 4.7 and 1.2% were matric, intermediate, graduate and postgraduate, respectively (Fig. 2).

According to Fig. 3, out of a total of 85, 40 were male and 45 were females. The period of stay of 34 patients in the Rehabilitation Unit was less than 6 weeks and that of 51 was more than 6 weeks

The information collected regarding patient's behavioural and psychosocial responses, shown in Table 1 revealed interesting results. 82.4% had a friendly behaviour with fellow patient and the patients who had been admitted in Rehabilitation Unit for more than 6 weeks were significantly ($\chi^2 = 8.4325$; $p = 0.003$) more friendly than those with a shorter stay. Likewise, 94.1, 90.9 and 92.9% had a friendly attitude towards doctors, nurses and paramedical staff, respectively.

Table No.1: Frequency distribution of patients based on behavioural and psychosocial responses

Information regarding behavioral and psychosocial environment	YES				NO				χ^2	P value
	Stay < 6 weeks	Stay > 6 weeks	Freq.	%	Stay < 6 weeks	Stay > 6 weeks	Freq.	%		
Friendly with fellow Patients	23	47	70	82.4	11	4	15	17.6	8.432	.003*
Friendly with doctors	30	50	80	94.1	4	1	5	5.9	3.541	.059*
Friendly with nurses	33	46	79	92.9	1	5	6	7.1	1.464	.226
Friendly with Paramedics	29	50	79	92.9	5	1	6	7.1	5.051	.004*
Takes medicine regularly	33	51	84	98.8	1	0	1	1.2	1.512	.217
Takes bath regularly	29	50	79	92.9	5	1	6	7.1	5.051	.024*
Brushes teeth regularly	21	44	65	76.5	13	7	20	23.5	6.810	.009*
Changes clothes regularly	21	43	64	75.3	3	8	11	12.9	0.852	.355
Changes bed sheets regularly	23	40	63	74.1	9	11	20	23.5	0.462	.496
Takes meal on time	27	49	76	89.4	7	2	9	10.6	5.985	.014*
Cleans utensils after having meals	25	36	61	71.8	9	13	22	25.9	0.01	.919
Goes out with fellow patients	20	41	61	71.8	14	10	24	28.2	4.683	.030*
Interest in watching TV	17	38	55	64.7	17	13	30	35.3	5.366	.020*
Interest in singing	20	16	36	42.4	14	35	49	57.6	6.296	.012*
Takes part in indoor/outdoor games	17	19	36	42.4	17	32	49	57.6	1.357	.244
Shows enthusiasm on meeting relatives	18	44	62	72.9	16	7	23	27.1	11.484	.001*

n = 85; Level of significance= 0.05; * = Significant

Table 2: Frequency distribution of patients according to information about vocational environment

Information regarding behavioral and psycho-social environment	YES				NO				χ^2	P value
	Stay<6 weeks	Stay>6 weeks	Freq.	%	Stay<6 weeks	Stay>6 weeks	Freq.	%		
Uses labor tools/equipments	13	36	49	57.6	21	15	36	42.4	8.745	.003*
Communicates spontaneously	28	37	65	76.5	6	14	20	23.5	1.089	.296
Grasps instructions quickly	12	33	45	52.9	22	18	40	47.1	7.083	.007*
Seeks more work	15	9	24	28.2	19	42	61	71.8	7.054	.007*
Cooks food	5	20	25	29.4	29	31	60	70.6	5.902	.015*
Interest in stitching/embroidery	17	14	31	36.5	17	37	54	63.5	4.476	.034*
Interest in weaving clothes on Khaddee	3	12	15	17.6	31	39	70	82.4	3.035	.081
Interest in Block printing	7	4	11	12.9	27	47	74	87.1	2.941	.086
Interest in gardening	9	24	33	38.8	25	27	52	61.2	3.640	.056

n = 85; Level of significance = 0.05; * = Significant

However, patients who had received longer treatment were significantly more friendly with doctors ($\chi^2=3.517$; $p=0.059$) and Paramedical staff ($\chi^2=5.051$; $p=0.024$). Almost all i.e. 98.8% patients took medicine regularly. Bath was regularly taken, teeth were regularly brushed and clothes were regularly changed by 92.9, 76.5 and 87.1%, respectively. 89.4% had a tendency to take meals on time and 74.1% cleaned their used utensils. 71.8% liked going out with fellow patients and comprised 41 out of 51 patients with longer stay. 64.7, 42.4 and 42.4% showed interest in watching television, singing and taking part in outdoor activities, whereas enthusiasm to meet relatives was expressed by 72.9%.

Table No. 2 shows the frequency distribution of patients in context with their responses towards the vocational environment which they were provided in the Rehabilitation Units. The tools (used by labourers) and equipment involved in vocational practices, such as in cloth weaving, were used by 49 patients and amongst them 36 were those whose stay in the Rehabilitation Units was more than 6 weeks. Spontaneous communication was accredited to 76.5% of the patients and about half of the subjects (52.9%) grasped the instructions quickly. Relatively few, 28.2% were eager to look for more work. Cooking food, either alone or in supervision was practiced by 29.4%. Interest in stitching or embroidery, weaving cloth on khaddi, block printing on clothes was shown by 36.5, 17.6 and 12.9, respectively. On the other hand, 38.8% showed interest in gardening.

DISCUSSION

The chronic mentally ill patients are usually shifted to rehabilitation units or centres with the intention of deinstitutionalization and where relatively open environment is provided in terms of permission to interact with relatives and friends. Vocational training is imparted to the patients in order to make them skilled enough to survive on their own, once they are discharged from the rehabilitation centre. This is done

to restore their self esteem and confidence. Over the last two decades, extensive research carried out in USA has revolutionized the concept of vocational rehabilitation^{12,13}.

For effective rehabilitation, it becomes imperative to evaluate psychiatric rehabilitation, which like other avenues of health, has intensified in recent times¹⁴. The present study conducted on mental patients admitted in Rehabilitation Units of Punjab Institute of Mental Health, Lahore, generated interesting results regarding their responses to the services provided to them.

In the present study out of the randomly selected subjects 40 were male (52.95%) and 45 (47.1%) were female. This is in line with the findings of Somers et al. (2006)¹⁵ who reported that women generally have higher prevalence of mental illnesses than men. Our findings recorded a major proportion, 67.1% of mentally ill patients to be either illiterate or possessing mere primary education, indicating the significance of higher education.

Important indicators of rehabilitation in chronic mentally ill patients can be obtained through assessment of behavioural and psychosocial responses. Similar studies have been undertaken by Priebe (2000)¹⁶ and Deva (2006)¹⁷. In the present study a significant difference was found between the patients with varied duration of stay in the rehabilitation unit with regards to friendly behaviour with fellow patients, doctors and paramedical staff, as those with longer stay, were much more friendly. There was an insignificant difference ($\chi^2=1.517$; $p=0.217$) in context with taking the medicine regularly, perhaps the reason being that medicine was given under strict supervision of the caretakers and nurses. The positive impact of rehabilitation was evident from the fact that patients who had longer stay tended to be more careful about personal hygiene as they brushed their teeth and took bath more regularly ($\chi^2=6.810$; $p=0.009$; ($\chi^2=5.051$; $p=0.024$) than those with shorter stay. Behavioural responses like taking more interest in watching television and singing revealed a significantly

($\chi^2=5.366$; $p=0.020$; ($\chi^2=6.296$; $p= 0,012$) greater tendency of restoring back to normal life for patients receiving longer treatment. Statistically more significant inclination towards interaction with relatives ($\chi^2=11.484$; $p=0,001$) and going out with fellow patients ($\chi^2= 4.683$; $p=0.030$) was observed for patients with longer stay in the Rehabilitation Unit. Thus, the rehabilitation services clearly enabled the psychiatric patients to overcome functional limitations, which include social (difficulty faced in interacting with community) and emotional (difficulty in controlling and managing extreme emotions), as also suggested by MacDonald et al., (2003)¹⁸.

Information about adaptability of patients to vocational environment revealed a statistically significant positive response ($\chi^2=8.745$; $p=0.003$) towards handling and using labour tools like axe, spade, cloth weaving equipment. Longer treatment resulted in grasping instructions quickly ($\chi^2= 7.083$; $p=0.007$). Comparatively fewer patients showed interest in stitching/ embroidery, as men did not take interest in this activity. Few patients took interest in weaving cloth on khaddi, block printing and gardening. Furthermore it was found that the duration of rehabilitation did not seem to influence these responses (results were statistically insignificant). However, the aspect of vocational training is a very important component of psychiatric rehabilitation, even though re-entering the community is not an easy task. Loveland et al. (2007)¹⁹ advocated the same school of thought and reported that people suffering from psychological and psychiatric disorders experience innumerable barriers and disincentives on returning back to work, the reason being, highly demanding labor market and associated complications of disability benefits.

Rehabilitation of patients with mental disorders is not by any means an easy task and requires cooperation between patient, doctors, psychiatrists, psychologists, nurses, paramedical staff and most of all, the community. Cook et al. (2005)²⁰ also suggested that multidisciplinary teams comprising of vocational staff and clinical staff are likely to produce fruitful results. Thus, deinstitutionalization of psychiatric patients along with rehabilitation services is a promising and effective strategy in enabling them to lead a normal life once again²⁰.

CONCLUSION

Management of psychiatric disorders has undergone remarkable changes in the recent past with the introduction of community based system of care. The significance of vocational and psychosocial rehabilitation has received considerable recognition. The present study carried out in the Rehabilitation Units of Punjab Institute of Mental Health, Lahore, revealed a positive outcome of the rehabilitation services. On the basis of our findings it was concluded that in 16 out of

25 attributes studied, the patients who had been admitted in Rehabilitation for a period longer than 6 weeks, showed a statistically significant positive response. Our results support the vision that psychiatric rehabilitation expedites recovery, restores the ability to work, encourages interacting with community and enhances overall quality of life quality of life

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Knowledge Regarding Risk Factors and Complications of Hepatitis B and C Virus in Newly Diagnosed Patients

Ibtisam Ilahi¹, Anser Abbas² and Ruqia Bano³

ABSTRACT

Objective: To determine the knowledge regarding risk factors and complications of hepatitis B and C virus in the newly diagnosed patients.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Department Medicine of OPD, DHQ Hospital Muzafargarh from April 2016 to October 2016.

Materials and Methods: All patients with age more than 18 years either gender, and newly diagnosed with hepatitis B or C were incorporated. All the patients were interviewed regarding risk factors and complications of Hepatitis B and C verbally. Patient's knowledge was categorized as complete knowledge, partial knowledge and no knowledge. All the information regarding age, gender, hepatitis B and C and awareness was entered in the proforma.

Results: Total 120 patients newly diagnosed with HCV and HBV were selected, majority of patients 45(37.5%) was found with age group of 31-40 years, and 39(32.5%) of the patients were with age group of 41-50 years. Male gender was the commonest 75(62.5%). Majority of cases 55(45.83%) had matric level education. Hepatitis C was the most common in 75% patients. Mostly patients 68% had partial knowledge regarding risk factors of hepatitis B and C, while from remaining cases 22% were unaware, and only 10% had complete knowledge. Mostly patients had partial knowledge regarding complications of hepatitis B and C, while big prevalent cases 21.67% were unknown and only 6.66% patients had almost complete knowledge regarding complications.

Conclusion: We concluded that mostly patients had partial knowledge regarding risk factors and complications of hepatitis B and C, big prevalent patients had no any knowledge.

Key Words: Hepatitis B and C, Risk factors, Complications, Knowledge.

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INTRODUCTION

Hepatitis B and C infection represent a considerable proportion of the hepatic disease throughout the world.¹ Viral hepatitis is the big event for hepatic diseases linked to liver inflammation and also in different patients long-lasting damage of the hepatic tissue.^{2,3} It is the very serious health related issue and also very important infectious leading the reason of mortality worldwide. Hepatitis due to viruses leads at least one million deaths rate throughout the world every year. The commonest type the viral hepatitis are 6 (A, B, C, D, E and G).² HBV and HCV infections are the most common reasons for the development chronic liver disease and long-lasting hepatic damage.^{2,4} Estimately 2

billion are infected by hepatitis B virus and > 350 million cases are carriers throughout the world.⁵ HCV Infection seems to be the endemic in most areas worldwide^{6,7} and about 3.3% population of the world (200 million) are infected by HCV.^{8,9}

Hepatitis B virus is the DNA virus in the hepatocytes it replicates, and damages liver through viral immune response. The virus is transmitted vertically at birth, horizontally through unprotected sex, sharing of injecting equipment and close contact between infants and neonates. Transmission through unscreened blood products is another route of transmission since blood remains infectious for several weeks even when dried.^{10,11} Hepatitis C virus is an RNA virus which is transmitted by blood-to-blood contact. Sharing injecting equipment and blood transfusion are the most frequently observed routes of transmission.¹² Therefore, significance of the infection of hepatitis B and C in suffered cases population in several areas additionally risk factors of the viral hepatitis transmission in those areas investigations should be carried out to evaluate the measures for the decreases of such viral transmission with the sound indications in populations. Patient's awareness regarding sign symptoms, severity of the disease, its monitoring and the management options are very essential for the inappropriate self-

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care, faithfulness to the follow up, early identification of red flag signs and looking for the treatment timely.¹³ Therefore this study has been conducted to evaluate the awareness regarding risk factors and complications of HCV and HBV in newly diagnosed cases.

MATERIALS AND METHODS

Present study design was cross sectional and was carried out at in medicine department DHQ Hospital Muzaffargarh and some data was also collected for private medical centers. Study duration was 6 months from April 2016 to October 2016. All patients with age more than 18 years either gender and newly diagnosed with hepatitis B or C were incorporated in the study. Patients don't want to participate in the study and those had hesitation in answered were excluded. All the patients were interviewed regarding risk factors and complications of Hepatitis B and C verbally. Patient's knowledge was categorized as complete knowledge, partial knowledge and no knowledge. All the information regarding age, gender, hepatitis B and C and awareness was entered in the proforma. data was analyzed in SPSS version 20.

RESULTS

Total 120 patients newly diagnosed with hepatitis B and C were selected in this study, majority of patients 45(37.5%) was found with age group of 31-40 years, and 39(32.5%) of the patients with age group of 41-50 years. Male gender was the commonest 75(62.5%) and female were 45(37.5%). Majority of cases 55(45.83%) had matric level education 25% were primary, passed and 20.83% were graduates while 8.34% were uneducated. Table:1.

Table No.1: Demographic data of patients (n = 120)

Characteristics	Frequency (%)
Age groups	
18-30	12(10.0%)
31-40	45(37.5%)
41-50	39(32.5%)
>50	24(20.0%)
Gender	
Male	75(62.5%)
Female	45(37.5%)
Educational status	
Uneducated	10(8.34%)
Primary	30(25.0%)
Metric	55(45.83%)
Graduate	25(20.83%)

Hepatitis C was found in majority of the cases 75%, while HBV and HCV+HBV were found with percentage of 18.34% and 6.66% respectively. Fig:1. Mostly patients 68% had partial knowledge regarding risk factors of hepatitis B and C, while from remaining

cases 22% were unaware, and only 10% had almost complete knowledge Fig: 2

According to the knowledge of complications of hepatitis B and C, mostly patients had partial knowledge, while big prevalent cases 21.67% were unknown and only 6.66% patients had almost complete knowledge regarding complications. Fig: 3

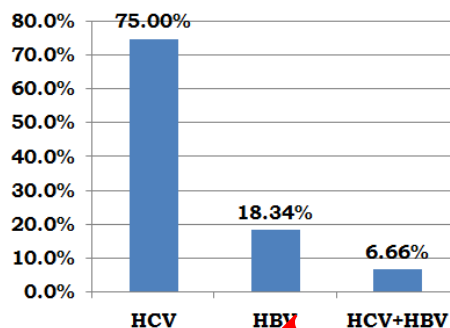


Figure No.1: Frequency of hepatitis B and C n=120

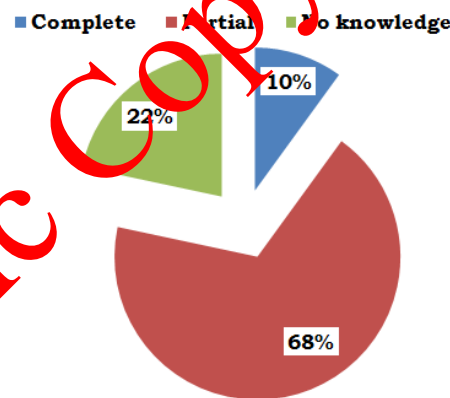


Figure No.2: Knowledge regarding risk factors of Hepatitis B and C n=120

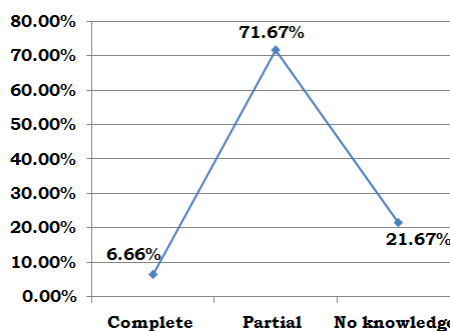


Figure No.3: Knowledge regarding complications of Hepatitis B and C n=120

DISCUSSION

Hepatitis B and C virus are the major reason of the liver disease and having a big important cause for the morbidity and mortality. Knowledge regarding it, is very low in Pakistani population generally, especially in uneducated peoples.¹⁴ In this study mostly patients 68%

had partial knowledge regarding risk factors of hepatitis B and C, while from remaining cases 22% were unaware, and only 10% had complete knowledge. As well as Mortel et al.¹⁵ reported that awareness in the health care workers was poor about hepatitis c infection. In a Pakistani study of Razi et al.¹⁶ reported there was a fair level of the awareness in students of the university regarding HBV and HCV. In the study of Ahmadi et al.¹⁷ reported that awareness of the health care workers very low regarding hepatitis B infection. Awareness regarding risk factors of HCV and HBV was found in the study of Jokhio et al.¹⁸ in which he reported that 96.2% razors after washing with antiseptic fluids after every client were used and 95.7% used the new blade. However, awareness regarding risk factors of the disease was very poor only 36.6% had knowledge that hepatitis may transmit by shaving instruments.

In this series total 120 patients newly diagnosed with hepatitis B and C were selected, majority of patients 45(37.5%) were found with age group of 31-40 years, and 39(32.5%) cases had age group of 41-50 years. Comparable results regarding age were found in the study of Irfan S et al.¹⁹

We found male gender was the commonest 75(62.5%) and female were 45(37.5%). Similarly in the study of Ghouri A et al.²⁰ reported that male were in majority with male to female ratio as 2.5:1.

In our study majority of cases 55(45.83%) had matric level education 25% were primary passed and 20.83% were graduates while 8.34% were uneducated. Similarly Haider G et al.²¹ conducted the study regarding awareness of hepatitis B in women and reported that in 61.98% women were uneducated, 17.35% were with metric, 13.22% were had intermediate education and 7.43% were graduate. In another study of Janjua NZ et al.²² conducted on barbers shops reported that 48% were uneducated.

In this study Hepatitis C was found in majority of the cases 75%, while HBV and HCV+HBV were found with percentage of 18.33% and 6.66% respectively. Comparable results were stated in the study of Almani SA et al.²³ and he reported that mostly 52% patients were infected by hepatitis c virus, 16% were infected by HBV and 16% patients had diagnosis of hepatitis B and C coinfection. In another study conducted by Farooqui, et al.²⁴ reported that hepatitis C infection is big prevalent in 59% patients, hepatitis B infection was in 32% patients, and coinfection of hepatitis B and C was only in 03% patients.

In this study according to the knowledge of complications of hepatitis B and C, mostly patients had partial knowledge, while big prevalent cases 21.67% were unknown and only 6.66% patients had almost complete knowledge regarding complications. In a study carried out in medical students by Anjali S in Gujarat²⁵ reported higher level of the knowledge in

86.7% study participants regarding risk factors. Ethiopian study showed that 62.4% of medical students had knowledge regarding HBV may develop the hepatic carcinoma but only 18.5% of them received vaccine of HBV. In the study of Paul P²⁶ reported that only 12% students had knowledge regarding sever complication HBV infection as well as liver carcinoma.

CONCLUSION

We concluded that mostly patients had partial knowledge regarding risk factors and complications of hepatitis B and C, big prevalent patients had no any knowledge. Awareness programs should be created specially regarding risk factors of hepatitis B and C to prevent the healthy peoples and coming generation from this worsen disease.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Awareness of Diabetic Patients Regarding Diabetic Neuropathy

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ABSTRACT

Objective: This study intended to find out the awareness level of patients regarding diabetic neuropathy.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Medicine Department of Indus Medical College Tando Muhammad Khan from February 2016 to July 2016.

Materials and Methods: All patients after diagnosis of diabetic neuropathy were selected. Cases were interviewed regarding diabetic neuropathy awareness and duration of diabetes etc. All the information regarding patients age, gender, clinical presentation and knowledge regarding diabetic neuropathy were recorded on self-designed proforma.

Results: Total 100 cases had diabetic neuropathy were involved in study. Most of cases i.e. 40% were with age of > 50 years, 30% patients ranged from 41-50 years of age group. 70% patients were females while 30% patients were males. Burning sensation was in 80% patients, numbness in hands and feet seen in 75% patients, tingling sensation was present in 70% patients. When patients were assessed regarding awareness of diabetic neuropathy than only 30% patients knew about complications of diabetes mellitus, only 10% patients knew about diabetic neuropathy.

Conclusion: It is concluded that patients had very poor knowledge regarding diabetic neuropathy.

Key Words: Neuropathy, diabetic patients, awareness.

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INTRODUCTION

Diabetic neuropathy, a commonest diabetes mellitus complication, influencing nearly 50% cases of Diabetes Mellitus Type-I & Type-II. Peripheral neuropathy of diabetes implicates the dysfunctional symptoms/signs of peripheral nerve in diabetic individuals following further possible factors have been discounted.¹ In type 1 diabetes, distal polyneuropathy generally turns out to be symptomatic following several years of long term hyperglycemia, however in type-II, it can possibly be obvious following just a few years of established inadequate glycemic regulation to meet at diagnosis. Symptoms are as below:

- Sensory – Positive/Negative, focal/diffuse; generally insidious in commencement as well as exhibiting a distribution of stocking-&-glove within distal extremities
- Motor – Proximal, distal, or further focal weakness, occasionally taking place accompanied by (sensorimotor neuropathy) sensory neuropathy

- Autonomic – Neuropathy which may comprise cardiovascular, gastrointestinal, and genitourinary systems in addition to sweat glands

An American cohort study reported that 47% diabetic cases have certain peripheral neuropathy.² It is projected that neuropathy is observed among 7.5% of cases while diagnosis of diabetes. >50% cases present symmetric distal polyneuropathy. Focal syndromes for example carpal tunnel syndrome (14-30%),^{3,4,5} plexopathies/radiculopathies, and cranial neuropathies represent the remaining 50%. Strong incidence statistics for the last two less-frequent syndromes is absent. Pirart et al, in a cohort of 4400 Belgian cases, projected that 7.5% of cases previously had neuropathy at the time of being diagnosed with diabetes.⁶ The neuropathy cases, after 25 years, elevated nearly 45%. The diabetic neuropathy incidence in United Kingdom, in hospital clinic populace was observed to be nearly 29%.⁷ The factors resulting in the diabetic neuropathy development are not well-studied, and several hypotheses have been developed.⁸ It is usually believed as a process dependant on a number of factors. Symptoms development relies upon several factors, for example overall hyperglycemic disclosure as well as further risk factors for example raised lipids, increased height, smoking, blood pressure, and high disclosure to further possibly neurotoxic factors for instance ethanol. Genetic causes can possibly contribute.⁹ Neuropathies are distinguished through a gradual dysfunction of nerve fiber. A generally recognized explanation of

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peripheral neuropathy of diabetes is "the attendance of signs and/or symptoms of dysfunction of peripheral nerve in diabetic cases following elimination of further factors."¹⁰ Neuropathies are the commonest diabetic complication, influencing nearly 50% cases with Type-I & Type-II diabetes. In Type-I DM, distal polyneuropathy generally turns out to be symptomatic following several years of long-term hyperglycemia. On the other hand, DM Type-2 cases can possibly present distal polyneuropathy following just a few years of well-known poor glycemic regulation; occasionally, these cases previously have neuropathy while diagnosis. Neuropathies relentlessly drop the living standard of patient. Moreover, while the neuropathy primary symptoms can be greatly intolerable, the secondary complications (such as ileus, foot ulcers, falls, , and cardiac arrhythmias) are yet further severe and can result in amputations, fractures, and yet death in diabetic cases. Studies¹¹ exhibited an overall absence of data regarding preventive or initial therapy measures in majority of diabetic cases previously amputated their lower-leg. Awareness level of diabetic patients is required to be determined regarding the ulcers prevention to design an intervention policy. Training patients regarding appropriate care and recurrent self investigations has been established as an effective interventional technique that can avoid ulceration.¹² This study intended to find out the awareness level of patients about diabetic neuropathy.

MATERIALS AND METHODS

This cross sectional study was held in medicine department of Indus medical college Tando Muhammad Khan. Study duration was 6 month from February 2016 July 2016. Total 100 diabetic cases were involved in this study after diagnosis of diabetic neuropathy after taking informed consent verbally. All the cases without diabetic neuropathy were not selected. All the cases more than 40 years of the either gender were selected. Complete clinical examination in all the cases was carried out including complications of diabetes, life style modification, whether they check their feet and soles for ulceration routinely and duration of diabetes etc. Cases were interviewed regarding diabetic neuropathy awareness. All the information regarding patients age gender, clinical presentation and knowledge regarding diabetic neuropathy were recorded on self-designed proforma. Data was entered on Spss version 16 for the analysis.

RESULTS

Total 100 cases were involved in this study. Most of cases i.e. 40(40%) ranged >50 years of age, 30(30%) cases ranged from 41-5- years of age and 25(25%) cases ranged from 30-40 years of age. 70(70%) patients were females while 30(30%) patients were males. (Table 1)

In this study according to neuropathy burning sensation in was 80(80%) patients, numbness in hands and feet seen in 75(75%) patients, tingling sensation was present in 70(70%) patients. (Table 2)

In this study, majority of the patients, i.e. 60(60%) had diabetes for more than 15 years, 30(30%) had diabetes for 11-15 years and 10(10%) patients had diabetes for 5-10 years. (FIG:1)

When patients were assessed regarding awareness of diabetic neuropathy than only 30(30%) patients knew about complications of diabetes mellitus, only 10(10%) patients knew about diabetic neuropathy while 90% cases were unaware regarding it. (FIG:2)

Table No.1: Age & gender of the patients n=100

Variables	Number (%)
Age groups	
<30 years	05(05%)
30-40 years	25(25%)
41-50 years	30(30%)
>50 years	40(40%)
Gender	
Males	30(30%)
Females	70(70%)

Table No.2: Various presentations of diabetic neuropathy n=100

Clinical presentation	Number (%)
Tingling sensation	70(70%)
Numbness in hands and feet	75(75%)
Burning	80(80%)
Sharp pain	45(45%)
Itchy pain	20(20%)
Pain in cold	15(15%)
Others	20(20%)

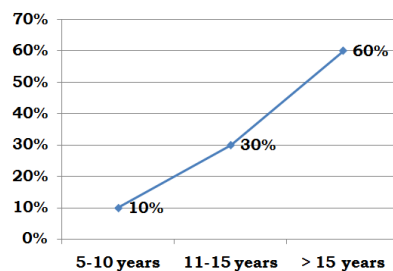


Figure No.1. Duration of diabetes n=100

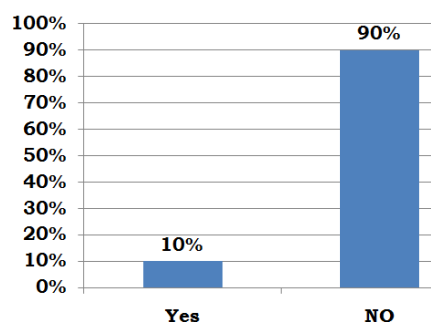


Figure No.2: Frequency of awareness regarding neuropathy n=100

DISCUSSION

Diabetic neuropathy (DN) can influence any site of nervous system therefore must be suspected in every patient who had diabetes for more than 5 years. Family physicians can contribute significantly in the education & care of diabetic individuals himself. They can boost the awareness and encourage the patients with diabetes to gain a healthy living standard, which would additionally result in a beneficial glycemic control offering safeguard from long-term complications. Diabetic polyneuropathy is a common diabetic complication along raised morbidity as well as loss of living standard. Tesfye et al.¹³ studied 3,250 diabetic cases reported 28% cases with a complete incidence of peripheral neuropathy. The condition was substantially correlated with period of disease, age, smoking status, diastolic blood pressure, height, high triglyceride level, low HDL cholesterol level and HbA1C. In this study, majority of the patients, i.e, 60(60%) had diabetes for more than 15 years, 30(30%) had diabetes for 11-15 years and 10(10%) patients had diabetes for 5-10 years. A study exhibited that in spite of very poor diabetic control, nearly half of the diabetic patients never acquired neuropathy symptoms, even following >20 years of diabetes. On the other hand, a few unlucky patients acquired neuropathy soon following the introduction of diabetes, yet when control of glycaemia is rather good. These distinguished observations involve the implication of factors except glycaemia in the diabetic neuropathy aetiology.¹⁴ Results of another study conducted by Fargol Booya et al.¹⁵ showed that statistically significant correlations were established between neuropathy and diabetes control quality gender, age, and disease duration (P values respectively: 0.04, 0.04, < 0.001 and 0.005. When patients were assessed regarding awareness of diabetic neuropathy than only 10(50%) patients knew about complications of diabetes mellitus, only 10(10%) patients knew about diabetic neuropathy. In comparison to this, results of Study conducted by Gurmu AE et al.¹⁶ exhibited that there was an inadequate practice in patients about self insulin treatment & diabetes which requires training on self-care administration as well as insulin self-treatment for diabetic cases by trained healthcare providers. 135 (90%) were aware of the home administration of insulin's effect of hypoglycemia. Above (78%) three quarters stated that they were satisfied with insulin treatment. Above the half (54.7%) cases had their blood sugar examined each month. Similar results are also seen in another study conducted by Kheir N et al.¹⁷ who reported in their results that there was usually inadequate practice of recurrently feet inspection for detecting signs of neuropathy, taking medicine in terms

of meals, adapting doses if required and deciding therapy goals. Results of another study also showed that 45.5% (n:80) of the cases were noticed to do recurrent foot care, 79% (n:139) checked soles recurrently, %25,6 (n:45) checked shoes inner prior to wearing.¹⁸ Multifocal, optic, central and Autonomic motor neuropathies have been projected presenting asymptomatic.^{19, 20} Asymptomatic neuropathy detection in foot is vital for superior administration and foot care in diabetic cases disposed to amputations & complications.²¹ Results of study conducted by Nathaniel GI et al.²² also reported that only 103 (45.8%) of patients examined had ever had previous eye examination of which 26 (26.3%) did so prior to their diagnosis with diabetes mellitus. Less than a quarter (22.3%) was referred by doctors for the eye examination. Age, sex, educational status and level of awareness did not significantly influence the number of those who had the eye examination while the duration of diabetes significant affect the number of those who had eye examination ($p < 0.005$). DM can be expressed as the mother of several harmful conditions including nervous and vascular events. There is need to improve the awareness of general population regarding complications of diabetes to prevent its complications.

CONCLUSION

This study concluded that patients had very poor knowledge regarding diabetic neuropathy, almost all cases were unaware. Further attention is needed to be paid to elderly diabetic male case with inadequate diabetes control regarding regular examinations of foot and further practical training.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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When appropriate may be included.

ACKNOWLEDGMENTS

List of all contributors who do not meet the criteria for Authorship, such as a person who provided purely technical help, writing assistance or department chair who provided only general support. Financial & Material support should be acknowledged.

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