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Editorial

Family Planning: Where Does Pakistan Stand?

Mohsin Masud Jan

Editor

The world's population is still growing. Although the rate of growth has been declining since the 1960s, global population grows each year by approximately 80 million people, or the equivalent of the population of a country the size of Germany. Nearly all of this growth is concentrated in the developing nations of the world, in many of which fertility rates remain high. High fertility can impose costly burdens on developing nations. It may impede opportunities for economic development, increase health risks for women and children, and erode the quality of life by reducing access to education, nutrition, employment, and scarce resources such as potable water. Furthermore, surveys of women in developing countries suggest that a large percentage--from 10 to 40 percent--want to space or limit childbearing but are not using contraception. This finding indicates a continuing, unmet need for contraception. These are just a handful of issues a country can possibly face due to high fertility rates and consequently a huge population, which is exactly what is being seen in Pakistan at the moment.

To highlight some family planning programs, China and Indonesia are at the forefront, though I exclude China from this discourse as Pakistan, as a nation cannot identify with the Chinese on a religious level. Now talking about Indonesia, the family planning program over there has been effective over the last four decades and is now being quoted as a 'success story' around the globe -- especially in resource-constrained economies.

One key element of this program involved developing a strategic partnership between the government and Muslim religious leaders. The continuous engagement of Indonesia's government with the prominent leaders of religious organizations has yielded several fatwas that have played an instrumental role making family planning initiatives acceptable on the community level.

Without the support of Muslim religious leaders, the family planning program in Indonesia would not have successfully contributed to the decline in the fertility rate from 5.6 at the beginning of the program to 2.3 at present.

In 1947, at the time of Independence, Pakistan's population was 31 million. The fertility rate was 7.5

per women and the population growth rate was 4.5 percent per year. In the 1990's, the fertility and population growth rates were reduced to 5.1 and 2.9, respectively. But this reduction is negligible. By 2035, Pakistan's population is projected to have hit 260 million (as per UNFPA, Pakistan).

Pakistan faces a daunting challenge. According to initial estimates, it is currently the world's sixth largest country in terms of population and is likely to become the third largest contributor to world population growth. According to UN projections, Pakistan's population will grow to over 380 million by the year 2050, surpassing Indonesia, Brazil, Russia and the US to become the world's third most populous country after India and China. With one of the highest population growth rates for any Asian country, Pakistan will certainly experience a dramatic decline in the per capita availability of arable land, water and forest resources. The rapid population growth -- which stands at three percent per year -- is already eroding economic gains. The question that now arises is: what went wrong and why?

Notwithstanding the difficulties in confronting family planning programs, there is evidence of a change in behavior among Pakistani society. A World Bank study conducted in 2014 revealed that men are showing an increased interest in family planning services and contraception. However, they are unable to avail them primarily due to the poor economic climate and its implication for large families.

In 2015, a landmark meeting was organized with the collaboration of UNFPA the Population Council. During this meeting, the ulema from across the country endorsed a declaration to allow the use of all reversible family planning methods that can help women plan the timing and spacing of their pregnancies in a bid to avoid maternal deaths and improve the overall health of families.

They unanimously offered their support in promoting birth-spacing services and thereby creating a healthy and prosperous society. The religious leaders and heads of religious institutions also affirmed that Islam declares the preservation and maintenance of human life as an inalienable right of all individuals

and families. They said the religion supports all measures, means and approaches that are in conformity to Islamic teachings to ensure this basic right.

Just like Indonesia, Iran and Bangladesh, Pakistan should also involve the religious community and consider them stakeholders in achieving the sustainable development goals.

Pakistan should also combat the organizational and management issues that have plagued its family planning programs to achieve coverage and effectiveness. The approach to delivering family planning services should also be altered to improve the overall status of women.

The most important steps that have been suggested include expanding family planning concept beyond FP so they can also tackle concerns on reproductive health services. Other recommendations include generating a positive attitude among public officials, organizing effective media campaigns through celebrity endorsements, improving the existing service quality and providing vasectomies and other reproductive services. Giving priority to the education of women, encouraging religious leaders to endorse the programs and emphasizing the role of donor agencies to continue with their responsibility are some other steps that will eventually support a struggling economy and a young nation.

Electronic Copy

Elevated D-Dimers and C-Reactive Protein Levels as a Risk Factor for Development of Thrombotic Events in Type 2 Diabetes Mellitus

Amjad Ali¹, Subhan ud Din², Hameed Ullah¹ and Ishtiaq Hussain¹

ABSTRACT

Objective: To study the levels of C-Reactive Protein and D-dimers in diabetic patients.

Study Design: Descriptive study.

Place and Duration of Study: This study was conducted at the Departments of Medicine and Pathology at Bacha Khan Medical College and Teaching Hospital Mardan from January to June 2016.

Materials and Methods: The study included a total of 150 patients. Out of these 150 patients, d-dimer levels were measured in 50 patients and CRP levels in the other 50. Remaining 50 patients were included in the control group. In control group, which comprised of non diabetic patients, d-dimer and CRP levels were measured in all 50 patients.

Results: CRP was elevated in 22 out of 50 patients (44%) and d-dimers were elevated in 32 out of 50 patients (64%). Five out of 50 patients had D-dimers levels in the range of 250-500ng/ml. 15 out of 50 patients had d-dimer levels in the range of 500-1000ng/ml and 10 out of 50 patients had d-dimers levels in the range of 1000-2000ng/ml. The study showed that both CRP and d-dimer levels were elevated in type 2 diabetic patients as compared to control group in which only 3 out of 50 patients had elevated d-dimer and 4 out of 50 had elevated CRP. P-value for CRP was less than 0.0035 and for d-dimer it was less than 0.0032.

Conclusion: The study concluded that diabetic patients are associated with significantly elevated level of CRP and d-dimer level. CRP is an inflammatory marker and d-dimer is hemostatic marker. Elevated levels identify patients who are predisposed to thrombotic events and thus useful to identify at risk patients. Early management in these patients reduce thrombotic complications.

Key Words: d-dimers, C-reactive Proteins, Diabetes Mellitus

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INTRODUCTION

Diabetes mellitus is a chronic disorder in which absolute or relative deficiency of insulin or its function occurs. The diabetes is associated with a lot of complications including diabetic neuropathy, diabetic nephropathy, diabetic retinopathy and Cardiovascular Diseases. All of these complications arise from common dysfunction of micro or macrovasculature in various parts of the body induced mainly by high concentrations of glucose in DM². Type 2 DM is an inflammatory atherothrombotic condition and inflammation has central role in the pathogenesis of atherosclerosis³. This inflammation is reflected by increased plasma levels of several biomarkers of inflammation such as CRP⁴. CRP is a marker of injury and its levels are considerably increased in patients of Type 2 DM.

Without having any signs of injury this increased concentration of CRP might be related to type 2 diabetes mellitus in some way. Elevated levels of CRP and other inflammatory markers are important risk factors for development of insulin resistance⁵. And cardiovascular disease⁶. High CRP levels have been linked to increased risk of thrombotic events⁷. Diabetic patients also presents with hypercoagulable state and have abnormalities in coagulation, hemostasis, platelet dysfunction and reduced activity of fibrinolytic system; these collectively can accelerate atherogenesis in diabetic patients⁸. The prothrombotic state in diabetic patients is characterized by increased fibrinogen levels, increased plasminogen activator inhibitors and different abnormalities in platelet functions. The disordered hemostatic mechanisms in DM play role in the pathogenesis of microvascular and macrovascular complications^{9,10}.

d-dimer fragments are the plasmin mediated proteolytic degradation of cross linked fibrin clot and d-dimers assay detects these fragments. High levels of d-dimers have been reported in diabetic patients and its elevated levels predict hypercoagulable and prothrombotic state¹¹. The aim of the study is to evaluate the plasma levels of CRP and d-dimers in type 2 DM patients as both hypercoagulable and chronic inflammatory states can

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increase the risk of cardiovascular events (myocardial infarction), cerebrovascular and peripheral vascular disease. Increased mortality due to cardiovascular disease in diabetics result from atherothrombotic complications, so determination of these two parameters has a predictive value and provides useful information to clinicians in assessing prothrombotic state in these patients.

MATERIALS AND METHODS

This study was conducted in the Department of Medicine at Mardan Medical Complex Teaching Hospital Mardan and pathology department of Bacha Khan medical college Mardan in Jan 2016 to June 2016. A total of 100 patients of DM were included in the study with blood glucose levels more than 200 mg/dl while 50 normal healthy individuals were placed in the control group. Both the diseased and control healthy individuals were adult males and females.

Patients with history of hypertension, Deep Venous Thrombosis, Pulmonary Embolism, Pneumonia and Septicemia were excluded from the study. 5 ml Blood samples were collected from all these diabetic and healthy individuals in a tube containing sodium citrate 3.2%. The citrated blood was centrifuged to separate plasma for determination of d-dimer levels and for CRP levels blood was taken in an EDTA tube. A sample of 0.5ml of blood was taken in gel tube for blood sugar estimation. Blood glucose levels were determined by a semi- quantifier chemical analyzer (Japan) for both diabetic and healthy individuals and entered in a paper proforma.

For determination of d-dimer levels, spe-d-dimer assays were utilized. Because d-dimer assay is a useful, reliable, quick and accurate method to identify any thromboembolic events in the body.

RESULTS

The present study included a total of 100 patients of type2 DM and 50 individuals were included as control group. All the patients were adult males and females. In the present study 45% of patients with type 2 DM showed elevated CRP levels, which means value of CRP level was 5.6 ± 0.5 ng/l which were significantly elevated in diabetic patients as compared to control group ($p < 0.0035$). In control group 8% (4 out of 50) had elevated CRP levels.

Similarly d-dimer level was also studied in diabetic patients. 65% of the patients with type 2 DM showed elevated d-dimer levels. Patients had d-dimer levels in the range of 500-1000 ng/ml and 20% of the patients had d-dimer levels in the range of 1000-2000 ng/ml. All these patients had significantly elevated levels of d-dimers compared to control group ($p < 0.00324$). In control group 6% (3 out of 50) of the patients had elevated d-dimers.

The study shows that type 2 diabetes is associated with elevated CRP and d-dimers levels. CRP is an inflammatory marker, more predictive and shows the inflammatory status of the patient as the elevated levels predict the progression and pathogenesis of atherosclerosis. d-dimer is also a useful haemostatic marker and gives useful information to the clinician about the thromboembolic events in the body. So both d-dimers and CRP have predictive role in type 2 DM.

Table No. 1: Frequency and percentages of CRP and d-dimer levels in type 2 DM

S.No	Tests	Percentage
1	C Reactive protein	45%
2	d-dimers	65%

Table No. 2: Percentage of elevated CRP and d-dimers levels in Control group

S.No	Tests	Percentage
1.	C- Reactive Protein	08%
2.	d-dimers	06%

Statistical Plan:

Table No. 3: Ratio of elevated and normal CRP

	Elevated CRP	Normal CRP	
Type 2 DM	22	28	50
Non-Diabetic (control)	4	46	50
	26	74	100

$$\text{ODDs Ratio(OR)} = 22 \times 46 / 4 \times 28 = 9$$

As the Odds ratio is 9 which means that the patients with Type 2 DM are 9 times more likely to have elevated CRP than Non-Diabetics (Controls).

- In the above 2*2 Table Type 2 DM is exposure while CRP is outcome.

Table No. 4: Ratio of elevated and normal d-dimers

	Elevated d-dimers	Normal d-dimers	
Type 2 DM	32	18	50
Non Diabetic (Control)	3	47	50
	35	65	100

$$\text{ODDs Ratio(OR)} = 32 \times 47 / 18 \times 3 = 28$$

As the Odds ratio is 28 which concludes that the patients with Type 2 DM are 28 times more likely to have elevated d-dimers than Non-Diabetics (Controls).

Statistical Method: The statistical method used to analyze the data in our study was Chi square test. The chi square test was run in SPSS & p values were obtained which were statistically significant as given below:

For CRP group the P value was $p < 0.0035$ while for d-dimers the p value was $p < 0.00324$.

The above P values indicates that the difference between Diabetics & control group is statistically

significant & not merely by chance, hence rejecting the null hypothesis.

DISCUSSION

The present study included a total of 100 patients of DM and 50 as a control healthy individuals. In the present study 55 (40%) of the patients showed elevated CRP levels in diabetic patients, which is similar to the study conducted by Nayak et al which showed 57% elevated CRP levels in DM patients¹². Various studies have been conducted and reported that DM is associated with elevated CRP levels. Tabak et al reported that CRP levels are higher among Diabetic patients¹³. Kaur et al also reported that DM is associated with high CRP levels¹⁴. Human CRP is an acute phase reactant involved in acute and chronic inflammation, synthesized by hepatocytes and its production is stimulated in response to infection, tissue injury or inflammation. Its expression is controlled by IL-1, IL-6 and TNF alpha¹⁵. Chronic low grade inflammation play important role in the pathogenesis of type 2 DM and progression to atherosclerosis¹⁶. CRP is a potential biomarker for prediction of future risk of cardiovascular disease both in diabetic and non-diabetic individuals and even a small rise in CRP levels leads to cardiovascular events.

Patients with type 2 DM had increased level of CRP and high CRP levels were found to be the predictor of risk for the development of diabetes¹⁷. IL-6 is a potent stimulant for hepatic CRP production^{18,19} which are mainly provided by adiposities. Diabetes mellitus and its various complications involve the role of inflammation in their pathogenesis and link with CRP mediated inflammatory events, elevated levels of CRP causes more severe damage to the endothelial linings²⁰. CRP is strongly associated with endothelial dysfunction by damaging endothelial glycocalyx layer, which is a protective barrier for the walls of blood vessels. Elevated CRP levels severely damages the endothelial layers and decreasing their thickness and this endothelial dysfunction is the precursor of many diabetic complications such as diabetic retinopathy and diabetic nephropathy²¹. In the present study 80% of the patients showed elevated d-dimers level, which is similar to the studies conducted by various authors. Mohsin et al conducted study on diabetic patients and reported that d-dimers are significantly elevated in these patients. A similar study has been conducted by Letonja et al on diabetic patients who reported elevated d-dimer levels in these patients²².

Various studies have been performed on diabetic patients by various authors who reported elevated d-dimer levels in type 2DM^{23,24}. d-dimer is a specific fragment of fibrin clot and formed as a result of plasmin

mediated proteolytic degradation of cross linked fibrin clots. A thrombotic complications are the main cause of mortality in diabetic patients. Premature atherosclerosis increases platelet reactivity and activates coagulation factors with associated hypofibrinolysis all contributing to increased cardiovascular risk in these patients²⁵. DM has a hypercoagulable state and is associated with increased risk for thrombosis, and this hypercoagulable status is evidenced by increased fibrinogen level, decreased protein S levels and increased production of von-willibrand factor by endothelium²⁶. In addition increased thrombotic tendency is due to platelet hyperactivity, increased activation of prothrombotic coagulation factors coupled with decreased fibrinolysis. All these lead to haemostatic abnormalities in type 2 DM²⁷. Due to hypercoagulable state diabetic patients are more prone to micro and macrovascular complications²⁸. About 80% of diabetics die from thrombotic events with 75-80% of these deaths resulting from cardiovascular events²⁹.

CONCLUSION

The present study concluded that diabetes mellitus is a chronic inflammatory disorder with hemostatic abnormalities associated with increased coagulation activation markers represented by elevated CRP and D-dimer levels, both these markers have predictive value and their elevated levels identify patients at risk for thrombotic complications, so their elevated levels give valuable information to the clinicians for the appropriate management of these patients and to reduce their chances of further complications and improve their life style.

Recommendations:

In our community diabetic patients and specifically clinicians should be fully aware of and educated about the importance thromboembolic events and their complications that can occur in patients with elevated d-dimers levels. They should early advise the detection of these inflammatory and hemostatic markers to know at risk patients earlier and reduce complications. More robust methods should be adopted to obtain accurate results for d-dimers.

Author's Contribution:

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Experience in the Management of Finger Tip Injuries at a Tertiary Care Hospital in Karachi

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ABSTRACT

Objective: To analyze the pattern of fingertip injuries in patients presenting to the emergency department in terms of management options in accordance with the severity of injury.

Study Design: Descriptive case series study.

Place and Duration of Study: This study was conducted at the Plastic and Reconstructive Surgery Department, Liaquat National Hospital, Karachi from July 2014 to June 2015.

Materials and Methods: A study was undertaken on records of 261 patients who were presented with fingertip injuries to the Emergency Department of Liaquat national hospital, Karachi during the years 2014-2015. Data was subjected to both descriptive and inferential analysis. Variables like patient's age, gender, place of injury, mechanism and type of injury, amputation level and treatment options were defined by using descriptive analysis. Inferential analysis was applied for evaluating the most commonly affected age group, the most frequent mechanism of injury and the relationship of severity of injury to the choice of treatment options.

Results: The frequency of injuries was highest among young population (< 10 years) and in boys. Majority of injuries occurred due to finger trapped in doors, crush injuries were the most common type. Amputation injuries are mostly of type 1 and type 2 allen's type. Primary repair is the mode of treatment that is frequently used followed by conservative management, revision amputation and local flaps.

Conclusion: Children below 10 years of age were involved in fingertip injuries in a large number. Door trap injuries are frequently common and safety measures should be devised to prevent fingertip injuries. Treatment should be individualized according to the type and characteristics of injuries and should be carefully planned.

Key Words: Finger tip injuries, Hand trauma, Management options.

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INTRODUCTION

Hand injuries accounts for a significant proportion of patient presenting to emergency department in acute trauma setting. Among them, fingertip are involved in nearly 40% of cases.^{1,2} Anatomically, fingertip is that part of the finger that is located distal to the insertion of flexor and extensor tendons on the distal phalanx.³ It constitutes skin, soft tissues, nail and bone. A normal fingertip having both sensory and motor function is an integral part of the hand both functionally and cosmetically.^{4,5} Fingertip injuries are a limitations to the routine life activities, loss of work hours and may end up in long term functional or aesthetical disabilities and even change of profession in case of improper management.

Commonly affected population group is young children resulting mostly due to crushing by doors.^{Error! Bookmark not defined.}⁶ Though many of these injuries are trivial in nature and need a simple treatment by ER physician and do not need referral to hand surgeon, some of the cases need specialized treatment by hand surgeon.

Injuries involving fingertips may presents in a number of ways like crush injuries, sharp cuts or lacerations, de-gloving or avulsion and amputations.^{7,8}

A number of classifications are present to describe the injuries including PNB classification, Lister's classification, Pulvertaft hand centre classification and Allen's classification. Allen's classification is proposed for amputation injuries. Type I injuries are those that involves only the pulp. Type II is the injury to the pulp and the nail bed. Type III injuries consists of distal phalangeal fracture with associated pulp and nail loss. Type IV injuries are amputations proximal to the lunule.^{Error! Bookmark not defined.}⁹ Treating the fingertip injuries is a complex and controversial matter due to availability of vast variety of treatment options for most injuries.

The management algorithm depends on a several factors including, age, hand dominance, digit involvement, sex, preexisting medical conditions,

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mechanism of injury, occupation, and anatomy of fingertip defect.¹⁰ Therefore, treatment of fingertip injuries must be individualized. The goals of surgery are Preservation of functional length, Durable coverage, Preservation of useful sensibility, Prevention of neuromas, Prevention of adjacent joint contracture, Early recovery & return to work, play, and activities of daily living. This study is conducted to analyze the pattern of fingertip injuries in patients presenting to the emergency department in terms of management options in accordance with the severity of injury.

MATERIALS AND METHODS

This descriptive case series study was conducted at the Plastic and Reconstructive Surgery Department, Liaquat National Hospital, Karachi from July 2014 to June 2015.

Inclusion Criteria:

1. All patient with isolated finger tip injuries presenting to emergency department within 24 hours of trauma
2. All ages and both genders

Exclusion Criteria:

1. Patients with Injuries that occurred more than 24 hours ago
2. Patients with other limb or life threatening injuries that can affect the management plan
3. Patient with unsalvageable proximal injuries

We conducted a retrospective observational study and data of all the patients with fingertip injuries presented to the emergency department from July 2014 to June 2015 was collected from patient's data base. The records of 261 patients were reviewed. Data was subjected to percentage based analysis and categorized on the basis of age and gender. Nature and mechanism along with the setting (indoor/outdoor) of injury were recorded. Allen's classification was used to describe the amputation injuries. This study also reviewed the various treatment options employed in the management of fingertip injuries and correlated them with the type of injuries. For data entry and analysis Microsoft excel and SPSS version 20 was used.

RESULTS

In this study, data of 261 patients was reviewed retrospectively. Mean age of the study population was 14 years (17.96 years for male and 5.6 years for females) with minimum age of 01 year and maximum age of 67 years. It included 69% (n=180) males and 31% (n=81) females. The males are in general at more risk of experiencing fingertip injuries (p-value = .015) as compared to the females.

55.6% of study population was children below 10 years of age. The place of injury was recorded and Indoor injuries were 51.7% (n=135) versus 48.3% (n=126) of outdoor injuries. There was no significant difference found in place of occurrence of injury (p-value=0.676).

Most common cause of fingertip injuries was found to be Door trap injuries i.e. 46.4% (n=121). Other Causes included RTA (24.1 %, n=63), occupational (22.2%, n=58) and others (7.3%, n=19). Door trap injuries were significantly more common in children (p-value=0.000) with mean age of 10 years (CI=4.26) and occupational injuries were the most common cause in adult population, mean age 25.6 years (CI=6.03). The mechanism of injury had a significant relation with the gender (p-value=0.002), the occupational injuries being more common in males than in females. (Figure 1)

Crushing was the most common type of injury i.e. 56.3% (n=14), 26.1% (n=68) of injuries caused amputation of the fingertip while lacerations and degloving injuries were present in 13% (n=34) and 4.6% (n=12) of the patients respectively. A significant relationship was observed between age and nature of injury (p-value=0.000), with crush injuries ranking highest as the cause of injury in children with mean age of 10.53 years & CI=3.58 (Figure 2). The statistical difference between male and females with regards to the nature of injury was insignificant (p-value=0.694).

Most of the amputation injuries were Allen class 1 (37.2%, n=97) while class 2, 3 and 4 comprising 29.9% (n=78), 21.1% (n=55) and 11.9 % (n=31) of the injuries respectively. The relationship between allen's classification and age was statistically significant (p-value=0.000), with the allen's type 1 injuries being most common in younger population (mean age 12.72 years, CI=4.47). The allen's injury type distribution among males and females was statistically insignificant (p-value=0.391).

Table No.1: Management of fingertip injuries

Procedure	Frequency(n)	Percent
Conservative	24	9.2
Primary	105	40.2
Local flap	52	19.9
Replantation	11	4.2
Terminalization	58	22.2
SSG	11	4.2
Total	261	100

Table No.2: Local flaps

Local flaps	Frequency(n)	Percent
Atosoy-kleinert	26	50
Kutler	9	17.3
Cross finger	9	17.3
Dmca flap	4	7.6
Littler flap	4	7.6
Total	52	100

Most of the injuries (Table 1) were managed successfully by primary repair (40.2%, n=105). No statistical significant difference was recorded between age (p-value=0.037), gender (p-value=0.229) and the treatment option. However, the statistical difference between allen's injury type and the treatment option

was significant (p -value=0.000). Most of the type 1 and type 2 injuries were managed with primary repair, while type 4 injuries were equally treated with primary repair and local flaps. (Figure 3) Approximately half of the injuries requiring flaps were managed by utilizing Atasoy-Kleinert Flap. (Table 2)

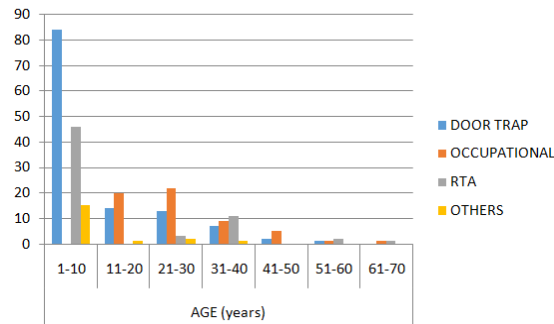


Figure No.1: Mechanism of figure tip injuries.

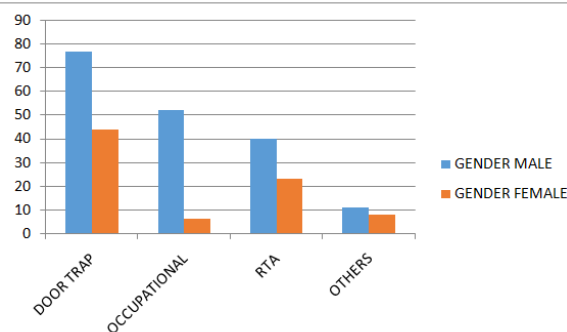


Figure No.2: Mechanism of fingertip injuries in relation to the age (above) and gender (below).

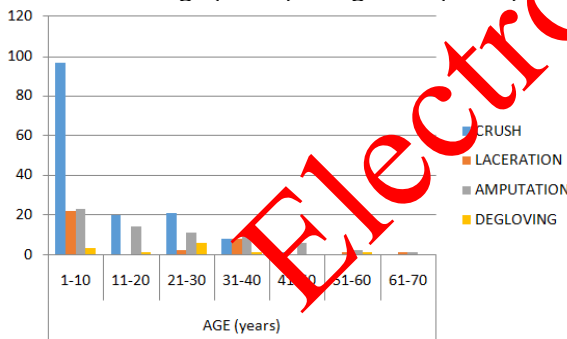


Figure No.3: Distribution of nature of injuries in age groups

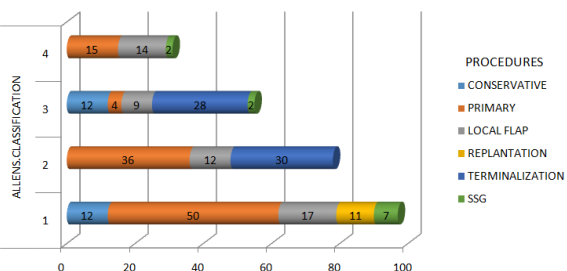


Figure No.4: Management according to Allen's classification

DISCUSSION

As it has been documented in a number of previous studies^{Error! Bookmark not defined., Error! Bookmark not defined.,11}

Fingertip injuries occur most commonly in younger population, 55.9% of the affected patient in our study were below 10 years of age. It is clearly evident from our study that the incidence of these injuries is higher in male as compare to female. Though there is no absolute answer for the male dominance but it is postulated that males are usually more involved in physical games/adventures and outdoor activities, they are likely to have a higher incidence of fingertip trauma. Numerous studies have also confirmed this finding.^{Error! Bookmark not defined., Error! Bookmark not defined., 12}

There is not much difference in the place of occurrence of injury i.e. indoor versus outdoor. This is in contrast to the observation by N.V. Doraiswamy (1999)⁶ and N.V. Doraiswamy & H. baig (2000)¹ that reported the indoor injuries as a commonest place of occurrence. In one of the study by Alexandra fetter, outdoor injuries are reported to be the common cause. Of all the injuries, the mechanism with higher frequency is door trap injuries, the finger being caught between the doors (slamming or jamming door).^{Error! Bookmark not defined.,13}

Door trap injuries may present as crush injuries, subungual hematoma, nail bed laceration and/or amputation resulting in restriction to the daily life activities and sometimes permanent disfigurement or disability. Therefore understanding this mechanism of injury is important to device safety measures for prevention of this kind of injuries. N V Doraiswamy has done a detailed study on door trap injury mechanism and described the mechanism and impact.^{Error! Bookmark not defined.}

Injuries acquired during road traffic accidents or work place injuries were the other frequent causes.

It was observed in our study that crush injuries were the most frequent type of injuries and this is consistent with finding by Alexandra (2002) study who reported crush injuries as the most common type involving approximately half of the cases. Though we found amputation injuries as the second most common cause in contradiction to the Alexandra who observed laceration as the other common cause.^{Error! Bookmark not defined.}

Allen's classification was used to describe the amputation injuries and it was found that type 1 and types 2 injuries occur more frequently accounting for nearly two third of cases collectively.

The objectives of treatment are covering of the tissue defect, preservation of the motor abilities of the hand and finger length, reduction of discomfort, and possibly quick return to daily activities.¹⁴ A detailed and thorough clinical examination is necessary before jumping to the treatment. Reviewing the treatment option used for fingertip injuries, they were designed according to the type and geometry of the defect. As it has already been discussed that most common injuries are crush types, the most frequently applied mode of treatment is primary repair of resultant pathology that is nail bed and laceration repair. Conservative management is used in few of the patient with regular

dressings especially in patients with type 1 Allen's amputations. This has been described in previous studies as an effective method of treatment for small tip defect (1.5 cm²) without exposed bone with excellent results.^{15,16} Skin grafting is not among the favorite options as it has some unpleasing sequel like pointed palpable nail or bone, contour deformity of pulp and impaired sensation at graft site. Nevertheless it is considered when there is large area of soft tissue loss without exposed bone and patient is unwilling to go through prolonged dressing for secondary intention healing.^{Error! Bookmark not defined.} Local flaps to cover the soft tissue is very well known and used when there is soft tissue loss with exposed bone. The type of flap depends on the size and site of defect, the available undamaged tissues and the surgeon's experience. These flaps include Atasoy-kleinert flap, Kutler flap, cross finger flap, dorsal metacarpal artery flap and littler flap.^{Error! Bookmark not defined.} Among these, Atasoy-Kleinert is the one that is more commonly employed. Local flaps are generally used in patients with type 3 and type 4 amputation injuries.

Revision amputation is sometimes needed in patient with soft tissue loss and exposed bone where other options of reconstruction are not favorable. When applicable, digital replantation is an excellent treatment to maintain the finger length, cosmesis and functionality of fingertip. Replantation is attempted when the amputee is available with preserved tissues and structures that can be reconstructed, mostly performed in amputation at the level of or distal to the distal interphalangeal joint.^{Error! Bookmark not defined.} Replantation facilitate functional and aesthetical restoration while maintaining length of the finger.¹⁷

CONCLUSION

Fingertip injuries are among the most common injuries in patient presenting to emergency department with hand trauma. They occur in children frequently and mostly due to fingers trapped in door. Education and guidance should be provided to both the children and adults about the mechanism to prevent these injuries by employing safety measures. A number of treatment modalities are available for the management of fingertip injuries based on the characteristics of injury and geometry of defect. Well and carefully planned treatment strategy is essential to preserve the function and aesthetics of fingertip as much as possible.

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The Position of Knot at Occipital Region in Suicidal Hanging Deaths amongst Asphyxial Medico-Legal Autopsies in Lahore

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and Mohsana Urooj Rana¹

ABSTRACT

Objective: To find out the position of knot in all asphyxial deaths, where the interference was at the level of neck, was the main objective. This study was conducted to find out the position, particularly in suicidal hanging cases.

Study Design: Descriptive / Observational Study

Place and Duration of Study: This study was conducted at the Forensic Medicine Department, King Edward Medical University, Lahore from 2006 to 2008.

Materials and Methods: a total of 2979 medico-legal autopsies were conducted in the Department of Forensic Medicine & Toxicology, King Edward Medical University. Out of these 220 cases were asphyxial deaths. Autopsy reports of these asphyxial deaths, their police documents and hospital charts were scrutinized.

Results: 220 cases out of total 2979 autopsies were of asphyxial deaths, which was 7.39%. In these 104 cases were those of hanging being the commonest cause. And they were 42.27% of total asphyxial deaths. Cases of ligature strangulation were 64, which was 29.09% of total asphyxial cases. And 52 cases were that of manual throttling and it was 23.64%. In 104 cases of hanging, the suicidal manner of death was seen in 68 which was 68.50%. And in ratio males were quite distinct in predominance, which was Male/Female ratio 02.78:1.0. The age group between 20-30 years showed higher incidence in males as compared to females which were more in number in 10-20 years. Not a single case of hanging was seen in below 10 years of age. On the other hand, the strangulation was common in ages between 20-40 years. The males of age group of 20's and 30's showed higher incidence than females in hanging, which was in 30's to 40's. The females were higher in number in ligature strangulations in twenties to forties years of age than males. While males were higher in number in throttling and females in forties. The manner of death was homicidal in 52.27% deaths. In 30.90% the manner was suicidal, and in 11.82% the manner was undetermined. The method adopted to achieve neck compression was ligature strangulation and throttling in homicidal cases in 57.27% deaths, in 30.97% was hanging in suicidal manner of death. In hanging the knot was found at occipital region in 62.50% deaths and it was found on the side of the neck in 23.08% deaths. In contrast to hanging in ligature strangulation in 78.13% cases the knot was found on front of the neck and in 21.87% it was on the side of the neck.

Conclusion: For committing suicide the hanging was the most common method used in our country. And for homicidal killing the ligature strangulation and manual throttling were the methods used for asphyxial deaths. In hanging the knot was typically placed at occipital region in 65 deaths and on either side of the neck in 24 deaths. And not a single case had the knot on front in suicidal hanging. In contrast to it, in ligature strangulation the knot was seen on front in 50 cases and in 10 cases it was on either side of neck. Not even a single case it was placed at the back of the neck.

Key Words: Suicidal Hanging, Position of Knot, Occipital Region, Asphyxial Deaths.

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INTRODUCTION

Neck is an important structure as it connects head and body. So it conducts many structures to achieve this connection and function.

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There are the main blood vessels carrying blood to and from brain and other vital structures. Similarly the nerves coming from brain and going to brain are also conducted through neck. The main wind pipe to the lungs (Trachea) and food pipe (Esophagus) are also other important structures being conducted through neck. Hence neck is an important vulnerable structure, especially in mechanical asphyxial deaths. Ligature strangulation and manual throttling are the most common means used to cause mechanical asphyxia. In typical hanging only the weight of the body is the constricting force¹. A direct blow on neck, arm lock of

this region, falls on neck and accidental entrapment in ropes, all these can cause mechanical asphyxia².

Whatever means are used, the cause of death in asphyxial death will depend upon the manner and amount of force applied and the type of structure involved. Blockage of jugular veins can be achieved with only 2 kilo grams of weight; and back flow of blood to heart will occur, causing cyanosis, congestion and petechiae in the area above constriction. With the occlusion of carotids arteries the cerebral ischemia will occur, only with 3.5 kilo grams of weight. Sudden cardiac arrest will occur with the excitation of baroreceptors in carotid bodies with a blow in that area.

In manual throttling especially the air passages are blocked just by pushing the larynx back, it will push the base of tongue posteriorly against the posterior pharyngeal wall. Higher weight, as much as 15 kilo grams will cause occlusion of trachea being a rigid structure. In manual throttling and ligature compression will cause fractures of hyoid bone & thyroid cartilages, as direct force is being applied on the larynx.^{2,3,4,5,6}

So with the achievement of mechanical asphyxia, whatever means is used, the physiological and pathological changes will appear. There will be reduction in the oxygen concentration, rise in carbon dioxide and pH will become acidic. With this reduction in oxygen level will cause endothelial damage resulting in increased permeability and dilatation of capillaries. They are manifested as non-pathological findings of asphyxia, as cyanosis, congestion, tardeu spots and edema of lungs. With endothelial damage, fibrinolysis will be released causing fluidity of blood.

MATERIALS AND METHODS

Data Source: The main source was the postmortem reports, available police papers and hospital documents. All types of cases were studied, but the cases of asphyxial deaths were of major concentration. In these cases all the parameters were analyzed as, the age of the deceased, it's sex, methods used for compression of the neck, material of string, it's level from thyroid cartilage, numbers of whorls, hyoid bone fracture and placement of knot.

Selection's Criteria.

Inclusion Criteria: Only the cases in which the cause of death was hanging and strangulation were selected to be included in this study.

Exclusion Criteria: Other cases in which the cause of death was other than hanging or strangulation were not included.

RESULTS

As this study includes the scrutiny of 2979 cases of all types of medico-legal deaths, in which the autopsies were conducted at the autopsy center of the Department of Forensic Medicine, King Edward Medical

University, Lahore. Out of all cases, 220 (7.38%) cases were those of asphyxial deaths. (Table: 1) & (Fig: 1)

Table No.1: Cause of Death

	Total cases	Percentage of Cases
Blunt Cases	403.0 Cases	13.52%
Sharp Cases	256.0 Cases	8.5%
Fire-arms Cases	1285. Cases	43.13%
Poisoning Cases	74.0 Cases	2.48%
Burns Cases	50.0 Cases	1.68%
Asphyxia Cases	220.0 cases	7.38%
Electrocution Cases	19.0 Cases	0.64%
Drowning Cases	17.0 cases	0.57%
Bomb Blast Cases	65.0 Cases	2.18%
Natural Cases	347.0 Cases	11.65%
Un-Determined Cases	213.0 Cases	7.15%
Total Cases	2979.0 Cases	100.00

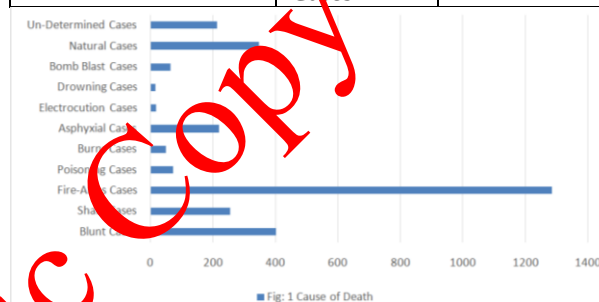


Figure No.1: Causes of death

Method of Asphyxia: In 220 cases of asphyxial deaths, which were selected for study, mainly three types of means of neck compression were found. Which were hanging, ligature strangulation and throttling. 104 cases were of hanging (47.27%), 64 cases were of ligature strangulation (29.09%) and 52 cases were of throttling (23.64%). (Table: 2) (Fig: 2)

Table No.2: Method of Asphyxia in 220 Asphyxial Deaths

Types of Asphyxial Deaths	Number	Percentage
Cases of Hanging	104	47.27%
Cases of Ligature Strangulation	64	29.09%
Cases of Throttling	52	23.64%
Total Cases	220	100.00

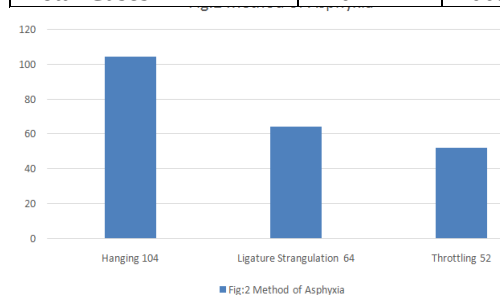


Figure No.2: Method of Asphyxia

Distribution of Gender and Age: Out of 220 cases of asphyxial deaths, 144 were males which were 65.45% and 76 cases were of females 34.55%. Fig: 3)

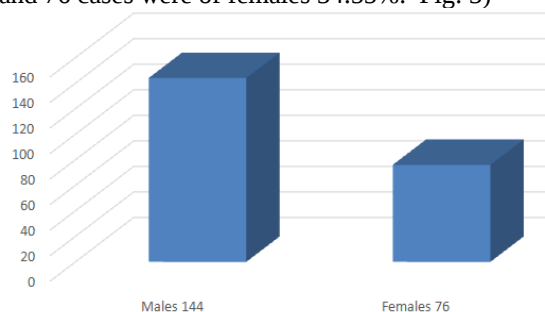


Figure No.3: Gender distribution

Between ages group of 21-30 years most of the cases of asphyxial deaths were found, and they were 79 cases (35.91% of all asphyxial deaths). Then the next higher age group was between the ages of 31-40 years, they were 57 in number (25.91% of all asphyxial deaths). (Table: 3)

Table No.3: Gender & Age Variation

	Males	Females	Total No. of Cases	%age
< 1 Years	-	-	-	-
1-10 Years	2.0	3.0	5.0	2.27%
11-20 Years	23.0	15.0	38.0	17.27%
21-30 Years	59.0	20.0	79.0	35.91%
31-40 Years	36.0	21.0	57.0	25.91%
41-50 Years	9.0	6.0	15.0	6.82%
51-60 Years	10.0	7.0	17.0	7.73%
>60 Years	5.0	4.0	9.0	4.09%
Total	144.0	76.0	220.0	100.0

Table No. 4: Manner of Death

Years Of Age	Cases	Homicidal Manner Male:Female Ratio 2.15:1.0			Suicidal Manner Male:Female Ratio 2.77:1.0			Manner Un-Determined Male : Female Ratio 1.6:1.0		
		M	F	Total	M	F	Total	M	F	Total
<1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0-10.0	5.0	5.0	3.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
11.0-20.0	38.0	8.0	6.0	14.0	5.0	9.0	14.0	7.0	3.0	10.0
21.0-30.0	79.0	36.0	11.0	47.0	20.0	6.0	26.0	4.0	2.0	6.0
31.0-40.0	57.0	20.0	14.0	34.0	16.0	2.0	18.0	3.0	2.0	5.0
41.0-50.0	15.0	8.0	2.0	10.0	4.0	1.0	5.0	0.0	0.0	0.0
51.0-60.0	17.0	6.0	3.0	9.0	5.0	0.0	5.0	0.0	3.0	3.0
>60.0	9.0	6.0	1.0	7.0	0.0	0.0	0.0	2.0	0.0	2.0
Total Cases	220.0	86.0	40.0	126.0	50.0	18.0	68.0	16.0	10.0	26.0
				57.27%			30.91%			11.82%

Table No. 5: Knot Position in Hanging & Strangulation

Type of Asphyxial Death	Hanging Cases	Position of Knot	No. of Cases	Percentage
		Front of Neck	0.0	0.0
		Occiput Region of Neck	65.0	62.50%
	Ligature Strangulation Cases	Lateral (right or left)	24.0	23.08%
		Front of Neck	50.0	78.13%
		Occiput Region of Neck	0.0	0.0
		Lateral (right or Left)	14.0	21.87%

	(65.45%)	(34.55%)		
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Manner of Death: In our study, the homicidal manner of death was seen in 126 cases, which was 57.27%. The suicidal manner was seen in 68 cases, that was 30.90%. And in 26 cases (11.82%), the manner remained un-determined. Not a single cases of accidental manner came out during this study period.

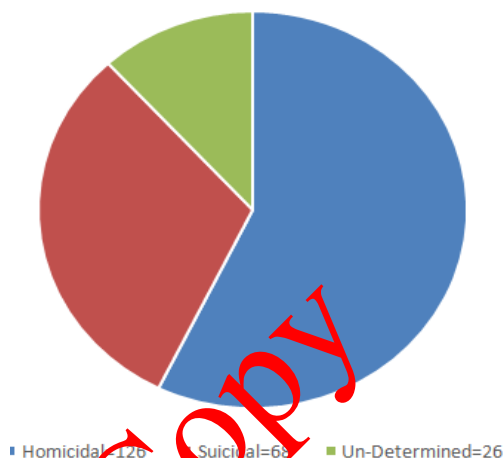


Figure No.4: Manner of death

In homicidal deaths, the male to female ratio was 01.15:1.0. In suicidal it was 02.77:1.0, and was 01.6:1.0 in un-determined cases. (Table: 4)

Knot Position in Hanging & Strangulation: The cases of hanging were 87 in total out of 220 cases of asphyxial deaths. Out of these, in 65 cases the knot was placed in occipital region, and in 24 cases it was laterally placed either on left or right. No case was seen where the knot was placed on front. Whereas in ligature strangulation, in 50 cases the knot was placed on front, and in 14 cases it was lateral in position. None was reported in which was at occipital region. (Table: 5) & (Fig: 5)

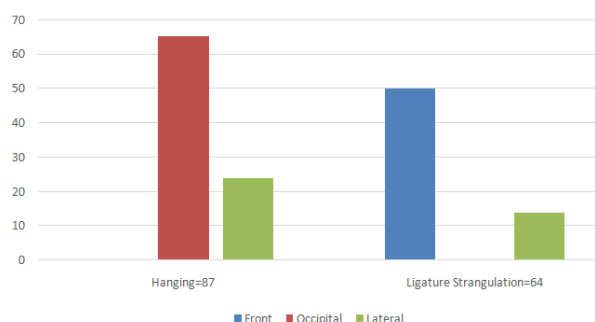


Figure No.5: Knot Position in Hanging & Strangulation

DISCUSSION

Incidence: In 2979 medico-legal autopsies, 220 deaths were because of interference to the process of respiration at all levels, showing an incidence of 0.7.39% out of all deaths. And in all asphyxial deaths the incidence of interference at the level of neck is 89.43%. Which is much higher than those of the 01.6% (Rehman), 01.75%⁸ (Malik SA), and 01.88%⁹ (Bashir MZ). In study carried out by Srivastava AK¹⁰ it was 02.94%¹⁰ of asphyxial deaths out of all deaths, and those where the interference was at the level of neck were 24.53% of all asphyxial deaths. In the study of Hussain SM the asphyxial deaths were 65%¹¹ out of all deaths, and where the interference was at the level of neck were 82% in all types of asphyxial deaths. And in all medico-legal deaths the incidence of asphyxial deaths were 01.17%¹² in the study of Verma SK and were 12.4%¹³ asphyxial deaths out of all causes in study of Vermici S. Where the study of Edirne in Turkey the incidence of asphyxial deaths was 05.5% out of all deaths, which is higher than that of our study.

Type of Interference at Neck: The number of cases of hanging were 104 (47.27%), which is highest in number. Those of the ligature strangulations were 64 (20.09%). And 52 (23.64%) cases were of manual throttling. These incidences are comparable with the study of Rehman IU⁷ showing 80.70% (Hanging & Strangulations) and 19.30% (Manual Throttling), and of Malik SA⁸ showing 61.17% (Hanging), 21.19% (Strangulation) & 18.0% (Throttling), of Bashir MZ⁹ 57.0% (Hanging), 21.0% (Strangulation) & 18.0% (Throttling), In Srivastava¹⁰ ligature strangulations were (19.23%) & throttling were (46.15%), in Hussain SM¹¹

69.0% cases were of hanging, in Demirci S¹³ 12.40% cases were of ligature strangulation, in Azmak D¹⁴ 41.80% were of hanging, 2.90% of ligature strangulation & 2.30% cases were of manual throttling, and in Sharma BR¹⁵ 85.0% cases were of hanging & strangulation and 6.0% of throttling.

Sex and Age: The maximum number of cases of asphyxia, where the interference was at the level of neck were between the ages of 21-30 years. This incidence is similar as seen in the studies already carried out on this cause of death. As it was seen in the study of Hussain SM¹¹ showing 57.0% of asphyxial deaths, in the study of Verma SK¹² the predominant age group involved was between 21-30 years, and in Azmak D¹⁴ the average age was seen as 41.90 years. The study of Bawon DA¹⁶, 5th decade of life showed highest incidence is hanging. Whereas the study carried out in USA by Guarner & Hanzlick¹⁷ noticed the average age of 31.0 years, the highest number.

Ratio of Male versus Females: Our study shows the ratio of male to female as, 02.25:1.0 in hanging, in strangulation it is 02.65:1.0, and for manual throttling it is recorded as 01.26:1.0. In all the three types of neck constrictions, the number of male cases are showing higher incidence.

Out of all asphyxial deaths, in the cases of hanging 69.23% were males, as compared to females which were 30.76%. This incidence is closer to the study of Azmak D¹⁴, in which 83.90% were males. In the study of Bashir MZ⁹ et al., the number of male asphyxial deaths were 73.03% and females were 26.92%, having a ratio of male/female as 02.70:1.0. The study of Bashir MZ⁹ had shown 58.90% males and 41.02% females in neck compression by strangulation & throttling. Male/Female ratio by Azmak D¹⁴ was pointed out as 1.0:3.0 in ligature strangulation and 1.0:2.0 in manual throttling. Amongst all asphyxial deaths Srivastava AK¹⁰ had shown 30.77% cases of males and 69.23% cases of females, showing greater incidence in female cases than male cases.

Manner of Death: In our study amongst all asphyxial deaths 65.38% cases were of hanging, showing a higher incidence than the studies carried out by Bashir MZ⁹ 45.05% and is lower than that of Demirci S¹³ 85.0%.

Our study showed the manner as suicidal in 30.90% of cases, which is lower than study of Bashir MZ⁹ 45.45% & that of Azmak D¹⁴ showing 47.0%. The study of Demirci S¹³ showed 15.0%, which is quite lower than our study.

Our study showed 65.38% cases of hanging, which were all suicidal, and it is lower than that of Bashir MZ⁹ showing as 86.53%. Our study showed 09.62% cases of homicidal asphyxial deaths which are also higher than Bashir MZ⁹ showing 03.84%. No case of accidental hanging was seen in our study. However 5.0% of accidental deaths of auto-erotic asphyxia were seen by Bowen DA¹⁶.

Position of Knot: The position of knot was seen at occiput in 65 cases, which was 62.50% of all asphyxial deaths. And this incidence is similar to that of the study carried out by Azmak D¹² showing as 66.0% at occipital region in cases of hanging. Whereas his study showed that in 88.70% cases of ligature strangulation, it was in chin.

In our study in 24 cases of hanging, the knot was placed lateral side either on left or right, which came out to be 23.08%.

In 50 cases of ligature strangulation, the knot was on front, having an incidence of 78.13%. In 14 cases the knot was on lateral side, either on left or right and it was in 21.87% of cases. And the results of our study are close to those shown by Bawon DA.¹⁶ & Sharma BR¹⁵

CONCLUSION

Amongst all un-natural deaths, mechanical asphyxial deaths like hanging & strangulation is the most common method used. In these hanging remains the preferable choice in suicidal manner of dying. Males are higher in number and the highest incidence is seen in 3rd decade of life. Knot was typically placed at the occiput in most of the cases of suicidal hanging. Whereas it was observed to be placed on front in cases of homicidal ligature strangulation.

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

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Making Local Anesthesia Injection Pain Free

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ABSTRACT

Objective: To compare mean pain score on injection between xylocaine with adrenaline and buffered xylocaine with adrenaline with addition of bicarbonate for patients undergoing facial laceration repair in Accident and Emergency Department after trauma.

Study Design: Double Blinded Randomized Control Trial

Place of study: This study was conducted at the Accident and Emergency Department, Liaquat National Hospital, Karachi from March 1st, 2016 to February 28th, 2017.

Materials and Methods: Patients were selected from Accident and Emergency in Liaquat National Hospital. After informed consent, the patients were divided into two groups; with Group A comprising of patients injected with xylocaine with adrenaline; and Group B consisting of patient injected with buffered xylocaine with adrenaline with the addition of bicarbonate. Patient was assigned a group randomly by using lottery method. Buffered or unbuffered local anesthetic solution was prepared by principle investigator. Solution was injected by a second investigator, who was kept unaware about the nature of solution Patient was asked to define his pain as 0 being no pain and 10 being worst pain possible.

Results: The mean age of the patients in group A was 30.9 ± 6.4 and in group B was 22 ± 5.9 . When outcome variables i.e. mean pain of group A was 5.7 ± 0.7 and group B was 1.3 ± 0.4 with p value of <0.0001 , was compared also, mean pain score in specific age groups, mean pain score in different gender, site, mechanism and age were compared, significant differences were observed.

Conclusion: In our study, it is found that buffered xylocaine is less painful to inject as compared to non-buffered xylocaine.

Key Words: Xylocaine with adrenaline, buffered xylocaine with adrenaline adding bicarbonate and traumatic lacerated wounds, pain.

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INTRODUCTION

The administration of local anesthetics often causes significant discomfort. This is commonly perceived as a 'burning pain' sensation,¹ the severity of which depends on the type of local anesthetic used² and the pain threshold of the patients. Few other factors influence pain on injection, including the angle of introduction of needle³, smaller diameter of needle⁴, the rate of injection, temperature of solution⁵, site to be injected, a pause after initial injection⁶, keep anesthesia solution ahead of needle⁷ and the pressure from the fluid distension of the tissue.

Safety of xylocaine with adrenaline is well established even in hand and finger tips. There are still no well-documented cases of finger infarction with lidocaine

and epinephrine in the finger⁸, even with 1:1000 accidental finger epinephrine injection⁹. There is level I evidence that 1 mg of phentolamine in 1 ml of saline reliably reverses epinephrine vasoconstriction in the finger, should this be required as a rescue agent¹⁰. However, this is almost never required in clinical practice^{11,12}.

Xylocaine is the most widely used local anesthetic agent in plastic surgery because of its rapid onset of action and its long duration of sensory blockade¹³. Commercially available solutions of xylocaine with adrenaline have a pH 4.7. The low pH increases the stability and shelf life of the agent,¹⁴ increases the rate of penetration of the anesthetic into the nerve cells, which substantially decreases the burning sensation of infiltration and speeds up the onset of anesthesia¹⁵. Many studies showed that alkalinizing xylocaine with epinephrine significantly reduce injection pain of infiltration^{16,17}. The amount of sodium bicarbonate necessary to neutralize commercially available xylocaine-epinephrine (pH 4.7) to physiologically neutral pH^{7.4} was established in a study. The analysis showed that neutral pH could be accomplished by adding 1.0 ml sodium bicarbonate (8.4 g/l) to 10 ml xylocaine-epinephrine (1%, 5 microgram/ml). Chemical analysis also established that the neutralized xylocaine

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epinephrine was stable for 24 hours after adding sodium bicarbonate¹⁸. In a study, total of 22 patients were analyzed. Pain scores for infiltration pain with the unbuffered preparation were significantly higher than the score when buffered preparation was used ($P = 3.74 \times 10^{-7}$) and the mean pain scores were 5.1(± 0.4) and 1.8(± 0.4), respectively.¹⁵

The use of commercial xylocaine buffered with sodium bicarbonate is a common practice in the US.¹⁶ However, very few surgeons in our institute use pH-adjusted local anesthetic. This must be due to unavailability of local literature on the effect of buffered local anesthetic on infiltration and procedure pain. As our study is largest double blinded, randomized so far conducted, we hope that this study will convince surgeons in our institute and across Pakistan to use a buffered xylocaine solution for local anesthetic surgery, as it is a simple, effective, practical and inexpensive way of reducing pain during infiltration.

MATERIALS AND METHODS

This study was conducted at the Accident and Emergency Department, Liaquat National Hospital, Karachi from March 1st, 2016 to February 28th, 2017.

Inclusion criteria:

1. Age between 20-55 years
2. Traumatic lacerated wounds
3. Wound within 6 hours of injury.
4. Wound size 2-10 cms
5. Wound site (face)

Exclusion criteria:

1. Major psychiatric illness, chronic renal and/or respiratory insufficiency (Assessed from history or documented medical record).
2. Diabetic or neuropathic wound was assessed clinically or medical record.
3. Chronic wounds were assessed clinically.
4. Malnigancy was assessed from documented medical record.
5. Pregnant or lactating women were assessed from history.
6. Medications interfering with effect of xylocaine and clotting (any pain medications)

First 300 patients came to Accident and Emergency in Liaquat National Hospital with linear lacerated wound on their face meeting the inclusion and exclusion criteria during the study period were included in this study. Informed consent was taken from the patients by principal investigator. The patients were divided into two groups; with Group A comprising of patients injected with xylocaine with adrenaline; and Group B consisting of patients injected with buffered xylocaine with adrenaline adding bicarbonate. Patient was assigned a group randomly by using lottery method. Patient demographics and history including age, sex,

educational status, wound size, site and mechanism of injury was noted by principle investigator. After all aseptic measures, principle investigator prepared a local anesthetic solution. 2% Xylocaine with adrenaline 10cc ampule was used and for buffering 1 cc of bicarbonate 8.4% was added in same syringe of 10 cc making it 11 cc solution. Expire date of all drugs were checked. Solution is injected subdermally using a 27 G needle holding perpendicular to the skin by a second investigator, who didn't know about the solutions preparation to make this study a double blinded. Patient was asked to define his pain according to visual analog score as 0 being no pain and 10 being worst pain imagine. All the data was collected on a pre-designed proforma by the principle investigator. Biasness and confounding variables were controlled by strictly following the inclusion and exclusion criteria.

Data analysis: Data was analyzed by using Statistical Package for Social Sciences SPSS (19). Descriptive statistics was calculated for qualitative and quantitative variables. Frequency distribution and percentages were calculated for qualitative variables i.e. gender, mechanism and site of laceration. Mean $\pm$ SD was calculated for quantitative variables i.e. age, baseline pain score, size of laceration, duration of laceration and pain score. Difference in pain scores between two groups on injection was analyzed with independent T-test taking $P \leq 0.05$ as significant. Stratification was done on the effect modifiers i.e. age, gender, baseline pain score, site, mechanism, duration and size of laceration to see effect of these on the outcome with t test and $P \leq 0.05$ was considered as significant.

RESULTS

Total of 300 patients of lacerated traumatic wound were included in this study. 150 were given xylocaine adrenaline and 150 were given buffered xylocaine with adrenaline adding bicarbonate on injection.

Table No.1: Mean pain score

Groups	Pain score		P-value
	Mean	SD	
Group A (n=150)	5.7	0.7	<0.0001
Group B (n=150)	1.3	0.4	

The age of the patients ranged from 20-55 years. The average age of the patients in group A was 39 ± 8.5 and in group B was 40.1 ± 7.9 , baseline pain score in group A was 6.7 ± 0.4 and in group B was 6.9 ± 0.4 , size of laceration in cm in group A was 3 ± 1.4 and in group B was 3.2 ± 1.7 and average duration of lacerated wound in hours in group A was 3.7 ± 0.7 and in group B was 4.0 ± 0.9 . 86(57.3%) of the patients were male in group A and in group B, 90(60%) were male and 64(42.6%) were female in group A and 60(40%) were female in

group B. In group A, 65(43.3%) were injured from knife and 85(56.6%) got injured from glass and in group B, 69(46%) were injured from knife and 81(54%) were injured from glass.

Table No.2: Mean pain score, age group 20-40 years

Groups	Pain score		P-value
	Mean	SD	
Group A (n=112)	5.4	0.5	<0.0001
Group B (n=123)	1.7	0.4	
Mean pain score, age group 40-55 years			
Group A (n=38)	5.8	0.8	<0.0001
Group B (n=27)	1.7	0.4	

Table No.3: Mean pain score, male patients

Groups	Pain score		P-value
	Mean	SD	
Group A (n=86)	5.4	0.5	<0.0001
Group B (n=90)	1.3	0.4	
Mean pain score, female patients			
Group A (n=64)	5.7	0.7	<0.0001
Group B (n=60)	1.4	0.5	

Table No.4: Mean pain score, knife cut

Groups	Pain score		P-value
	Mean	SD	
Group A (n=65)	5.6	0.7	<0.0001
Group B (n=69)	1.4	0.5	
Mean pain score, glass cut			
Group A (n=85)	5.7	0.8	<0.0001
Group B (n=81)	1.3	0.4	

Table No.5: Mean pain score, baseline pain score <5

Groups	Pain score		P-value
	Mean	SD	
Group A (n=27)	5.7	0.3	<0.0001
Group B (n=38)	1.7	0.4	
Mean pain score, baseline pain score >5			
Group A (n=123)	5.3	0.4	<0.0001
Group B (n=112)	1.8	0.4	

Table No.6: Mean pain score, injury right side of face

Groups	Pain score		P-value
	Mean	SD	
Group A (n=84)	5.7	0.7	<0.0001
Group B (n=78)	1.4	0.5	
Mean pain score, injury left side of face			
Group A (n=66)	5.6	0.8	<0.0001
Group B (n=72)	1.2	0.4	

In group-A, 84(56%) had lacerated wound on right side of face and in group-B, 78(52%) had lacerated wound on the right side of the face. When outcome variables i.e. mean pain score was compared between two

groups, significant difference was observed. (Table no: 1) When outcome variables were stratified with respect to age group (Table no: 2), gender (Table no: 3), mechanism of injury (Table no: 4), baseline pain score (Table no: 5) and side of laceration (Table no: 6), significant difference was observed.

DISCUSSION

Xylocaine is known to be painful to inject.¹ Adjustment of pH through the use of bicarbonate or other buffering solutions has been shown to improve the pain of injection of anesthetics with or without epinephrine in intact skin of volunteer.^{13,16} Buffered xylocaine has been studied in laceration repair. The exact mechanism of improving the pain of injection is uncertain¹⁵ but alkalization might reduce the acidity of xylocaine to some extent is a possible mechanism. The findings of this study clearly indicate that buffered xylocaine solution causes the patient to experience less pain. There was also no variation between genders, age groups, site and mechanism of wound in the results. The solution should be clear without any cloudy precipitate. Do not inject any solution that appears cloudy because this may indicate that the anesthetic has precipitated out of solution because of time elapsed or higher-than-required concentration of sodium bicarbonate. Third, the mixture be made the same day as surgery, because the sodium bicarbonate has a shelf life of 1 day after the bottle is opened, and potentially a few days longer if the mixture is refrigerated.¹⁹ The sterility of the mixed solution is no less than unbuffered xylocaine based on previous study results that reported no increase in infections for buffered solution.¹⁷ Although no studies have examined the infection rate of buffered xylocaine as the primary outcome measure, there are studies detailing the infection rate of botulinum toxin type A, which also must be mixed at time of use. These studies found no increased incidence of infection caused by performing mixing and even long-term storage and reuse.²⁰ The cost and time required to buffer xylocaine injections are minimal, as are the potential risks, and should be considered to improve patient comfort. Because this study controls many of the confounding variables present in previous studies, we believe it definitively establishes that buffered xylocaine reduces initial injection pain in periocular subcutaneous anesthesia without adjunctive topical, oral, or intravenous anesthesia or sedation. When used appropriately, buffered xylocaine minimizes the pain associated with injection and offers a safety profile equal to that of unbuffered xylocaine.

CONCLUSION

In our study, it is found that buffered xylocaine is less painful to inject as compare to non-buffered xylocaine. Ultimately, surgeons should not underestimate the

effect of pain reduction, in any amount, on a patient's satisfaction with their care.

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A Study Conducted to Find the Usefulness of Sclerotherapy and Band Ligation as Treatment Modalities in Second Degree Internal Haemorrhoids

Asma Niaz Khan

ABSTRACT

Objective: To analyze the efficacy and success rate of sclerotherapy (ST) and rubber band ligation (RBL) for the treatment of second degree internal haemorrhoids.

Study Design: Cross-sectional prospective study

Place and Duration of Study: This study was conducted at the Surgical Units, Civil Hospital Karachi from June 2011 till August 2013.

Materials and Methods: Total 130 patients were selected out of 300 with second degree internal haemorrhoids without first, third or secondary haemorrhoids, anal fistula, anal fissures or perianal sinus. They were divided into two equal groups; i.e rubber band ligation (RBL) group and sclerotherapy (ST) group consisted of 65 patients in each group.

Results: The major complaint was of pain 128(98.46%) patients, relieved within 7±days in ST-group & took longer approximately 7±days in RBL-group. Bleeding per rectum was present in 102(77.9%) patients; out of which 51 patients were treated by RBL 49 (96.08%) got relieve immediately; but two took 2 weeks because of the complication of band slippage and got settled after repeat procedure. Complain of constipation was present in 89(68.46%) patients, 88(98.8%) got relived from the symptom after treatment. Mucus discharge & tenesmus were relieved in both groups after treatment.

Conclusion: By ST and RBL second degree haemorrhoids can be treated with good success rate and efficacy in OPD setup. These also unload the economic burden on hospital and patient.

Key Words: Sclerotherapy (ST), Rubber band ligation (RBL), Second degree Haemorrhoids, Haemorrhoidectomy.

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INTRODUCTION

Haemorrhoids are not in itself an indication for treatment; its treatment must be aimed at symptomatic relief and the correction of anatomic deformity. Both of the above are achieved by means of conservative or surgical methods.¹

Iyer and colleagues examined long-terms out comes in there retrospective analysis of rubber band ligations and reported RBL as safe and effective.²

Little is known about how these changes occur and when they develop. Most recent papers dealing with functional changes in prolapsing haemorrhoids have been connected with stapled haemorrhoidectomy^{3, 4, 5}.

Now a day's RBL is the most widely used procedure and it offers the possibility to resolve haemorrhoidal disease without the need for hospitalization or anaesthesia and with lower incidence of complications when compared to conventional surgery.⁶

The purpose of this study was to analyze the efficacy and success rate for the treatment of second degree internal haemorrhoids using sclerotherapy (ST) and rubber band ligation (RBL) the in out-patient department.

MATERIALS AND METHODS

The study was conducted for a period of two years and two months from June 2006 till August 2008, 130 patients were selected out of 300 patients with second degree internal haemorrhoids without the presence of secondary haemorrhoids. The patients under went proctoscopy in the surgical OPDs and were selected from their according to the inclusion and exclusion criteria. The patients were treated by two different treatment modalities, rubber band ligation (RBL) was applied on 65 patients (RBL-Group). Sclerotherapy (ST) was applied on 65 patients (ST-Group).

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Inclusion criterion, was strictly followed, patients with second degree symptomatic haemorrhoids were included. Patients with the age group between 21-62 years were included in the study. Patients with mixed presentation of 2nd degree haemorrhoids along with 1st and 3rd degree haemorrhoids were excluded. Patients with 2nd degree haemorrhoids along with external haemorrhoids, anal fissure, anal fistulas, were also excluded. Patients with coeliac disease, colon cancer, ulcerative colitis, liver cirrhosis and liver cancer were also excluded from the study.

The instrument used for RBL was Baron's ligator, consist of small metal cylinder on a long handle attached to this cylinder or drum the handle design like scissors handle for open and close movement, by closing the handle the cylinder glides over the screw part of drum where the band is loaded thus releasing the band over the stump of pile or haemorrhoid which was drawn into the cylinder by special seizing forceps by pulling the mucosal prolapsed part of haemorrhoid into the cylinder, a rubber band ligature which was placed or loaded around the cylinder screw end by special conical metal tip loader which can be attached to the screw end by screwing movement then the band is rolled on it till it reaches the base of screw at the cylinder, then the metal cone is removed leaving the band loaded on cylinder screw end for application. Now a proctoscope is introduced with the patient in left lateral position and both legs rolled towards abdomen now the patient is asked to strain gently pushing the haemorrhoids downwards. The ligator was then inserted through the proctoscope and the mucosal part of haemorrhoid is pulled by the seizing forceps inside the cylinder of ligator till the base of haemorrhoid is reached now the handle of ligator is closed thus releasing the loaded rubber band at the base of haemorrhoid. This causes in numbness of the strangulated tissue. The haemorrhoid after ligation gives the look of small cherry.

For ST, 5% phenol in almond oil was used in a 10cc disposable syringe. Proctoscope is introduced with the patient in left lateral position with both legs folded towards abdomen, 2^o degree internal haemorrhoid with prolapsed mucosa identified, then loaded 5% phenol oil is injected into prolapsed mucosa, 1.5cc- 2cc injected in each haemorrhoid.

Maximum of two haemorrhoids were treated per session in both the treatment modalities. Four to six weeks gap was maintained between each session for both RBL & ST-groups so as to provide time for the mucosal swelling of the treated haemorrhoids to get settled down.

The patients were kept under observation for one hour after the procedure and were advised for the following precautions & medications;

1. Avoid straining too hard during defecation for at least 6-8hrs
2. Drink 12- 15 glasses of water daily
3. Warm sitz baths
4. Analgesics were given i.e. Tab. Voren 50mg
5. Advised for stool softener i.e. Syp. Creamaffin
6. Ispaghul husk

Advice for follow-ups after one month, six months, and one year and last after two years, but in case of any complains the patient was asked to contact immediately.

RESULTS

Two treatment modalities were applied for the treatment of 2nd degree haemorrhoids, which were i.e. RBL and ST. The results of both the groups were analyzed for their efficacy and success rate.

A total of 130 out of 300 patients fulfilled the inclusion criteria; they were divided into two groups, 65(50%) patients in RBL-Group and 65(50%) patients in ST-Group. Among the total of 130 patients, 58(44.62%) were males and 72(55.38%) females. There was no difference in pattern or presentation of cases according to their sex, which is shown in Table-I.

Table No.1: Number & Sex of Patients:

Procedure	No. of Patients	Male	Female
RBL-Group	65 (50%)	28 (43.08%)	37 (56.92%)
ST-Group	65 (50%)	30 (46.15%)	35 (53.85%)
Total	130 (100%)	58 (44.62%)	72 (55.38%)

Patients age range between 21 to 62 years. The mean age was 45 ± 1 . They were divided into four age groups. The first group was from 21 to 30 years, with 39(30%) patients out of which 15 (38.46%) were males and 24 (61.54%) were females. The second group was from 31 to 40 years, with 29(22.31%) patients out of which 12 (41.38%) were males and 17 (58.62%) were females. Third group from 41 to 50 years, with 40(30.77%) patients out of which 21(52.5%) were males and 19 (47.5%) were females & forth group was 51 to 62 years, with 22(16.92%) patients among them 10(45.45%) males and 12(54.55%) were females.

Two haemorrhoids were treated per session, as more than two may cause post procedural narrowing of rectal lumen due to mucosal swelling leading to difficulty in passing stool. The number of sessions each patient had is given in Table-2

In RBL-group; out of 65 patients 11(16.92%) had three 2nd degree internal haemorrhoids at 3^o 7^o & 11^o clock positions. 21(32.3%) had two 2nd degree internal haemorrhoids at 11^o & 3^o clock positions, 18(27.69%)

two 2^o internal haemorrhoids at 11^o & 7^o clock positions and 15(23.07%) have had two haemorrhoids at 3^o & 7^o.

In ST-Group; 23(35.38%) had three 2nd degree internal haemorrhoids at 3^o 7^o & 11^o clock positions, 10(15.38%) had two 2nd degree internal haemorrhoids at 11^o & 3^o clock positions, 16(24.62%) two 2^o internal haemorrhoids at 11^o & 7^o clock positions, and 16(24.62%) two 2^o internal haemorrhoids at 3^o & 7^o.

TableNo.2: Number of Sessions of RBL & ST

Proce- dure	One Session	Two Sessions	Three Sessions	Four Sessions	Five sessions	Total Patients
RBL	15 (23.08%)	38 (58.46%)	11 (16.92%)	1 (1.54%)	2 After slippage of band	65 (100%)
ST	5 (7.69%)	37 (56.92%)	13 (20%)	5 (7.69%)	5 (7.69%)	65 (100%)

The major complaint was of pain during and after defecation; it was present in 128(98.46%) patients, relieved within 3±days in ST-group & took longer approximately 7±days in RBL-group become asymptomatic after treatment by both the modalities.

The second common complaint of patients before treatment was of bleeding per rectum in 102(78.46%) patients most of them 99(98.02%) become asymptomatic immediately, but 2(1.98%) patients of RBL-group returned due to rubber band slippage. One returned to ward on 10th day after RBL-treatment the other returned on 13th day of RBL-treatment both presented with bleeding per rectum which lasted to about 2± days, till the third day the patients got settled down, and were discharged with the advice to return back for treatment after six weeks. The ST session was done after six weeks to both the patients, which then remained uneventful till follow up. One of the reasons for slippage of band could be the small size of the cherry red 2nd degree hemorrhoidal nodule from its stump after RBL.

Third complaint before treatment was of difficulty in passing stool in 89(68.46%) patients, among which 82(92.13%) become asymptomatic immediately after treatment and 7(7.87%) remained symptomatic, among the seven symptomatic patients 5 patients got settled down in three to four weeks time 2 have difficulty in passing stool since the age of 9-12 years. Out of these two, one got settled with altered dietary habits, but the other patient started passing stool after every second day, which according to patient was constipation until the follow up of one and a half year, thus 88 (98.88%) patients out of 89 got relieved from the symptom of constipation.

Tenesmus was present in 99(76.15%) patients; the result was 100%, as all patients become asymptomatic

after treatment by both the treatment modalities. Mucus discharge was present in 8(6.15%) patients and four were treated by RBL & remaining four by ST and both groups become asymptomatic after treatment.

The results of pain, tenesmus and mucus discharge were relieved in almost all the patients of both the groups. The complaint of bleeding per rectum also settled, but due to slippage of band two patients have repeated RBL-treatment after four weeks of first session the post procedural period after second session remained uneventful till one and a half years. The results of RBL-treatment modality are shown in Figure-I.

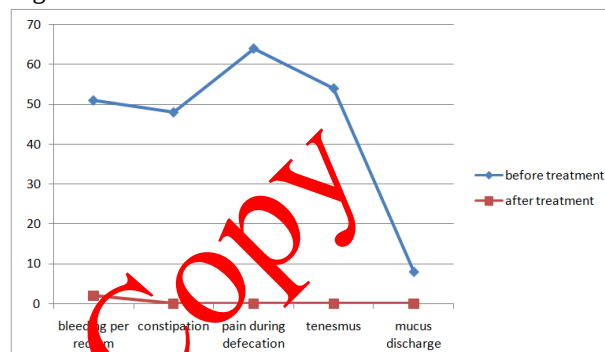


Figure No.1: Results of RBL-treatment Modality

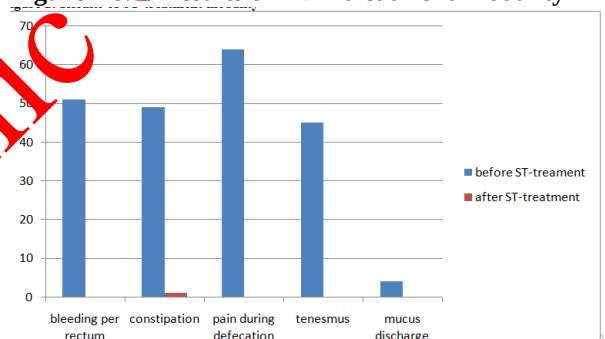


Figure No.1: Results of ST-treatment modality

One patient of ST-group did not have relieved from constipation but bleeding per rectum and pain during defecation got settled. The follow up was conducted for one and a half year no recurrence was reported up till the follow-up in both the groups. The results of ST-treatment modality are shown in Figure-2.

In our series the results of ST- group were very satisfying as pain, bleeding per rectum, mucus discharge & tenesmus was 100% successful & only one patient have the complaint of passing stool after two days, which according to patient was constipation.

DISCUSSION

Both RBL & ST are simple to perform in outpatient department and need no hospitalization, until some serious complications develops i.e. bleeding per rectum, hematuria, sepsis and stenosis. Associated conditions

such as skin tags, fistulas, external haemorrhoids should be looked for and these cases should be advised for surgery as first choice treatment⁷. Studies support the in-office treatment of first and second degree haemorrhoids, which has become a common practice now-a-days.⁸

Slippage of bands is a disadvantage of RBL. If slippage of bands occurred the procedure is repeated after the patient gets settled down. The incidence of slippage can be reduced to some extent by better selection criteria as second and third degree haemorrhoids are more suitable for RBL, due to their larger haemorrhoidal stump.⁹

Mehanna D & Platel C¹⁰ reported 4% of patients with RBL had minor bleed, which required no active surgical management. Su M Y & associates^{11,12} reported control of bleeding and prolapsed in 93% & 91 % of patients after RBL. The results of these studies are much closer to ours where control of bleeding was 96.08% and prolapsed was 100%.

Constipation & difficulty in passing stool is a common complain 27.62% patients¹³. In our series the symptom of constipation was present in 68.46% patients and after treatment 99% became asymptomatic. Sclerotherapy was successful in about 70-80 % of patients with 2nd degree haemorrhoids¹⁴. Our study shows that ST success rate was 99.1% up till the follow up of one and a half year.

A three year follow up by Kanellos I & associates¹⁵ showed that only 44.7% of their patients, with second degree haemorrhoids, remained symptom free or had improved, while 24.8% were worse & the remainder were unchanged (30.5%). In our study 99% approximately were symptom free among both groups, only one patient of RBL didn't got relieve from the complaint of constipation.

Fakhuda A & associates^{16, 17} reported excellent results in 89% of patients, good in 9% & poor in 2% in patients with RBL. Chew SS & associates¹⁸ reported excellent results with 3.1% complications (only bleeding) with RBL. Kumar¹⁹ described cure rate up to 71%, Poen AC^{20, 21} says that RBL is an effective treatment for symptomatic haemorrhoids.

CONCLUSION

By ST and RBL second degree haemorrhoids can be treated with good success rate and efficacy in OPD setup. These modalities also unload the economic burden on hospital and patients.

Author's Contribution:

Concept & Design of Study: Asma Niaz Khan
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An Audit of Radiological Imaging in Physical Injuries and Their Medicolegal Patterns at A Tertiary Care Hospital of Sindh

Radiological
Imaging of
Injuries and
Their
Medicolegal

Ikram Ahmed Tunio¹, Muhammad Qasim Memon² and Waheed Ali Nahyoon²

ABSTRACT

Objective: The present study was conducted to report the patterns of radiological imaging of physical injuries and its medicolegal implications presenting at a tertiary care hospital of Sindh.

Study Design: Observational study

Place and Duration of Study: This study was conducted at the Department of Radiology, Chandka Medical College Hospital Larkana from August 2014 to July 2016.

Materials and Methods: Record of 5130 patients was screened of which only 987 fulfilled the inclusion criteria. Plain X-rays, CT scan, ultrasound and magnetic resonance imaging (MRI) records were checked for the findings of bony injury, body parts injured, cause and nature of physical injury. Microsoft excels and Statistix 8.1 version (USA) was used for the data analysis (P-value ≤ 0.05).

Results: Mean $\pm$ SD age was noted as 34 ± 15.9 years. Of 987, 880 (89.15%) were male and 107 (10.84%) were female ($p=0.0001$). Plain X-rays were performed in 99.81%, Sonography in (24.22%), CT scans in (33.43%) and MRI in (13.8%) ($p=0.0001$). Fractures of limb bones, skull, chest cage and pelvic bones were noted. Motor bicycle (44.07%) was most common cause of physical injury followed by motor vehicle (25.83%) and fire arm injuries (8.71%). Medicolegal patterns reveal 6% were accidental, 2% homicidal and remaining were non- medicolegal cases.

Conclusion: Common cause of physical injuries was the motor cycle use and radiological imaging was helpful in rapid diagnosis in particular of bony fractures for early medical therapy. CT scan and MRI are necessary for head injuries cases.

Key Words: Physical injuries, X-rays, CT scan, MRI, Medicolegal Patterns

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INTRODUCTION

Physical injuries are a common problem of modern life and radiological examination of affected body part is essential for necessary therapeutic decisions to be instituted. Radiological examination of affected body part is an essential clinical tool in the emergency departments.^{1,2} Physical injuries have multiplied due to motor vehicles availability and non-abiding of traffic rules resulting in road traffic accidents (RTA). This problem is universal; occurrence has increased throughout the World. Physical injuries usually involve one or more bony parts of body. Bony injuries are

problematic because of surgical management, disability, long duration for healing, and loss of work and financial burden.^{1,2} In Pakistan, the urbanization is on rise, similarly the motor vehicle use, law and order situations, violence, injustice while public intolerance is on decline. Fire arms and social violence are major problems of urban life. Modernization and industrialization have opened new chapters of public problems which are not handled properly. Availability of rapid and true justice is a dream which has become a nightmare and people are ready to fight on trivial problems.¹ Motor vehicle injuries occupy top followed by fire arm injuries. Physical injury tolls for a large number of deaths, disability, and financial problems in particular for the deprived families of society.² A previous study reported mortality and morbidity in physical injuries due to RTA resulting in the functional disability.³ Physical injury may be isolated affecting only a single body part or may be generalized. RTAs usually cause serious multiple body injuries, damaging both soft and bony body parts. RTA, bomb blasts, sports and assaults usually result in death or severe physical injuries necessitating urgent surgical and medical measures to save the lives. World directory shows the RTA rank 9th position as cause of physical

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injuries, which is projected to 3rd position by the year 2020.⁴ This needs the health providing institutes should be prepared in advance for handling the ever rising problem of physical injuries.^{5,6} Radiological imaging plays primary role in the diagnosis and management of physical injuries. The victims need the imaging studies urgently to initiate the surgical and medical intervention in time and in proper direction. A report shows 1.2 million people die because of physical injuries.⁷ The rising death toll because of physical injuries is a risk for the low- and middle- income developing countries.^{7,8} Motor bicycles and motor vehicles have become a popular means of transport in Pakistan; both for personal and commercial purpose.⁹ This has multiplied the physical injuries inflicted during RTAs which are common due to non- implementation of driving laws. Unfortunately, the majority of public is ignorant and don't abide by the traffic laws.^{10,11} The present clinical audit is a retrospective report which is being reported on the role of radiological imaging in the management of physical injuries presenting at our tertiary care hospital. The present report will highlight the problem in the greater interest of public to abide by the traffic laws and the traffic department to be more conscious and vigilant at least to minimize the road traffic accidents, physical injuries, economical loss and mortality.

MATERIALS AND METHODS

The present observational study was conducted at the Department of Radiology, Chandka medical college hospital Larkana sindh between August 2014 and July 2016. Subjects of physical injuries presenting at the emergency unit of hospital are referred to the Department of Radiology. X-rays and computerized tomography scanning are frequent investigations for the hard and soft tissue injuries. Our hospital provides best radiological imaging services at affordable charges. Radiology department is one of the busiest departments having working collaboration with emergency department round the clock, working 24 hours. Patients of >20 years of age, both genders, and not critically ill were included in the study protocol. Patients with serious physical injuries, admitted in the intensive care units were excluded. Non willing subjects were also excluded. Physical injury was defined as a body injury occurred by motor bike, motor car, motor cycle, etc. Victim was defined as subjects who got body injury as a rider, innocent road bystander, a passenger and or a pedestrian. Permission was taken from the institutional ethical committee before conducting the research. A proforma was designed to collect the patient's biodata; physical injuries, radiological imaging and findings were noted. Bony injuries, imagined bony parts, physical findings, causes and medicolegal nature of physical injuries were collected and saved carefully in the proforma. Data of 5130 patients was collected; of

which only 987 fulfilled the inclusion criteria and included the study protocol. Plain X-rays, CT scan, ultrasound and magnetic resonance imaging (MRI) records were checked for the findings of bony injury, body parts imagined, cause and nature of physical injury, bullets, foreign bodies and bony fractures. Consent was necessary in certain cases of medicolegal nature only. Confidentiality of data was maintained by keeping the proforma secured. Only concerned researcher could approach the record of patients. The data was typed on the Microsoft excel sheet, was copied to the Statistix 8.1 version (USA). Continuous data was analyzed by the Student's t-test and results were presented as mean $\pm$ SD. Cross tabulation was performed for the categorical variables using Chi square test and results were presented as frequency and percentage. Graphs were generated by the Microsoft excel sheet. Statistical significance was considered significant at confidence interval of 95% ($P \leq 0.05$).

RESULTS

Age, calculated as mean $\pm$ SD, was noted as 34 ± 15.9 years. 46.4% of study subjects belonged to the 2nd decade of life followed by 3rd decade as second most common in 20.7%. ≥ 60 years was least age group noted in 1.2% ($p=0.0001$) (table 1). Of 987, 880 (89.15%) were male and 107 (10.84%) were female ($p=0.0001$) (table 1 and graph 1). Majority of subjects belonged to lower social class (67.5%), urban population (85.41%) and uneducated (69.30%) ($p=0.001$, $p=0.0013$ and $p=0.0012$ respectively) as shown in table 1.

Table No. 1: Age distribution of study subjects (n=987)

	No	%	P-value
Age			
10- 19.9 years	458	46.4	0.0001
20- 29.9 years	207	20.7	
30- 39.9 years	123	12.46	
40- 49.9 years	119	12.05	
50-59.9 years	61	6.18	
≥ 60 years	19	1.92	
Male	880	89.15	0.0001
Female	107	10.84	
Urban	843	85.41	0.0001
Rural	144	14.58	
Lower social class	667	67.57	0.0013
Middle social class	142	14.38	
Upper social class	178	18.03	
Educated	303	30.69	0.0012
Uneducated	684	69.30	

Frequency of radiological examination of body parts and radiological imaging category are shown in table 2. Most common imagined body parts were the limbs,

followed by head, chest and pelvic bones. Plain X-rays were performed in 99.81%, Sonography in (24.11%), CT scans in (33.43%) and MRI in (13.8%) ($p=0.0001$) as shown in table 2. Frequency of bony parts x-rayed, causes and medicolegal patterns of physical injuries are shown in table 3, 4 and 5 respectively. Fractures of limb bones, skull, chest cage and pelvic bones were noted. Motor bicycle (44.07%) was most common cause of physical injury followed by motor vehicle (25.83%) and fire arm injuries (8.71%). Pedestrians comprised of 12.46% of total cases (table 4 and graph 1). Medicolegal patterns of physical injuries reveals 5.67% were accidental, 2.67% homicidal and non-medicolegal cases were noted as 91.79% as shown in table 5 and graph 2.

Table No.2: Frequency of radiological examination of body parts (n=987)

	No.	%
X-ray body parts		
Upper limbs	213	21.58
Lower limbs	220	22.28
Head	182	18.43
Spine	108	10.94
Chest	112	11.34
Pelvis	122	12.36
Abdomen	30	3.03
Radiological Category		
Plain X-ray	979	99.81
Sonography	238	24.11
CT scanning	330	33.43
MRI scanning	137	13.80

Table No.3: Frequency of bony part X-rays (n=987)

	No	%
Thumb bones	27	2.33
Hand bones	91	9.21
Skull	85	8.61
Pelvic bones	55	5.57
Radius+ Ulna	105	10.63
Clavicle	86	8.71
Wrist bones	40	4.05
Femur	52	5.26
Tibia	193	19.55
Fibula	37	3.74
Chest	85	8.61
Bones of foot	27	2.73
Patella	31	3.14

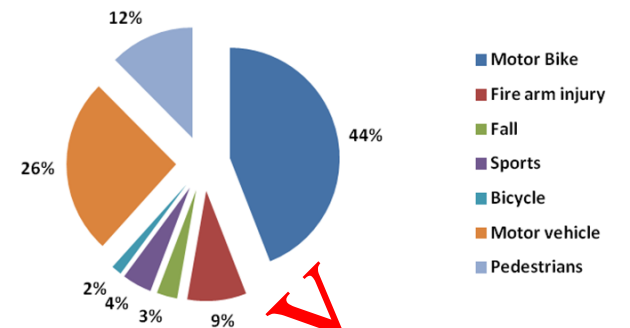
Table No. 4: Causes of Physical injuries (n=987)

	No	%
Motor bicycle	435	44.07
Fire arm injury	86	8.71
Fall	30	3.03
Sports	43	4.35
Bicycle	15	1.51
Motor vehicle	255	25.83

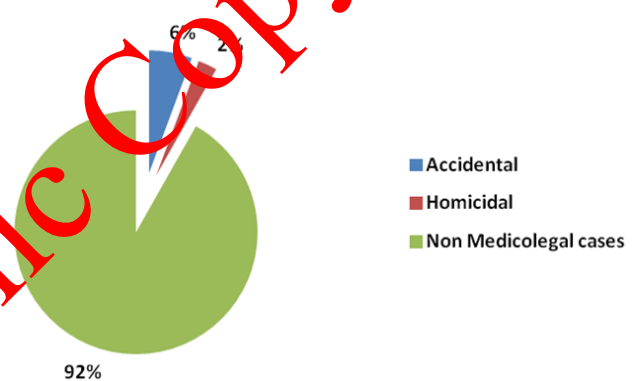
Pedestrians	123	12.46
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Table No.5: Medicolegal Patterns of Physical Injuries (n=987)

	No	%
Accidental	56	5.67
Homicidal	25	2.53
Non Medicolegal cases	906	91.79



Graph No.1: Causes of Physical injuries



Graph No.2: Medicolegal patterns of Physical injuries

DISCUSSION

The present is the first research being reported for the radiological imaging in the diagnosis of physical injuries and its medicolegal implications from our tertiary care hospital. The Physical injuries are on incline because of motor vehicle availability and traffic rules are neglected at all. This has resulted in the morbidity and mortality in the country. The present research highlights the importance of radiological imaging in saving the lives, making a proper diagnosis of soft and bony injuries, and implementation of proper therapeutic measures. This saves the community against the morbidity and mortality. Bony fractures are a cause of physical disability which is a cause of handicap and loss of physical movement of bread earners in the society. Road traffic accidents have topped as a cause of physical injuries due to traffic law disobedience and negligence. Radiological imaging is of prime importance in the physical injuries in daily clinical practice. Many of RTA victims are presenting at the

emergency units of tertiary care hospitals for the treatment purpose. In present study, majority of physical injuries victims were teenagers of second decade of life. The age, calculated as mean $\pm$ SD was noted as 34 ± 15.9 years. This shows a young age being the victims of physical injury. The findings are in agreement with previous studies.¹¹⁻¹³ 46.4% of study subjects belonged to the 2nd decade of life followed by 3rd decade as second most common in 20.7%. ≥ 60 years was least age group noted in 1.2% ($p=0.0001$) (table 1). The findings are in agreement with previous studies.¹¹⁻¹³

Of 987, 880 (89.15%) were male and 107 (10.84%) were female ($p=0.0001$). The male dominance is in keeping with previous studies.^{12,13} This is because our society is male dominated which are involved in outside home activities, running the motor vehicles hence prone to get physical injuries, while the female are usually engaged in the in-house activities. Majority of subjects belonged to lower social class (67.5%), urban population (85.41%) and uneducated (69.30%) ($p=0.001$, $p=0.0013$ and $p=0.0012$ respectively). These findings are supported by previous studies.^{14,15} Most common injured body parts were the limbs, followed by head, chest and pelvic bones. Fractures of limb bones, skull, chest cage and pelvic bones were noted. Pedestrians comprised of 12.46% of total cases. The findings are consistent to the previous studies.^{12,13}

Radiological imaging reveals bony fractures of lower limb as most common followed by upper limb bony fractures, head, chest and vertebral column. Our findings are supported by previous studies.¹⁶⁻¹⁹ Plain x-rays were performed in 99.81%, Sonography in (24.11%), CT scans in (33.43%) and MRI in (12.8%) ($p=0.0001$). The findings are in agreement with the previous studies.^{20,21} Bony fractures of limbs, skull, chest, and bony pelvis were the most common noted. Motor bicycle (44.07%) was most common cause of physical injury followed by motor vehicle (25.83%) and fire arm injuries (8.71%). Previous studies^{20,21} had reported similar patterns of physical injuries. Medicolegal patterns of physical injury reveals 5.67% were accidental, 2.67% homicidal and non-medicolegal cases were noted as 91.79%. The findings are consistent to previous studies.^{18,19} Previous reported^{22,23} reported the bony injuries of limbs are most common, the findings support our present study. Limb injuries due to motor bikes was commonest cause of bone fractures is in agreement with previous studies.^{22,23} Our findings of physical injuries are supported by previous study from Nigeria.²⁴ Plain x-rays were the most common radiological investigations noted in present study, this is consistent to previous studies.^{24,25} Our findings of chest, pelvic and spinal injuries are in full agreement with reported studies.²⁶⁻²⁸ CT scans were mostly advised for the head injuries followed by chest and abdominal trauma. Head injuries were common in the motor cyclist which is consistent to previous studies.^{27,28} The

reason is the youngsters avoid helmet and never use it, this cause is frequently reported.^{29,30} The motor cycling is the major cause of physical injuries and radiological imaging is necessary for timely institution of proper medical treatment.

CONCLUSION

The present study shows the motor vehicle injuries as the most common cause of physical injuries and radiological imaging is a par excellence in providing a rapid diagnosis of bony injuries for proper and rapid medical management. Analysis shows most cases are non-medicolegal cases. Accidental and homicidal cases comprised only 6% and 2% respectively. Preventable causes of physical injuries such as using helmet by motor cyclist may decrease the morbidity and mortality.

Author's Contribution:

Concept & Design of Study: Ikram Ahmed Tunio
Drafting: Muhammad Qasim Memon
Data Analysis: Wajid Ali Nahyoon
Revisiting Critically: Muhammad Qasim Memon
Final Approval of version: Ikram Ahmed Tunio

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

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Bacterial Resistance in Neonates With Sepsis, Not Responding to First Line Antibiotics

Muhammad Nadeem Chohan¹, Deve Dass¹, Srichand Talreja² and Nisar Ahmed¹

ABSTRACT

Objective: To determine the bacterial resistance in neonates with sepsis not responding to first line antibiotics, at Neonatal Intensive Care Unit, Nazeer Hussain Medical Complex Hyderabad

Study Design: Descriptive / cross sectional study.

Place and duration of study: This study was conducted at the Neonatal Intensive Care, Nazeer Hussain Medical Complex Hyderabad from July to December 2016

Materials and Methods: A total of 63 neonates admitted to NICU, Nazeer Hussain Medical Complex Hyderabad with suspected neonatal sepsis and fulfilling the inclusion criteria were included.

After taking blood culture second line broad spectrum antibiotics (Meropenem, Vancomycin) started and blood culture followed for the presence of bacteria and its sensitivity to various antibiotics, antibiotics resistance to first line antibiotics (Amikin, Cefotaxime, Ampicillin) was also followed.

Results: Most common age of presentation was <5 days ie 76.2%, having the male predominance 85.7% and most neonates were between 2 to 3 Kg ie 85.7%. Most neonates were born at term 61.9%. Most common organism was Staphylococcus Aureus 24 (38%). Death occurred in 9 (14.3%) neonates. Blood Culture was negative in 24 (38.09%) neonates. Klebsiella Pneumonia was the most common organism isolated and it was sensitive to Colistin and Meropenem in 100% cases, while it was resistant to Amikacin and Ampicillin in 100% cases.

Conclusion: Proper Blood Culture and Judicious use of antibiotics in neonatal sepsis can reduce the mortality, even in neonates who did not respond to first line antibiotics. Care should be taken, while using second line antibiotics, because resistance to second line antibiotics is emerging, hence there is need of vigilance and Blood Culture follow up to know the bacterial sensitivity and proper antibiotic coverage.

Key Words: Neonatal Sepsis, Blood Culture, Antibiotics Resistance

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INTRODUCTION

Sepsis is most common etiology of neonatal mortality in developing countries. Neonatal sepsis has no specific feature that can help in diagnosis, but it can present with drowsiness, feeding difficulties, tachycardia or tachypnea¹. In previous studies neonates with moderate sepsis presented with drowsiness, grunting, tachypnea or nasal flaring, while neonates with severe sepsis presented with unconsciousness, cyanosis, pallor or feeding problems².

Blood Culture yield in neonatal sepsis is between 25 to 54%. Though acute phase reactants like C-Reactive Proteins (CRP) may help in the diagnosis of neonatal sepsis but it lacks sensitivity and specificity. It also cannot detect specific organism and availability of these investigations are issues in developing countries.

Gold standard investigation for neonatal sepsis is Blood Culture but the results are not available immediately thus needs to start empiric treatment in suspected neonatal sepsis³. Aminoglycosides and Penicillin are used as first line empiric treatment for neonatal sepsis for last decades in developed countries and this was based on culture and sensitivity results of various research studies. As there is increased resistance of gram negative rods to aminoglycosides and Penicillin all over the world and antibiotic sensitivity vary between different hospitals and region, so we need local data to treat infections confidently⁴.

As a part of developing country and problems of cost and availability of Blood Culture facilities, most of the Neonatal Units in our area are not performing the Blood Culture in suspected Neonatal Sepsis and just starts recommended first line antibiotics i.e. Ampicillin and Cefotaxime or Amikacin. If the neonate dose not responds to first line antibiotics and becomes worse, then they shift the neonates to Neonatal Intensive Care Units having the facility of Ventilators and well equipped laboratory.

As our hospital is among one of the hospital that receives the major bulk of serious neonates with Severe Sepsis, so this study is performed to know the Bacterial yield and their sensitivity pattern, hence to make a local

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protocol to start empirically second line antibiotics, if first line antibiotics fails to respond.

MATERIALS AND METHODS

It was a Cross sectional study carried out by Non-probability consecutive sampling over 63 neonates, from July to December 2016 at Neonatal Intensive care of Nazeer Hussain Medical Complex Hyderabad. This study was approved by Ethical review committee of institute. All neonates admitting to Neonatal Intensive Care fulfilling inclusion criteria (aged less than one month of either sex shifted from another Neonatal Unit with Neonatal Sepsis not responding to Injection Ampicillin, Cefotaxime, and Amikin with clinical features suggestive of Sepsis ie. Fever, unable to feed, convulsions, respiratory distress, lethargic was enrolled in the study after taking informed consent from Parents. Patients with Neonatal Sepsis but already taking second line antibiotics ie, Injection Vancomycin, Meropenem were excluded from the study.

After history taking and detailed examination, Blood Culture was taken from the vein over the dorsum of hands in sterile bottle provided by laboratory and was sent to certified recognized microbiology laboratory. Bacteriological examination of Blood sample was carried out according to standard procedure. All specimens inoculated on following media: Mac conkey agar, Blood agar. Plates were allowed to warm to room temperature prior to use and inoculated within 30 minutes of specimen collection.

Antimicrobial susceptibility testing was performed in cases of positive culture by microbiologist having at least five years of experience in microbiology. Kirby-Bauer disc-diffusion method used for challenge for selected antibiotics with all pertinent isolates. McFarland 0.5 standardized bacteria suspension is swabbed over the Mueller-Hinton agar plate and allows it to dry for about 5-15 minutes. Paper disk containing single concentration of each antimicrobial agent were placed into the inoculated surface. After overnight incubation at 37°C, cut-off diameters of resultant inhibition zones were measured.

The data collection proforma was filled separately for each patient by researcher. Data was entered and

analyzed in SPSS v 22.0. Descriptive statistics i.e. mean + standard deviation was calculated for quantitative variables like age and duration of Sepsis. Frequency and percentage was reported for qualitative variables such as gender, bacterial pathogens isolated from blood samples, for drug resistance and for drug sensitivity.

Operational Definitions: Neonates: Age $\leq$ 28 days

Sepsis: Systemic inflammatory response syndrome secondary to infection.

RESULTS

Table No. 1: Demographic Data

Characteristics	No. of Patients	%
Age		
3 -5 days	48	76.2
6- 10 days	12	19.0
> 10 days	3	4.8
Gender		
Male	54	85.7
Female	9	14.3
Weight		
< 2kg	3	4.8
$\geq$ 2 - 3 Kg	54	85.7
> 3 Kg	6	9.5
Gestational Age		
<37 Weeks	24	38.1
$\geq$ 37 weeks	39	61.9

Table No.2: Blood Culture Results

Blood culture		%
K. Pneumoniae	12	19.04
Staphylococcus species	3	4.76
Acinobacter	3	4.76
Burkholderia cepacia	9	14.28
Enterobacter	3	4.76
Serratia species	9	14.28
No Growth	24	38.09

Table No.3: Neonatal Outcome

Outcome		%
Improved	54	85.7
Death	9	14.3

Table No.4: Bacterial Culture Sensitivity and Resistance

Bacteria	Meropenem		Amikacin		Vancomycin		Cotrimoxazole		Colistin		Ampicillin		Levofloxacin		Fosfomycin	
	R	S	R	S	R	S	R	S	R	S	R	S	R	S	R	S
K.Pneumonia	0	12 (100%)	12 (100%)	0	12 (100%)	0	–	–	0	12 (100%)	12 (100%)	0	–	–	–	–
Acinobacter	3 (100%)	0	3 (100%)	0	–	–	–	–	0	3 (100%)	–	–	–	–	–	–
Burkholderia Cepacia	0	9 (100%)	–	–	–	–	0	9 (100%)	–	–	–	–	9 (100%)	0	–	–
Enterobacter	0	3 (100%)	0	3 (100%)	–	–	–	–	–	–	3 (100%)	0	–	–	–	–
Serratia Species	9 (100%)	0	9 (100%)	0	–	–	–	–	–	–	9 (100%)	0	–	–	0	9 (100%)
Staphylococcus Species	–	–	0	3 (100%)	0	3 (100%)	–	–	–	–	3 (100%)	0	–	–	–	–

Most common age of presentation was <5 days i.e. 76.2% (Table 1), having the male predominance 85.7% (Table 1) and most neonates were between 2 to 3 Kg ie 85.7% (Table 1). Most neonates were born at term 61.9% (Table 1). Most common organism was *Staphylococcus Aureus* 24 (38%) (Table 2). Death occurred in 9 (14.3%) neonates (Table 3). Blood Culture was negative in 24 (38.09%) neonates (Table 2). *Klebsiella Pneumonia* was the most common organism isolated and it was sensitive to Colistin and Meropenem in 100% cases, while it was resistant to Amikacin and Ampicillin in 100% cases (Table 4).

DISCUSSION

In our study out of 63 neonates, 39 neonates (61.9%) had positive Blood Culture. Most common bacteria were *K. Pneumonia*, while least common bacteria were *Staphylococcus*, *Acinobacter* and *Enterobacter*.

A different local study from Peshawar showed 59.8% positive blood culture and this difference in high positive bacterial yield may be due to no antibiotic use prior to Blood Culture. *Escherichia coli* (*E. coli*) was the commonest organism causing (54; 80.5%) followed by *Pseudomonas* (6; 8.9%), *Klebsiella* (5; 7.4%) and *Staphylococcus aureus* (11; 16.4%) respectively, while in our study most common organism was *K. Pneumonia*, this shows the importance of different organism in different regions. The gram-negative organisms showed high degree of resistance to commonly used antibiotics, ampicillin (79.3%), cefotaxime (55.2%) and comparatively low resistance to gentamicin (43.2%), tobramycin (34.3%), imipenem (23.6%), amikacin (22.3%), and ciprofloxacin (11.9%) respectively, while in our study these organism were 100% resistant to Ampicillin and Amikacin and most of the gram negative organism were sensitive to Meropenem (100) but *Serratia* Species were 100 resistant to Meropenem. *Staphylococcus aureus* showed almost the same resistance to ampicillin, 75%, and comparatively low resistance to the rest of the antibiotics as compared to the gram-negative organisms, while in our study *Staphylococcus* was 100% sensitive to Amikacin and Vancomycin while 100% resistant to Ampicillin⁵.

An international study from America showed GBS (43%) and *E coli* (29 %,) were most frequently isolated. 16% of infected infants died, most commonly with *E coli* infection (33%), while in our study we did not found any GBS or *E.Coli*.⁶ This shows the variation in organisms presence in different countries. The death rate was lower in our study that may be due more severity of *E.Coli* or GBS in international study.

In another different local study *Staphylococcus Aureus* (64.1%) was the most common organism⁷. Gram positive organisms were mostly sensitive to

Vancomycin, amikacin and amoxicillin, while gram negative organisms were mostly sensitive to amikacin and imipenem. Ampicillin was found to be resistant to both gram positive and gram negative organism. While in our study *Staphylococcus Aureus* was the least common organism (4.76%), Gram positive organism were sensitive to Amikacin and Vancomycin, while resistant to Ampicillin.

In another international study Positive blood culture was found in 47.1%. Deaths occurred in 19% of neonates. *K. Pneumonia* was resistant to Ampicillin in 100% cases, while resistant to Amikacin in 67% cases⁸, while in our study 62% cases were Blood Culture positive and death ratio was in 9% cases.

In another local study the predominant microorganisms were *Enterobacter* and *Staphylococcus aureus*. The antibiotic sensitivity pattern revealed Ampicillin (74% resistance)⁹. While in our study *K. Pneumonia* was the most common organism and *Enterobacter* was the least common organism.

In another different study from India, Gram positive bacteria showed high resistance to Ampicillin (13.6%) and Amikacin-60%. They were highly susceptible to Vancomycin (95%). Among the Gram negative bacteria, many of them were resistant to ampicillin (75%), They were highly susceptible to Colistin (100%) and Meropenem (100%)¹⁰. While our study showed 100% resistance to Ampicillin.

CONCLUSION

Proper Blood Culture and Judicious use of antibiotics in neonatal sepsis can reduce the mortality, even in neonates who did not respond to first line antibiotics. Care should be taken, while using second line antibiotics, because resistance to second line antibiotics is emerging, hence there is need of vigilance and Blood Culture follow up to know the bacterial sensitivity and proper antibiotic coverage.

Author's Contribution:

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

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Investigating Effects of Curcuma Longa on the Liver Enzymes and Histopathological Examination in Chemical Induced Liver Injury in Rats

Aftab Ahmed Shaikh¹, Umair Ali Soomro², Shomail Saeed Siddiqui², Kashif Rasheed Shaikh³, Mumtaz Ali Qureshi⁴ and Munawar Ali Kalhoro⁵

ABSTRACT

Objective: The present research investigated the hepatoprotective and histoprotective potential of Curcuma longa (CL) against chemical induced liver injury in laboratory male Wistar rats.

Study Design: Experimental study

Place and Duration of Study: This study was conducted at the Animal House, Al-Tibri Medical College and Sindh Agriculture University from September 2016 to January 2017.

Materials and Methods: 60 adult male rats (Wistar strain), of 150- 250 grams, were randomly divided into 3 groups. Group A. Control (n=20) Rats were given isotonic saline (0.9%) orally daily for 4 weeks, Group B. (n=20) Rats were given Carbon tetrachloride (CCl₄) orally on alternate day for 4 weeks, Group C. (n=20) Rats were fed received Carbon tetrachloride (CCl₄) + Curcuma longa (250 mg/kg) orally on alternate days for 4 weeks. Blood samples were collected by cardiac puncture. Liver tissue 3-5μ thick sections were stained with H & E stain and examined by light microscopy. Statistical analysis was performed on Statistix 9.0 (USA) (P-value of ≤ 0.5)

Results: The present study shows hepatoprotective and histoprotective potential of Curcuma longa (CL) against chemical (carbon tetrachloride) induced liver injury. Curcuma longa improved Liver enzymes, serum superoxide dismutase, glutathione peroxidase, catalase and liver histology (P < 0.05).

Conclusion: Curcuma longa exerts hepatoprotective and histoprotective effects, and mitigates oxidative damage induced by carbon tetrachloride.

Key Words: Curcuma longa, Carbon tetrachloride, Liver enzymes, Histology

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INTRODUCTION

Curcuma longa (CL) is an herbal rhizome. It is a perennial herb. Botanically, it belongs to a native South Asian family called the "Zingiberaceae".

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Publicly it is known as the turmeric.¹ Turmeric is used in food cooking due to its culinary odor and taste. Turmeric is also used as "herbal remedy" because its medicinal properties are known to public since centuries back. In Folk medicine, the CL is used as digestive and carminative, stomachic and tonic. It is also used for the disease such as the worm infestations, urinary disorders, asthma, and gonorrhea.² Curcuma longa is reported of having anti-tumor potential,³ anti bacterial and antimicrobial activity,⁴ anti-inflammatory⁵, anti-oxidant⁶ and wound healing⁷ properties. Its gastro protective effects have also been reported previously.⁸ Similarly, in traditional medicine, several herbs had been used in experimental research for induced diseases such as chronic liver disorders, liver cirrhosis, and chemical induced liver injuries.^{9,10} Carbon tetrachloride (CCl₄) is chemical agent which has been used in experimental animal studies to evaluate various herbs of their medicinal potential, so that they may be used for the human purpose. The CCl₄ is a hepatotoxic agent. It has been used in laboratory animals to induce liver injury.¹¹ Mechanism of CCl₄ cell injury is not well understood. One postulated mechanism is the formation of free oxygen radicals

called reactive oxygen species (ROS). Free reactive oxygen radicals react with the cell membrane and induce lipid peroxidation and consequent upon the cell membrane destruction.^{11, 12} Liver tissue architecture disruption results in loss of physiological homeostasis of hepatocyte.¹³ As the cell membrane is injured, the cytoplasmic and mitochondrial enzymes are released into the blood capillaries.¹⁴ Liver enzymes are clinical biomarkers of liver injury and their blood levels correlate with the extent of tissue injury. Liver enzymes also indicate cytoplasmic and mitochondria injury at sub cellular levels. Alanine transaminase (ALT), aspartate transaminase (AST) and alkaline phosphatase (ALP) are enzymes of cytoplasmic compartment. While the lactate dehydrogenase (LDH) indicates mitochondrial membrane injury.^{11,15} Some of previous studies^{7,8} have been conducted with CL against the CCl₄ induced liver injury. The present experimental study investigated the hepatoprotective and histoprotective potential of Curcuma longa against Carbon tetrachloride induced liver injury in a male Wistar rat model. The present study hypothesized that the Curcuma longa has no effect against the Carbon tetrachloride induced liver injury.

MATERIALS AND METHODS

The present experimental research study was conducted at the Animal house of Al-Tibri Medical College and Sindh Agriculture University from September 2016 to January 2017. Rats were selected through non probability (purposive) according to selection criteria of inclusion and exclusion. Adult male rats (Wistar strain) of 150- 250 grams were the inclusion criteria. Female rats, different weight, not eating well and feeling sick were excluded. Our animal house is well equipped. Animals were kept in steel cages at an optimal temperature (22- 25 °C), humidity 55-60% and 12/12 hours dark and light cycle. Animals were observed on daily basis. 24 hours access to chow diet and clean pure water was strictly followed. 60 male rats were randomly divided into 3 groups.

Group A. Control (n=20) Rats were given isotonic saline (0.9%) orally daily for 4 weeks,

Group B. (n=20) Rats were given Carbon tetrachloride (CCl₄) orally on alternate day for 4 weeks;

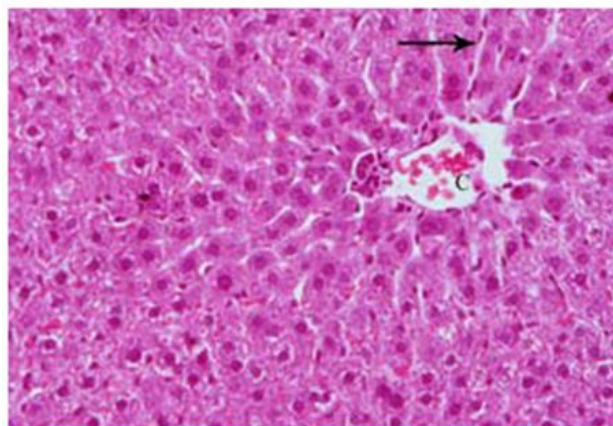
Group C. (n=20) Rats were fed received Carbon tetrachloride (CCl₄) + Curcuma longa (250 mg/kg) orally on alternate days for 4 weeks.

This protocol was strictly followed. CCl₄ was ordered before conducting study. The World Scientific store provided the CCl₄. Olive oil was used as vehicle. The CCl₄ was mixed in olive oil in 1:1 ratio. This was given orally 1.9 ml/kg orally on alternate days for consecutive 4 weeks.¹⁵ Curcuma longa was purchased and administered at dose of 250 mg/kg orally on alternate days for 4 weeks.¹⁶ At the end of experiment period, blood samples were collected by cardiac puncture (24 hours after experiment). Blood samples were

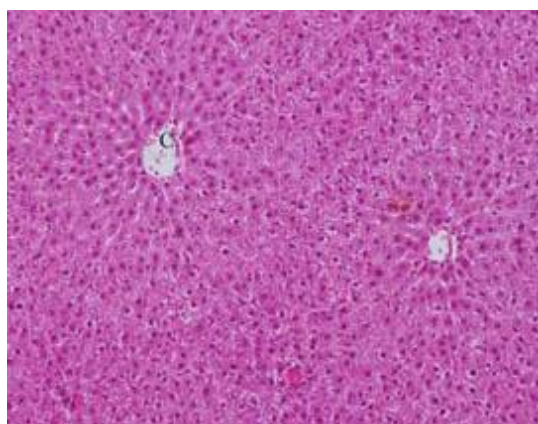
centrifuged at 4000 rpm for 10 minutes. Sera were separated out in tubes for biochemical investigation. Biochemical analysis of liver enzymes; alanine transaminase (ALT), aspartate transaminase (AST), alkaline phosphatase (ALP) and Gamma glutamyl transferase (γ-GT) was performed on Hitachi Roche Chemistry Analyzer. The rats were sacrificed as described previously.¹⁷ Laparotomy was performed by a trained veterinary technician. Liver was retrieved and freed from peritoneum and shifted to container containing the formaldehyde. Tissue pieces were embedded in paraffin. 3-5μ thick tissue sections were cut by microtome and stained with H & E stain. Histological slides were examined by light microscopy. Statistical analysis was performed on Statistix 9.0 (USA). Continuous variables were analyzed by one way ANOVA and descriptive statistics. Tukey Cramer post Hoc testing was used for analysis of difference between groups. Results were presented as mean ± SD. Statistical significance was defined as P-value of ≤ 0.5.

RESULTS

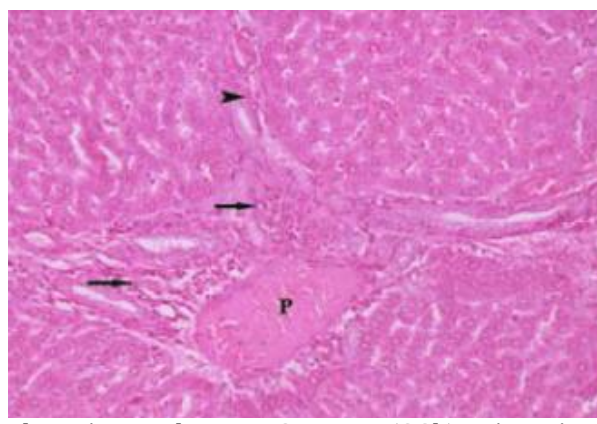
The present experimental rat model research shows beneficial effects of Curcuma longa (CL) against chemical induced liver injury. The mitochondrial and cytoplasmic enzymes of liver shows low rise in CL treated rats. ALT, AST, ALP and LDH were raised significantly in the group B- CCl₄ treated rats. The same parameters show a decline which was given CL along with CCl₄ in group C compared to controls group A. (P<0.05). Curcuma longa reveals hepatoprotective effects against the CCl₄ induced liver injury (Table 1). Serum Superoxide dismutase (SOD), Glutathione peroxidase (GPX) and Catalase (CAT) levels reveal a significantly rising pattern in CL treated rats. The rise in enzyme antioxidants is a new finding which shows the CL helps in annihilating the free radicals (P<0.05, Table 1). Histopathological examinations show histoprotective effects of the CL. Photomicrograph 1 and 2 shows the normal liver tissue showing hepatocytes arranged in cords with portal triad. Central venule is also visible.



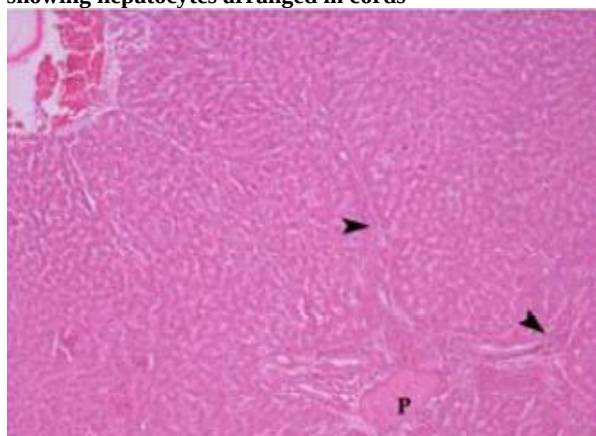
Photomicrograph No.1: Control- Normal liver tissue showing hepatocytes arranged in cords



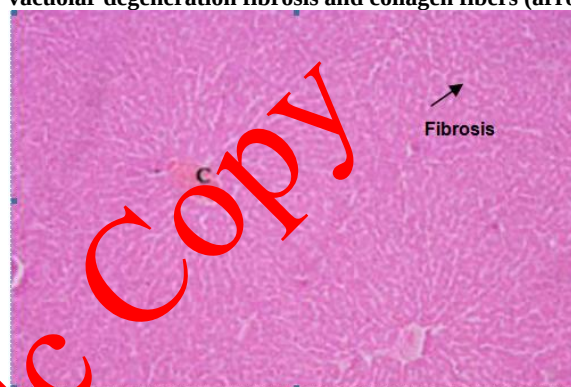
Photomicrograph No.2: Control- Normal liver tissue showing hepatocytes arranged in cords



Photomicrograph No.4: Group B (CCl₄)- Liver tissue section showing inflammatory infiltrates, necrosis, vacuolar degeneration fibrosis and collagen fibers (arrow)



Photomicrograph No.3: Group B (CCl₄)- Liver tissue section showing dilation and congestion of portal and central vein. Arrow head indicate areas of inflammation, necrosis, vacuolar degeneration and fibrosis.



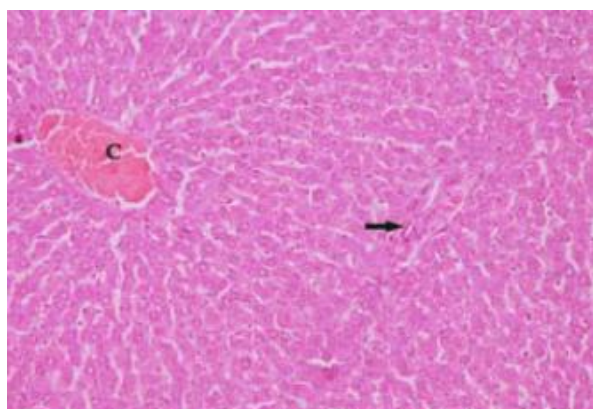
Photomicrograph No.5: Group C (CCl₄+ Curcuma longa)- Liver tissue section showing the hepatoprotective effects of Curcuma longa. Central venule (c) is normal. Fibrosis is minimized at the corners of liver specimen.

Table No.1: Liver enzymes and anti oxidant enzymes in controls and experimental rats (n=60)

	Group A (Controls)	Group B (CCl ₄)	Group C (CCl ₄ + Curcuma)	P-value
Alanine transaminase (U/L)	37.8±8.8	69.5±13.2	63.6±11.0	0.0001
Aspartate transaminase (U/L)	26.7±4.1	51.1±.5	39.5±11.5	0.009
Alkaline phosphatase (U/L)	73.8±13.0	143.5±29.5	115.5±37.5	0.029
Lactate dehydrogenase (U/L)	110.5±17.3	170.5±25.3	153.5±31.1	0.002
γ-Glutamyl transferase (U/L)	34.6±5.12	77.8±6.0	56.5±21.8	0.021
Bilirubin (mg/dl)	0.5±0.15	1.51±0.31	1.43±0.12	0.041
Creatinine (mg/dl)	0.7±0.11	1.5±0.13	1.2±0.31	0.001
Superoxide dismutase (U/ml)	133.51±32.56	76.35±13.94	131.81±13.15	0.035
Glutathione peroxidase (nM/min/mL)	134.30±33.83	88.03±23.13	123.5±9.08	0.0001
Serum Catalase (nM/min/mL)	407.54±81.32	172.71±92.33	267.35±32.05	0.0001

The Liver sections of the control group show intact central venules and hepatocytes cords. Destruction of tissue architecture by CCl₄ is seen in the Photomicrograph 3 and 4. Liver tissue section showing of dilation and congestion of portal and central vein is seen. Arrow head indicate areas of inflammation, necrosis, vacuolar degeneration collagen, and fibrosis. Congestion of central venule, sinusoids and portal triad were observed. Centrilobular hepatocytes revealed

hydropic changes and necrosis. The midzonal and peripheral hepatocytes revealed vacuolar degeneration, necrosis and fatty changes in CCl₄ treated liver tissue. Diacerein treated groups 5 and 6 exhibited amelioration of tissue architecture. Diacerein treated showed normalization of tissue. Liver tissue section showing the hepatoprotective effects of Curcuma longa is seen. Central venule (c) is normal. Fibrosis is minimized at the corners of liver specimen.



Photomicrograph No.6: Group C (CCl₄+ Curcuma longa)
Liver tissue section shows the hepatoprotective effects of Curcuma longa. Central venule (c) is normal. Fibrosis is minimized at the corners of liver specimen.

DISCUSSION

The present experimental study analyzed the Curcuma longa (CL) of its ameliorating effects of biochemical and histopathological parameters in carbon tetrachloride (CCl₄) induced liver injury. CL is a commonly used food additive. CL is a rhizome and its active constituent is known as the Curcumin. The Curcumin exerts anti oxidant effects. It enhances the apoptosis of injured hepatocytes. This mechanism has been proposed as down regulating the inflammation, hepatocyte injury and fibrogenesis.¹⁸ The CCl₄ treated rat's revealed severe liver injury as indicated by a rise in liver enzymes and histopathological examination. The findings of CCl₄ induced liver injury are in keeping with previous study.¹⁹ This previous study²⁰ rise in liver enzymes and destroyed tissue architecture. Presence of elevated cytoplasmic (ALT, AST, ALP) and mitochondrial (LDH) enzymes of liver indicate hepatocellular injury, as a result of hepatocyte membrane injury.²⁰ The present study used ethanol extract of Curcuma longa administered orally at dose of 250 mg/kg body weight. Active ingredients of CL by a previous study²¹ were reported as Curcumin (flavonoids) and volatile oils such as the atlantone, zingiberene and tumerone. A previous study²² reported the CL extracts exert direct free radical scavenging activity, enhances glutathione levels, and augments glutathione peroxides activity thereby accelerating the detoxification. In present study, the serum Superoxide dismutase (SOD), Glutathione peroxidase (GPX) and Catalase (CAT) levels reveal a significantly rising pattern in CL treated rats. The rise in enzyme antioxidants is a new finding which shows the CL helps in annihilating the free radicals (P<0.05, Table 1). These findings are consistent with previous studies.^{7,8} The findings are also in keeping with recent study.²¹ Volatile oils of CL exerts anti inflammatory activity.²³ Above findings of tissue protection by CL are consistent with the present study. Elevated cytoplasmic

(ALT, AST, ALP) and mitochondrial (LDH) enzymes of liver in CCl₄ treated rats indicate the hepatocellular injury.^{24,25} Histopathological findings of CCl₄ liver specimens correlate with the rise in liver enzyme. The findings are in keeping with recent study.²⁶ Histopathological examinations show histoprotective effects of the CL. Destruction of tissue architecture by CCl₄ (Photomicrograph 3 and 4) revealed dilation and congestion of portal and central vein, inflammation, necrosis, vacuolar degeneration collagen, and fibrosis. Congestion of central venule, sinusoids and portal triad were observed. Centrilobular hepatocytes revealed hydropic changes and necrosis. Diacerein normalizes these histopathological changes. In Diacerein treated liver rats, the tissue architecture was normalized and Fibrosis was minimized at the corners of liver specimen (Photomicrograph 5 and 6). Our findings are in agreement with previous studies.^{27,28} Our findings are also in agreement with another previous study.²¹ They conducted study to analyze the hepatoprotective effects of CL in thioacetamide induced liver injury and cirrhosis. The findings are also in keeping with recent study by Singh et al 2017.²⁶ Statistical analysis shows the CL treated rats revealed significant difference when compared with CCl₄ treated rats; hence the null hypothesis was rejected. The hepatoprotective and histoprotective effects of CL were accepted. Thus the present study concluded that the CL may be used in drug and chemical induced liver injury, however, further research is needed.

CONCLUSION

The Curcuma longa exerts hepatoprotective and histoprotective effects, and mitigates oxidative damage induced by carbon tetrachloride. The present study concludes the Curcuma longa may be used in drug and chemical induced liver injury; however, further research studies are warranted.

Author's Contribution:

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Final Approval of version: Aftab Ahmed Shaikh

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

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Outcome of 12-weeks Triple Therapy (TT), including Sofosbuvir (SOF), Ribavirin and Pegylated interferon-Alfa in all non-cirrhotic patients with chronic Hepatitis-C Genotype-3 infection

Nizamuddin¹, Ayesha Jamil¹, Muhammad Riaz¹, Waheed Iqbal², Fazal Rahim¹ and Hasan Raza³

ABSTRACT

Objective: The treatment of hepatitis C virus (HCV) infection is rapidly evolving from interferon and ribavirin which is the standard of care (SOC) for genotype 3-infection, to the most effective Triple therapy by adding Sofosbuvir to the SOC regimen. We assessed the efficacy of Sofosbuvir based triple therapy in new and previously non-responder patients with Hepatitis-C Genotype-3 infection, the most common genotype infecting Pakistani community.

Study Design: Prospective / multi-center study

Place and Duration of Study: This study was conducted at the Pharmacology Department, Khyber Girls Medical College, Peshawar Pakistan from October 2015 to April 2016.

Materials and Methods: We recruited a total of 75 patients and were assigned into three groups (Group A, B, C). Group-A as treatment naive, group-B as non-responder to conventional interferon plus Ribavirin and group-C as non-responder to peg-interferon and ribavirin. Sofosbuvir based triple therapy was given for 12-weeks. The primary end point was Sustained Virological Response12 (SVR12), which is HCV-RNA level <40IU/ml at 12weeks after completion of therapy.

Results: Among 75 patients, male-female ratio was n=51 and n=24 respectively. Each group has 25-cases. Rate of SVR12 was 100% (n=25/25) in group-A, 92% (n=23/25) in group-B and 88% (n=22/25) in group-C.

Conclusion: Our findings suggest that addition of Sofosbuvir to the standard therapy results in the better achievement of SVR in new and previously non-responder cases with Chronic Hepatitis-C genotype-3 infections.

Key Words: Chronic hepatitis-C, triple therapy, Sofosbuvir.

Citation of articles: Nizamuddin, Jamil A, Riaz M, Iqbal W, Rahim F, Raza H. Outcome of 12-weeks Triple Therapy (TT), including Sofosbuvir (SOF), Ribavirin and Pegylated interferon-Alfa in all non-cirrhotic patients with chronic Hepatitis-C Genotype-3 infection. Med Forum 2017;28(7):40-43.

INTRODUCTION

Infection due to hepatitis C virus is world-wide health issue with a global prevalence of 2.2%, affecting almost 130 million people worldwide¹. Due to implementation of extensive screening measures before blood transfusion, surgery, organs transplantation and overall improved health and hygiene practices, incidence of new cases is experiencing a downward trend in developed nations. But developing countries face different impediments, like low literacy level, paucity

of health care services and poor health and hygiene practices, in achieving a similar milestones. New cases usually come to the surface when they are diagnosed during routine screening or when they present with advanced complication of cirrhosis. It has got substantial impact on morbidity, mortality and utilization of health budget². There are several factors that determine the success of HCV antiviral therapy and progression of the disease to complications like cirrhosis and Hepatocellular Carcinoma (HCC). Among those high base-line viral load is the most notable ones³. Therefore, aggressive treatment is needed to achieve Sustained Virological Response (SVR), which is the only surrogate outcome in the treatment of Chronic Hepatitis C (CHC). In these Patients, SVR shows total clearance of virus and thus decrease risk of cirrhosis and HCC³. In last decade, the treatment strategy for Chronic Hepatitis C (CHC) is rapidly evolving from conventional interferon plus weight based ribavirin to Pegylated-Interferon plus weight based ribavirin as dual therapy (DT) and now to highly effective Triple therapy

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(TT) including Pegylated-Interferon-Alfa, Ribavirin and Nucleotide analogue NS5B HCV RNA dependent RNA polymerase inhibitor, Sofosbuvir. The TT boasts higher efficacy, cost-effectively, shorter treatment duration and a much more agreeable adverse effects profile. However, there is still little clinical data available from other countries, especially the ones with higher hepatitis C prevalence. A simple example of discordance among different cohorts is recently reported on genotype 2 in Germany⁴. Furthermore, it is important to realize that factor such cirrhosis, age, gender, baseline viral load, viral genotype, certain IL28b SNP genotypes^{5,6} seem to greatly reduce the effect of antiviral therapy.

MATERIALS AND METHODS

The present study was mainly centered on patients visiting different public and private hospitals in Peshawar District of Pakistan. Total duration of study was seven months, from October 2015 to April 2016. Total 75 patients were selected, having chronic Hepatitis C genotype 3 infections. Patients were distributed into three groups (1:1:1) including group A as new, group B as non-responder to DT including Conventional interferon plus ribavirin and group C as non-responder to DT including Pegylated-interferon plus ribavirin. Patients with cirrhosis, Chronic Liver disease due to other causes and Concomitant Hepatitis B or HIV infections were excluded from the study. Due to fear of poor compliance and tolerability, patient with advanced renal, cardiac diseases and cognitive dysfunctions were excluded from the study. All these patients were put on triple therapy (TT) including Sofosbuvir, Pegylated-interferon-Alfa plus ribavirin for 12 weeks. Polymerase Chain Reaction (PCR) for HCV was done after twelve week of the completion of therapy and was labeled as SVR12. The open labeled, prospective design was used in the study.

Data Collection: Ethical approval for the study was sought from ethical committee of Khyber Teaching Hospital Peshawar, and informed consent was obtained from the patients prior to their enrollment. A total 75 patients with Chronic Hepatitis C genotype 3 infections were included in the study, according to the predefined inclusion/exclusion criteria. The demographic information of the subjects such as names, age and gender were recorded. All collected informations were recorded on pre-designed Proforma. Patients' blood samples were collected before starting the TT regimen, at 1 month and at 3-months after the start of therapy. Viral RNA was extracted and reverse transcribed to cDNA using Viral RNA extraction and cDNA synthesis kit (Qiagen; USA), respectively. HCV-RNA-PCR, genotyping and SVR12 were done with Qaigen kit, using Rotorgen 6000 Molecular System, having Lower limit of quantification (LLOQ)<40IU/ml.

Data Analysis: Data was entered in Microsoft Office Excel 2007 and analyzed, by using SPSSversion 20.0. The data was expressed as mean percentage and presented in tabulated form.

RESULTS

Out of total 75 studied patients, 68%(n=51) were male and 32%(n=24) were female, with mean age of 38 ± 1.26 years. Age distribution among 75 patients was analyzed as n=18 (24%) patients were in age group of 21-30 years, n=21 (28%) patients were in age group of 31-40 years, n=24 (32%) patients were in age group of 41-50 years, n=9 (12%) patients were in age group of 51-60 years and n=3 (4%) patients were above 60 years of age as shown in Table1.

Status of SVR12 among 75 patients was analyzed in all three groups. In group A, n=25/25 (100%) patients have achieved SVR12, in-group B, n= 23/25 (92%) patients have achieved SVR12, while in-group C, n=22/25 (88%) patients have achieved SVR12 as shown in Table 2.

Status of response to different sub-genotype of Genotype 3 among 75 patients was analyzed in all 3 groups, which show 96.15%(n=50/52) response rate in simple genotype 3 and 86.95%(n=20/23) response rate in genotype 3a. There was no genotype 3b case in the study population. There were 2 cases with genotype 3 and 3-cases of genotype 3a, which have not responded to TT as shown in table 3.

IL28B was done in all those cases that have not responded to TT. Only n=1/5(20%) cases were with favorable CC (IL28B-rs12979860-CC) genotyping while n=4/5(80%) cases have unfavorable non-CC (IL28B-rs12979860non-CC)genotyping.

In these non-responder patients 4(80%) patients were male, 1(20%) patient was female and all of them were definitely non-cirrhotic.

Table No.1: Age distribution of different patient with CHC genotype 3 infection

Age	Total number of patients	Percentage
21-30 Years	18	24%
31-40 Years	21	28%
41-50 Years	24	32%
51-60 Years	09	12%
> 60 Years	03	04%
Total	75	100%

Table. No.2: SVR 12 observations in different studied groups

Groups	Observed SVR12	Percentage
Group A	25/25	100%
Group B	23/25	92%
Group C	22/25	88%

Table No.3: SVR12 status in Sub-genotype of genotype 3 in different studied groups

Groups	Genotype 3	Genotype 3a	Genotype 3b
Group A	17/17	08/08	00/00
Group B	18/19	05/06	00/00
Group C	15/16	07/09	00/00
Percentage (%)	96.15% (n=50/52)	86.95%(n=20/23)	0%

Table No.4: Sub-genotyping Status of IL28B in non-responders cases to TT

Status of IL28B	Group A	Group B	Group C	Total
IL28B-rs12979860-CC genotyping	0	0/5	01/5	20% (n=1/5)
IL28B-rs12979860non-CC genotyping	0	02/5	02/5	80% (n=4/5)

Table No.5: Over all data of responders and non-responder

Groups	No. of total cases	Genotype 3	Genotype 3a	Genotype 3b	Male	Female	No. Of responder to TT	No. Of non-responder to TT	Status of IL-28b in non-responder	
Group A	25	18	7	0	17/17	8/8	25/25	N= 00/25	CC=00	Non CC=00
Group B	25	16	9	0	11/13	12/12	23/25	N= 02/25	CC=00	Non CC=02
Group C	25	14	11	0	12/14	10/11	21/25	N= 04/25	CC=01	Non CC=02

DISCUSSION

Chronic Hepatitis C is a global problem and the paradigm shift of treatment from interferon based therapy to direct acting anti-viral therapy has totally changed the direction of research around the globe. One of the option in current guidelines, adopted by European Association for the Study of Liver (EASL) and American Association for the Study of Liver Diseases (AASLD) for the treatment of Chronic HCV genotype 3 infection is 12 weeks triple therapy, including Sofosbuvir, peg-interferon Alfa and ribavirin⁷. These new weapon in the therapeutic armamentarium against Hepatitis C has given new option to the clinician to use it liberally and at the same time, a pleasant and affordable choice for both cirrhotic and non-cirrhotic patients⁸. In our present study, “100% patients response rate has been observed to TT in case of newly diagnosed cases, 92% response rate in case of previously non-responder to conventional interferon plus ribavirin, while 84% response rate in case of previously non-responder to peg-interferon and ribavirin”. These finding are close to the finding of many clinical trials by Gilead Sciences, which show 100% SVR12 and SVR24 in all new cases with genotype 3, treated with triple therapy including Sofosbuvir, pegylated-interferon and ribavirin for 8 weeks^{8,9}.

Triple therapy is for short time and can be considered safe, tolerable and effective both in cirrhotic and non-cirrhotic patients. This has been confirmed by LONESTAR-2 trials using a small cohort and show,

that SVR12 rate in new patients treated with triple therapy was 85%. They also concluded, that there is no difference in the response rate in both cirrhotic and non-cirrhotic patients.¹⁰

Present findings of our study are generally consistent with another prior study conducted by ” by Graham R. Foster et al¹¹. They reported that in patients with HCV-genotype 3 infection, SVR12 rate is 93% in those who received Sofosbuvir, pegylated-interferon and ribavirin for 12 weeks.” Other shared findings include role of IL28B non-rs12979860-CC genotyping, male sex and cirrhosis in treatment response to Sofosbuvir based regimen. However small sample size is a limitation of the present study.

The most common adverse effect observed in our study were, aches and pains, flue like symptoms and insomnia, but due to short period of therapy and mild nature of all these adverse effects, none of the patient discontinue the treatment”.

And finally, it is now accepted world wide with many trials, “that short term treatment with TT is a new hope for all hepatitis C genotype 3 infected patients and should be considered the first choice in all eligible cases”. However, large trial is needed to address role of age, sex, genotype 3-subgroup, initial viral load and IL28B status in the response rate of HCV genotype 3 infections to TT.

CONCLUSION

Triple therapy is the most effective treatment in both new and previously non-responder cases with Chronic Hepatitis C genotype 3 infections in Pakistani

population. Further study is suggested, both at national and international level for further confirmation and specification of this regimen for HCV genotype 3 infection.

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

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Low Trauma Fractures and Osteoporosis in Men: Early Onset Owing to Sedentary Life Style

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ABSTRACT

Objective: This study was designed for men to evaluate the role of daily physical activity and its association with osteoporosis and fractures in men.

Study Design: Cross-sectional / prospective study

Place and Duration of Study: This study was conducted at the Pathology Department, Ziauddin University, Karachi from February to November 2014.

Materials and Methods: Around 1000 subjects were selected through free orthopedic camps set up in different areas of Karachi during the year 2014. After an informed signed consent demographic data including dietary habits, lifestyle and medical history including overall low-trauma fractures was recorded through interviewer administered Performa and BMD assessed by heel scan device.

Results: Out of 1000 subjects (age 44.4±9.8 years), 113 (11.3%) had Osteoporosis. In 544 who had low physical activity 89 (26%) had osteoporosis compared to only 24 (3.6%) out of 656 (65.6%) physically active participants. Low trauma fractures were present in 155 (15.5%) participants including 110(71%) in non active (68(44%) upper and 42(27%) lower extremities fractures. In 45(29%) participants with active life style, 30(19%) had upper and 15(10%) lower extremities fracture. Out of 110 low trauma fracture patients 41(37%) were osteoporotic whereas, only 8(13%) of active participants were osteoporotic. Upper extremity fractures 98(63%) were more common compared to lower extremity 57(37%).

Conclusion: Low daily activity may be the highest risk factor for osteoporosis and low trauma fractures at younger age in Pakistanis belonging to lower socioeconomic group.

Key Words: Osteoporosis, Physical activity, Lifestyle, Fracture, Bone mineral density

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INTRODUCTION

Osteoporosis is as widely prevalent in men as in women leading to different type of osteoporotic ailments especially hip fractures leading to greater morbidity and mortality rates compared to women^{1,2}. Earlier, there was a difference of 5–10 years delay in the onset in men compared to women. Now men and women have almost equivalent risk of sustaining fragility fracture³ but men are less (<10%) likely to receive therapy because of lack of awareness among healthcare providers to appraise men for osteoporosis or bone pathology⁴.

Throughout life bone keeps on modeling and remodeling, but with advancing age, the replaced bone level decreases as compare to the amount of bone resorbed. Due to this factor the patients comes with fragility fractures which may have occurred due to abnormalities in bony structure and material properties e.g; fewer and thinner trabeculae, larger or smaller bony size, thinned and porous cortices, and tissue mineral content could be either too high or too low.⁵ Bones should be strong for load bearing and light enough for speed of movement. For serving different functions of the skeleton, stiffness of bones make them able to resist bending for load bearing and propulsion against gravity, bones are flexible enough to deforming during impact loading without fracturing.⁶ Men at all ages after puberty have larger bones than women, resulting in greater bending strength, mortality after a hip fracture, one of the major complications of osteoporosis, is more common in men than in women.⁷

In men, there is a misconception of relating bone pathologies with age. Besides old age, there are other factors including nutritional variations, life style modification, endocrinological alterations etc. which may affect bones. In the first three decades of life, dietary calcium has a strong role influencing bone

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mineral content which is well established during this time period, its intake decreases as a person grows older.⁸

In 1993 the Consensus Development Conference defined osteoporosis as; “A disease characterized by low bone mass and micro architectural deterioration of bone tissue, leading to enhanced bone fragility and a consequent increase in fracture risk”.⁹ World Health Organization (WHO) in 1994, established a criteria; for the diagnosis of osteoporosis before incident of fractures, bone mineral density (BMD) measurements, describing osteopenia and osteoporosis levels.¹⁰

In men no study has been done as in women showing strong evidence of benefits of physical activity and multipurpose exercise programs on bone mass accretion and high anti-fracture efficiency.^{11,12}

MATERIALS AND METHODS

This cross-sectional study was conducted in Ziauddin University Karachi February to November 2014 with prior approval from Ziauddin University ethics review committee. A total of 1000 males, ± 45 years old, cigarette smoker or chewable tobacco users since ± 15 years, who agreed to participate, were recruited in the study after an informed signed consent. Information on demographics, educational status, occupation, lifestyle, dietary and chewable habits, surgical and medical history was obtained by an interviewer-administered questionnaire. Excluded were, those men who had chronic disease (asthma or diabetes etc.) or were on drugs altering the equilibrium of bone such as calcium plus vitamin supplements.

The dietary evaluation was assessed on parameters such as milk and eggs intake, meat consumption, cereals, fruits and vegetables.

The bone mineral density through Single x-ray absorptiometry (SXA), being inexpensive and an effective way of establishing the risk of fracture in future, was done on right foot heel of all 987 subjects. For maximum exposure the patient placed his right foot on the moulded support plate. Statistical Analyses was done by entering the data on SPSS version 20. All qualitative variables are presented as percentages and frequencies. All quantitative variables are presented as mean and standard deviation. A P-value less than 0.05 were considered significant.

RESULTS

The patients with T-score ≥ -2.5 on Single x-ray absorptiometry (SXA), were selected as osteoporotic according to WHO criteria. Out of total 1000 participants 656 (65.6%) had a habit of walking or cycling as a part of daily routine whereas, 344 (34.4%) were not. Incidence of Osteoporosis was found high among 25% of non active participants compared to only 3.5% in active participants. Participants at younger age (less than 40 yrs.) were found active and less

osteoporotic. The incidence of osteoporosis was observed in participants on the average at 45 years of age. (figure-1)

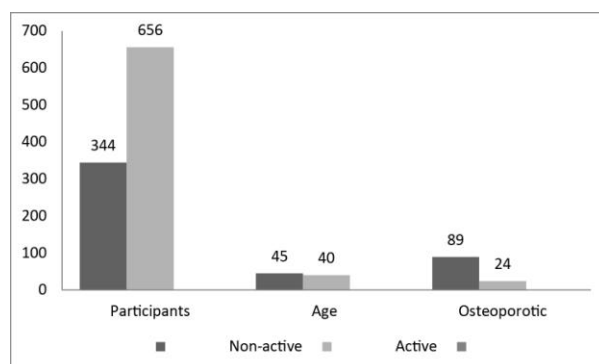


Figure No.1: Occurrence of osteoporosis in young age

When the relationship of diet was assessed in association with osteoporosis, it was found that out of total 749 who were taking inappropriate diet, osteoporosis was found in 14% (n= 105) and out of the total 251 taking appropriate diet only n=8 (3.2%) were found to be osteoporotic. Physical activity was also found associated with osteoporosis; those who had high daily activity out of them only 24 (3.65%) had osteoporosis compared to 89 (25.8%) cases of osteoporosis in people who had low physical activity. Of the total participants 668 (66.8%) were tobacco users, osteoporosis was found in 67, whereas, 332 were non-smokers with only 46 of them were osteoporotic (Fig-2).

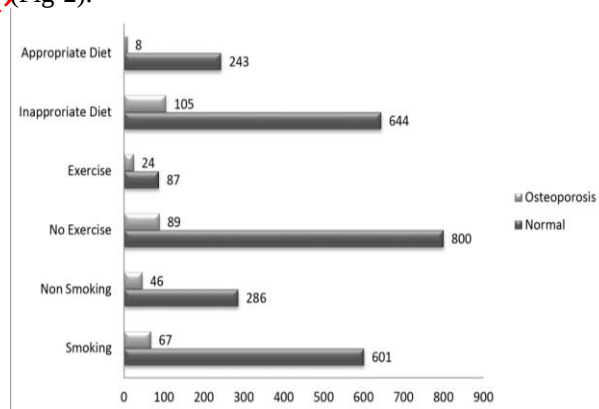


Figure No.2: Association of life style with Osteoporosis (n=1000).

Low trauma fractures were present in 155 (15.5%) participants including 110(71%) non active and n=45 (29%) active participants. Among active participants n= 30 (66.6%) had upper extremity fractures while n=15(33.4%) had lower extremity fractures. When assessed in non active participants n=42(61.8%) had upper extremity fractures while n=42 (38.2%) had lower extremity fractures. Out of 110 low trauma fracture patients 41(37%) non active participants were

osteoporotic whereas from n=45 active participants only n=8(13%) were osteoporotic (Table 1)

When osteoporosis was assessed with physical activity it was seen that non active participants had greater odds of being osteoporotic compared to active participants (OR=2.75 CI 1.09-7.11) (Winpepi version 11.39).

Table No.1: Low trauma fractures in active and non active participants

Subjects n=1000	Low trauma fracture [n=155 (15.5%)]			
	Active n= 45 (29%)			Non-active n=110 (71%)
	Cycling n(13%)	Walk n(6%)	Cycling/walk n(10%)	
Fracture	20	10	15	110
Upper Extremities	14	9	7	68
Lower Extremities	9	4	2	42
Osteoporosis	4	2	2	41

DISCUSSION

Sedentary life style compromises bone strength even at young age, leading to osteoporosis and frequent low trauma fractures. Out of 110 low trauma fracture patients with low daily activity, 41(37%) were found osteoporotic whereas, only 8(13%) of active participants were osteoporotic.

Association of Physical activity with fractures has also been found by other researchers who showed that moderate to vigorous activity is associated with a 45% (95% confidence interval (CI), 31-56%) less risk of fractures in both men and women.¹³ By doing exercise muscles are strengthened, flexibility is increased, and coordination and balance are improved. Daily tasks like walking, standing from a sitting posture are improved by strengthening of the muscles, improved balance prevent falls.¹⁴ Compression fractures of the spine can be prevented by doing postural exercises that strengthen the back muscles.¹⁵ Low trauma fracture was found highest in the upper extremities (63%) of our participants that occurred during daily routine activities compared to lower extremity (37%).

When low trauma fractures were compared with reference to life style 71% were present in non active people with sedentary life style having 44% in upper and 27% lower extremities fractures compared to only 9% in active life style participants having 19% in upper and 10% in lower extremities.

How mechanical signals are converted into biochemical response is important to understand in order to recognize how exercise plays a positive role in the prevention of osteoporosis. Primary bone mechanosensors are the osteocytes which are embedded within the bone matrix; they sense mechanical signals via 'stress- generated fluid flow' inside the bone, through exercise. The formation of cyclooxygenase-2 (COX-2) and release of prostaglandins is increased after skeletal

strain which are the intra-cellular and extra-cellular chemical mediators.^{16,17} Decrease in bone mineral density and thinning of cortical bone at the diaphysis occurs after disuse of bones. Exercise can be in the form of machines, tubing, free weights, or one's own body weight. Push-ups, weight lifting, and squats apply resistance against the bones by contracting the muscles and pulling upon the tendons. These activities have a direct effect upon bone remodeling and bone formation and are site specific, thus increasing the BMD in young and older individuals.^{18,19}

In this study it is evident that men who are not involved in any kind of exercise, like walking, running or cycling and are sitting for long hours, develop osteoporosis early in life. There was high incidence of low trauma fractures among the physically inactive group, while performing normal daily activities. According to a study in young men and women fragility fractures are uncommon because ability of the bone to withstand loads are well below.²⁰ As a person gets older bone fragility emerges, as the mechanism responsible for maintaining the material and structural properties of bone begin to fail. According to this study low trauma fractures are not common in young men⁽²¹⁾ in contrast to this studies our results show fractures at a age range up to 45 years which cannot be designated as old age. This proves that aging is only one of the many factors which lead to weakness of bones. Also highlight of this study was high prevalence of osteoporosis in subjects with inappropriate diet with low calcium content. The importance of getting accustomed to "healthy" balanced diet and a physically active lifestyle should begin from childhood continuing throughout life, for normal skeletal growth and aging.^{22,23} Adequate calcium intake has been demonstrated to be significant for increasing and maintaining bone mass.^{24, 25} On the role of exercise; a recent meta-analysis showed that both nonimpact and impact exercise had a positive effect on lumbar spine bone density in postmenopausal women, a positive effect at the femoral neck is produced by impact exercise only most probably.²⁶ Age-related declines in BMD is prevented by Resistance training exercises, as they leads into increase in bone mass.^{27,28,29}

CONCLUSION

Low daily activity may be the highest risk factor for low trauma fractures and osteoporosis at age below 50 years in Pakistanis belonging to lower socioeconomic group. Further studies are required with larger sample size to investigate.

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

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Outcomes of Endoscopic Treatment of Ureterocele in Children and Adults: Our Experience

Hameed-ur-Rehman Bozdar¹, Nisar Ahmed Shaikh², Muhammad Iqbal Soomro² and Malik Hussain Jalbani²

ABSTRACT

Objective: To assess the safety, complication and results of endoscopic treatment of ureterocele.

Study Design: Retrospective cohort study.

Place and Duration of Study: This study was conducted at the Urology Department CMCH Larkana and Khairpur Medical College Hospital, Khairpur from June 2011 to January 2014.

Materials and Methods: 22 cases of ureterocele at Urology Department CMCH Larkana and Khairpur Medical College Hospital Khairpur was conducted. Standard method of endoscopic surgery like endoscopic deroofting in adults and endoscopic incision in children carried out.

Results: Out of 22 patients, 12 (54.5%) were female and 10 (45.5%) male. The age of the patients ranged from 5 to 30 years. Mean age of patients was 16.3 with SD ± 8.7. The presenting features were lumbago pain in 17 (77.3%) cases, urinary tract infection in 3 (13.6%), and in 2 (9.1%) cases it was detected incidentally. All patients successfully treated by endoscopic surgery. Minor complication occurs like haematuria and UTI in 5 (22.7%), which treated medically.

Conclusion: Endoscopic treatment for ureterocele is safe and cost-effective surgery and least post-operative complication.

Key Words: Ureterocele, endoscopic treatment, children.

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INTRODUCTION

Ureterocele is a cystic out-pouching of the found in the distal ureter balloons due to a delay in Chown's membrane absorption.¹ Ureteroceles occur in 1 in every 4000 children and occur most common in whites. Females are affected 4-7 times more often than males and common on left-side. Approximately 10% of ureterocele are bilateral. Ureteroceles may be categorized based on their relationship with the renal unit or based on distal ureteral configuration and location. Single-system ureteroceles are those associated with a single kidney, collecting system, and ureter, Duplex-system ureteroceles are associated with kidneys that have completely duplicated ureters, Orthotopic (intravesical) ureterocele is a term used for a ureterocele contained within the bladder. An orthotopic ureterocele may prolapse into and beyond the bladder neck, but the origin of the walls of an orthotopic ureterocele are contained within the bladder.

The orthotopic ureterocele usually arises from a single renal unit with one collecting system and is more commonly diagnosed in adults. Ectopic (extravesical) ureterocele refers to ureteroceles with tissue that originates at the bladder neck or beyond, into the urethra. They typically arise from the upper pole moiety of a duplicated collecting system and are more common in the pediatric population. Another method of classifying ureterocele is based on location and configuration. Stephens proposed a classification system based on the features of the affected ureteral orifice, as follows: Stenotic ureteroceles are located inside the bladder with an obstructing orifice, Sphincteric ureteroceles lie distal to the internal sphincter. The ureterocele orifice may be normal or patulous, but the distal ureter leading to it becomes obstructed by the activity of the internal sphincter, Sphincterostenotic ureteroceles have characteristics of both stenotic and sphincteric ureteroceles and Cecoureteroceles are elongated beyond the ureterocele orifice by tunneling under the trigone and the urethra. At present, this classification is used infrequently. The characterization based on the location of the orifice (intravesical vs ectopic) is more commonly used because it has therapeutic implications.² Ureteral atony and stasis of urine in the ureterocele can precipitate calculus formation. The prevalence of calculus in a single ureterocele is variable (ranging between 4% and 39%).^{1,3} Orthotopic ureterocele occur in 17-35% of

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cases, with an incidence of ectopic ureterocele of about 80% in most pediatric series. Similarly, about 80% of ureterocele are associated with the upper pole moiety of a duplex system. When ectopic ureterocele are associated with duplicated collecting systems, the upper pole moiety usually dysplastic or poorly functioning. Single-system ectopic ureterocele are uncommon and are most often found in males^{4,5}. The pediatric and adult conditions are often found only through diagnostic investigation like ultrasound and X-Ray IVU.^{1,5} Ureterocele classified as Intravesical, Ectopic, Stenotic (Intravesical ureterocele with a stenotic opening), Sphincteric (Ectopic ureterocele with an orifice distal to the bladder neck), Sphincterostenotic (Orifice is stenotic and distal to the bladder neck) and Cecoureterocele (Ectopic ureterocele that extends into the urethra, but the orifice is in the bladder).⁴ Usually presenting with lumbar pain, Frequent urinary tract infection, Urosepsis, Obstructive voiding symptoms, Urinary retention, Failure to thrive, Hematuria, Ureteral calculus and cobra head sign is seen in radiography.^{6,7} Symptomatic ureterocele require proper treatment like excision and ureteric reimplantation while now a day endoscopic treatment is the choice treatment for ureterocele. our aim of study to see the efficacy and safety of endoscopic incision and deroofting of ureterocele in children and adult patients.

MATERIALS AND METHODS

A retrospective cohort study of 22 cases of ureterocele carried from June 2011 to January 2014 at urology department CMCH larkana and Khairpur medical college hospital Khairpur. All patients diagnosed on ultrasound and X-Ray IVU. Fig.No.1 Patients having upper tract pathology and diabetic excluded from the study. Standard method of endoscopic surgery like endoscopic deroofting in adults and endoscopic incision in children carried out while 12 (54.5%) patients having stone in ureterocele so litholapaxy done after endoscopic surgery.

RESULTS

Out of 22 patients, 12 (54.5%) were female and 10 (45.5%) male (Fig.No.2). The age of the patients ranged from 5 to 30 years. Mean age of patients were 16.3 with $SD \pm 8.7$. The presenting features were lumbar pain in 17 (77.3%) cases, urinary tract infection in 3 (13.6%), and in 2 (9.1%) cases it was detected incidentally (Fig.No.3). All patients successfully treated by endoscopic surgery. 12 (54.5%) patients having stone in ureterocele so litholapaxy done after endoscopic surgery (Fig.No.4). Minor complication occurs like haematuria and UTI in 5 (22.7%).



Figure No. 1: X-Ray Ivp Showing Ureterocele With Stone

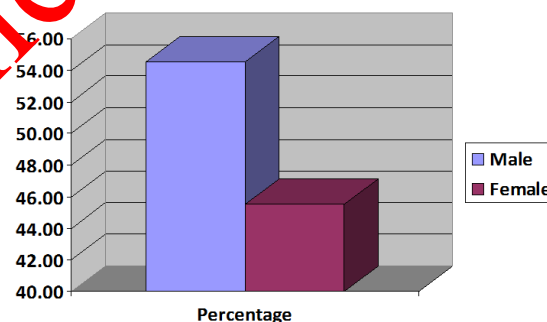


Figure No. 2: Male to female percentage of ureterocele

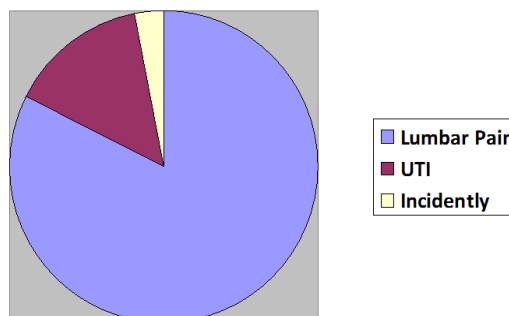


Figure No.3: Percentage of ureterocele presentation

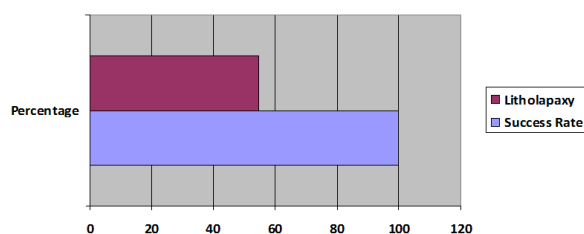


Figure No.4: Success rate of ureterocele and litholapaxy requirement

DISCUSSION

A ureterocele is one of the more challenging urologic abnormality facing urologist. However, with proper diagnosis and treatment, the outcome remains extremely good.⁶ Indications for ureterectomy include the Recurrent UTI, Ureteral calculi and intractable pain.^{2,7} In our study 22 patients, 12 (54.5%) were female and 10 (45.5%) male. The age of the patients ranged from 5 to 30 years. Mean age 16.3 ± 8.7 which is higher in secondary data due to patients presenting in late stage due to poverty and ignorance of health problems.^{5,7} Majority of our patients presenting with lumbar pain in 17 (77.3%) cases, urinary tract infection in 3 (13.6%), and in 2 (9.1%) cases it was detected incidentally which is comparable to other studies.⁸ All patients diagnosed on ultrasound and X-Ray IVU which is also comparable to various studies. In series study approximately 10% of ureteroceles are bilateral and Orthotopic ureteroceles occur in 17-35% of cases, with an incidence of ectopic ureteroceles of approximately 80% as well as 80% of ureteroceles are associated with the upper pole moiety of a duplex system and ectopic ureteroceles are associated with duplicated collecting systems, the upper pole moiety may be dysplastic or poorly functioning but in our study three cases seen bilateral only and none congenital anomalies seen in our study.^{4,10} Standard method of endoscopic surgery like endoscopic deroofing in adults and endoscopic incision in children done successfully. 12 (54.5%) patients having stone in ureterocele so litholapaxy done after endoscopic surgery which is also comparable to secondary data.^{1,9} Minor complication like haematuria and UTI occur in 5 (22.7%) cases which treated medically which is also comparable Campbell M and Singh I study.^{8,9}

CONCLUSION

Endoscopic treatment for ureterocele is safe and cost effective surgery and least post operative complication.

Author's Contribution:

Concept & Design of Study:	Hameed ur Rehman Buzdar
Drafting:	Nisar Ahmed Shaikh
Data Analysis:	Muhammad Iqbal Soomro
Revisiting Critically:	Malik Hussain Jalbani
Final Approval of version:	Hameed ur Rehman Buzdar

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

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An Audit of Gall Bladder Surgery and its Implications on Resident Training

Muhammad Shahid Farooq¹, Rabia Altaf² and Muhammad Rashid Anjum³

ABSTRACT

Objective: To find out the tier of surgeons performing most of surgery on the gall bladder and imply the results for improving the outcome of gall bladder surgery.

Study Design: Retrospective review.

Place and Duration of Study: This study was conducted at the South Surgical Ward, Mayo Hospital, Lahore from December, 2015- 30th November, 2016

Materials and Methods: This was carried out on the hospital record in order to find out number of gall bladder surgeries whether open or laparoscopic performed by a surgeon. We found out a total of 124 patients were operated for gall bladder removal.

Results: Our study shows that out of 124 patients, 95 (76.6%) patients had laparoscopic cholecystectomy and 29 (23.3%) patients had open cholecystectomy. 74.7 % (n=71) patients of laparoscopic surgery were performed by consultants, 23.1% (n=22) by senior registrars and 2.1% by the residents. 13.7% (n=4) of the open cholecystectomies were done by the consultants, 34.4 % (n=10) by senior registrars and 51.7 % (n=15) by the residents

Conclusion: We are performing laparoscopic cholecystectomy three time more often than the open cholecystectomy. The residents are the most frequent operating surgeons for open cholecystectomy. This has helped us improve the open surgery skills of residents.

Key Words: Laparoscopic, Open cholecystectomy, Surgeon, Resident, Audit

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INTRODUCTION

Gall stone disease is a very common problem in our part of the world as is in developed world. Around 10-30% of the patients with gall stones become symptomatic and will eventually need treatment. The common incidence of the gall bladder disease is denoted by the presence of gall stones in 30% of the autopsies performed in UK.¹ The incidence of the disease increases with age and this increased incidence also makes cholecystectomy a commonly performed procedure.² The introduction of laparoscopic cholecystectomy since 80s have made this the procedure of choice and very few patients end up with the alternatives.^{1,3} Now this is the most commonly performed laparoscopic surgery worldwide. The incidence of the open cholecystectomy has been reduced to less than 20% in the developed countries.⁴

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This shift towards the laparoscopic treatment regimen for gall bladder has also affected our country positively and now we are performing far more laparoscopic cholecystectomies than ever. The indications of open cholecystectomy are now left only to the expected cases of gall bladder cancer, converted cases, training purposes⁵ of the residents and patient's wishes. Now-a-days residents learn laparoscopic cholecystectomy even before the open cholecystectomy⁶ and this is the case with our surgical unit as well. Our local literature shows a lot of work on the complications, difficulties, conversion rate and feasibility of laparoscopic cholecystectomy but does not give clear evidence on the total number of patient being operated by laparoscopic cholecystectomy at any hospital. This study might represent an audit of our surgical unit for one year. Audit is a continuous process and has to go on and on for improving the health care of any health unit.⁷ To improve in our work and training we have to reflect upon our own doings.⁸ It has helped us as surgeons and doctors to make up our deficiencies and improve our patient outcomes. This ongoing exercise has helped us to improve ourselves as better surgeons in the area of gall bladder and produce a better progeny surgeons with ability to perform safe gall bladder surgery.

MATERIALS AND METHODS

This was a retrospective review was carried out at South Surgical Ward, Mayo Hospital, Lahore from the

record of the year 2015-2016 in order to find out number of gall bladder surgeries whether open or laparoscopic performed by a surgeon. One hundred and twenty four undergoing gall bladder surgery were included. Since this is a descriptive study so all the patients who got operated whether open or laparoscopically were included. We divided these patients in to two groups. The laparoscopic surgery patients were grouped into Group A and open surgery patients were grouped into Group B with 95 and 29 patients in each group respectively. Data Analysis was done using SPSS version 22.

RESULTS

Mean age of the patients who in group A was 38.91 ± 12.37 years and group B was 41 ± 15.3 years respectively. Both the groups had 14.5% males and 85.5% females (Table 1). The pre-operative diagnosis in laparoscopic and open cholecystectomy patients are shown in figures 1 and 2 respectively. The maximum cases in the group B were performed by the residents around 51% and the second major group of surgeons was senior registrars around 37% with 12% of the cases performed by the consultants (Fig. 3). The mean hospital stay in this group of patients was 1.82 days. Majority of the cases were discharged on the next day. On the other hand the majority was operated by consultant surgeons in Group A. 74.4% of the cases were performed by the consultants and 23.2% of the cholecystectomies were performed by the senior registrars and only 2.1% is the share of residents (Fig. 4). There was no mortality in Group A during the year. Mean length of postoperative hospital stay was 1 day. Only 59 cases (62.1%) were discharged on first postoperative day. 25% of the cases were discharged on second postoperative day. 13% of the patients were discharged home either on third or fourth postoperative day.

Table No.1: Frequency and percentage of males and females in open and laparoscopic groups (n=124)

Gender	No.	%
Male	18	14.5
Female	106	85.5

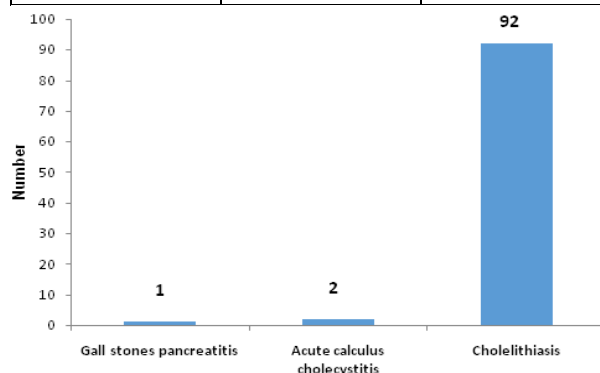


Figure No.1: Diagnosis of laparoscopic cholecystectomy

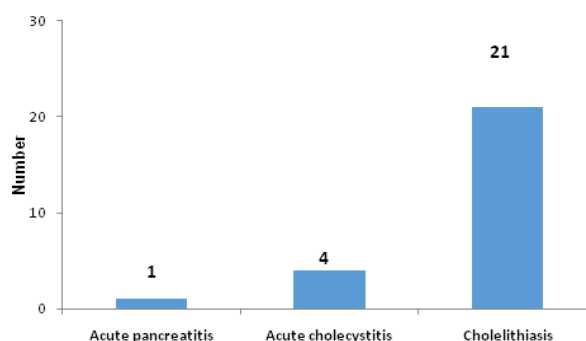


Figure No.2: Diagnosis of open cholecystectomy

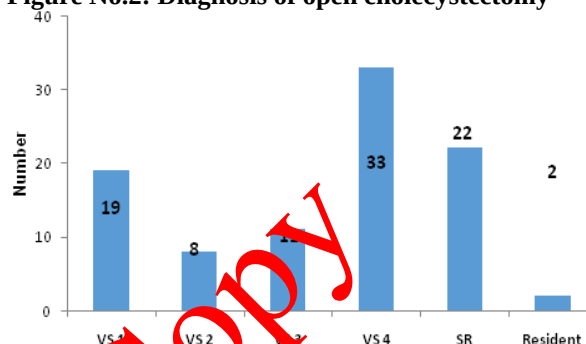


Figure No.3: Operating surgeons in open surgery

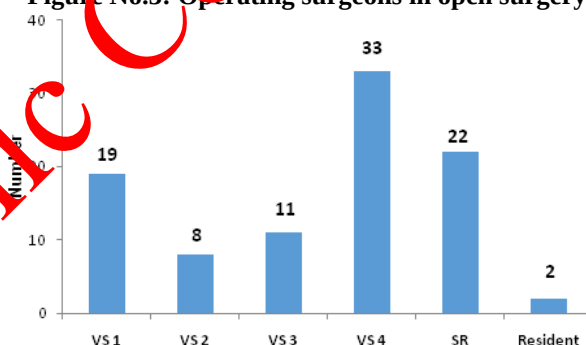


Figure No.4: Operating surgeons in laparoscopic cholecystectomy

DISCUSSION

Stones in the gall bladder constitute the major health problem worldwide. Simple cholelithiasis is more common so much so that more than 700 thousand cholecystectomies are performed in the United States. 60-70 % of the burden is shared by the American-Indian population.² The incidence of gall stone diseases is 16 % in Pakistan.⁹ The rate of gall bladder surgery is on a rise in our country as depicted by a study conducted by Channa et al¹⁰ in Hyderabad and adjoining areas. These evidences suggest the increase in the gall bladder surgery and when we further analysed our records we found that this is also true for us and most of the surgery performed for gall stone disease at our unit is laparoscopic surgery (95% vs. 29%). The most frequent surgeons were the consultant team for the laparoscopic procedures around 74.7% (n=71). The residents share was only 2.1% which is in contrast to the study carried out by Dr. Bockler where residents are

performing 37 % of the laparoscopic cholecystectomies.¹¹

Prior to laparoscopic cholecystectomy, junior residents performed 80% of all cholecystectomies but with the introduction of laparoscopic cholecystectomy the open surgery performed by residents has been reduced by 67%.¹² Though similar is the case with our residents where their share in the whole gall bladder surgery in only 13% (n=17) but our residents share in open surgery has improved and the residents have performed around 51.7% (n=15) open cholecystectomies during the same year.¹³ The Senior registrars performed 34.5% and 23.2% of open and laparoscopic procedures. This increase percentage of gall bladder surgery by the senior residents is comparable with the other teaching units and is the result of increased difficult gall bladder surgery after introduction of laparoscopic technique. As far as male to female ratio (1:6) in the open and laparoscopic surgery is concerned the two are same but we see a shift of work distribution towards the senior surgeons in laparoscopic group and more towards residents in the open group. One fourth of the cases performed by the senior registrars and residents were allocated for procedural training in the laparoscopy group under direct supervision of consultants while half of the procedures (51.7%) were allocated to residents for training purpose in the open surgery group. The senior registrars performed 34.4% of the open cholecystectomies under the indirect supervision of the consultants. It has been suggested that residents need a higher level of skill and should be more advanced in their training before being allowed to perform cholecystectomy laparoscopically.¹⁴

Traditionally the laparoscopic surgery follows the experience in the open surgery¹⁵ but this has not been proven rather many studies show that exposure at open cholecystectomy does not improve the performance at the laparoscopic surgery.^{15,16} However the residents need a higher level of skill at this time than was necessary for open cholecystectomy and have to be further advanced in their training in order to perform this operation laparoscopically as narrated by Hodgson.¹⁴ The accompanying decrease in the number of open cholecystectomies also has important implications for residency training. As with other centers, we have found that the number of open cholecystectomies has dwindled dramatically. These cases tend to be technically difficult and, therefore, usually are performed by a senior resident or consultant surgeon.¹² Although some reports contend that residents still receive adequate exposure to open biliary procedures in the era of laparoscopic cholecystectomy, we would suggest that it is becoming increasingly difficult to achieve this aim.¹⁷ So in the light of the available reference from the local and international literature as well as our own study results, we need to

redesign our curriculum in order to get better trained surgeons in two types of surgical modalities. This area of surgical training curriculum needs special attention in planning our training strategy and also incorporating the surgical simulators¹⁸ especially for the laparoscopic surgery in our training programme. This improved training regimen will not only reduce the work burden on our surgical team but in addition will have improved outcomes. This will also improve the skills at both open and laparoscopic surgery even in the initial years of training. Based on our findings we need to have a revised training schedule for our residents and an ongoing audit process to improve upon ourselves. This study has also helped us to plan and conduct a more robust study for assessing the improvement and shift in the paradigm offered by the introduction of laparoscopic surgery in our residents.

CONCLUSION

We are performing laparoscopic cholecystectomy three time more often than the open cholecystectomy. The residents are the most frequent operating surgeons for open cholecystectomy. The residents are being increasingly involved in the laparoscopic procedures in direct as well as indirect supervision. This has helped us improve the open surgery skills of residents

Author's Contribution:

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Drafting:	Rabia Altaf
Data Analysis:	Rabia Altaf
Revisiting Critically:	Muhammad Rashid Anjum
Final Approval of version:	Muhammad Shahid Farooq

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

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Anti-Inflammatory Effects of 1% Aspirin Gel and Mouthwash on Clinical Parameters and on Salivary PGE₂ Conc. in Periodontal Diseases: A Clinical Study

Faiza Hasan¹, Rahila Najam² and Muhammad Usman³

Anti-Inflammatory Effects of 1% Aspirin Gel and Mouthwash

ABSTRACT

Objective: The objective of this study was to develop 1% aspirin gel and mouthwash to determine its local effects in patients with periodontal diseases in order to prevent the systemic adverse effects associated with its oral use.

Study Design: Randomized control trial study.

Place and duration of study: This study was conducted at the Department of Pharmacology, University of Karachi and also Crown Dental Clinic, Karachi from July 2015 to December 2015.

Materials and Methods: 40 patients were included and divided into four groups. 1) Control group received no treatment, 2) Standard treatment group received only scaling and root planning, 3) Gel treated group, 1% gel was applied into the periodontal pocket of patients after scaling and root planning. 4) Mouthwash treated group, 1% mouthwash was given to the patients after scaling and root planning. The clinical parameters and the level of PGE₂ were measured at day 0 and after 30 days of treatment in the all groups. Analysis was done by one way ANOVA followed by Bonferroni test where $p \leq 0.05$ was considered significant.

Results: Both the gel and mouthwash were very effective in reducing the clinical parameters and PGE₂ level as compared to standard and control group. The mouthwash in comparison to gel was more effective in reducing the level of PGE₂.

Conclusion: We concluded from this study that local drug preparations produced significant effects in the treatment of periodontal diseases and can prove an alternate to the systemic treatment.

Key Words: Periodontal diseases, clinical parameters, PGE₂, scaling, root planning.

Citation of articles: Hasan F, Najam R, Usman M. Anti-Inflammatory Effects of 1% Aspirin Gel and Mouthwash on Clinical Parameters and on Salivary PGE₂ Conc. in Periodontal Diseases: A Clinical Study. Med Forum 2017;28(7):55-59.

INTRODUCTION

The two diseases that usually affects the periodontium are gingivitis and periodontitis. Both the diseases have similar clinical features of inflammation, including erythema, edema, bleeding and enlargement of gingival tissues but in periodontitis there is clinical attachment loss, periodontal pocketing and alveolar bone loss. The most common cause of these diseases is the bacterial plaque and calculus as well as variable microbial pattern¹.

The periodontologist generally treat these diseases by conventional standard treatment which includes scaling

and root planning. Sometimes oral drugs in which NSAIDs are usually combined with antibiotics are given in combination with standard treatment. The long term uses of these drugs have been associated with several systemic adverse effects².

In periodontal diseases, the level of COX-2 is increased which in turn are responsible for the production of PGE₂ that is associated with inflammation³.

Aspirin is an analgesic, anti-inflammatory and anti-pyretic agent commonly used in toothache and other inflammatory diseases of oral cavity⁴. In the stomach and intestine PGE₂ and PGF_{2-α} stimulate the synthesis of protective mucosal barrier. Aspirin decreases gastric acid and mucous secretion which may cause epigastric distress, ulceration, hemorrhage, and iron-deficiency anemia^{5, 6}.

New researches are now focusing to treat the periodontal diseases locally rather than systemically in order to avoid the adverse effects associated with the systemic administration. Although it is a time consuming procedure and required proficiency but the advantages of local delivery system are that less dose is required for the treatment and the possibility of emergence of resistant microorganisms is decreased.

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The drug is also maintained at the site of action for a longer period of time at appropriate levels⁷.

The aim of this study was to develop and compare the local formulation of 1% aspirin gel and mouthwash with standard treatment in patients with gingivitis and periodontitis to prevent the systemic adverse effects associated with its oral use. The clinical parameters and the level of PGE₂ were also measured before and at the end of 30 days treatment. In this study we also compared the efficacy of 1% aspirin gel with 1% aspirin mouthwash.

MATERIALS AND METHODS

Acetylsalicylic acid (Aspirin) from Kaizen Pharmaceutical (Pvt) Limited, Karachi was used. The other chemicals were obtained from Nigheban Pharmacy, Karachi for the preparation of 1% aspirin gel and mouthwash.

Preparation of 1% aspirin gel Acetylsalicylic acid was dissolved in between 80 on basic magnetic stirring hot plate (IKA Works Inc.) between 100°C to 150°C with continuous stirring until a clear solution was obtained⁸. Then this clear solution was added to 2% carboxy-methylcellulose gel containing methylparaben sodium, propylparaben sodium and EDTA at room temperature with continuous stirring to prevent lump formation. Triethanolamine was finally added to adjust the pH of the solution⁹. Gel was then evaluated for its physicochemical properties.

Preparation of 1% aspirin mouthwash: Aspirin was dissolved in parts in propylene glycol with the help of mechanical stirrer at 500 RPM for 30 minutes. Then sodium benzoate was added as a preservative, and glycerin as a sweetener. Finally, triethanolamine was added to adjust the pH of the solution. After the mouthwash preparation it was evaluated for its physicochemical properties.

Procedure including the application of intra-crevicular gel and mouthwash

Subjects participated in the study: 40 patients were included in this study. The complete clinical procedure was explained to each patient and consent was also signed from each patient before starting the procedure.

History taking and clinical examination: After taking history the patients were examined with dental examination instruments. The clinical parameters were measured when the patient was sitting on a dental chair by using WHO (CPITN) probe.

Inclusion criteria:

- Patients more than 20 years of age
- Patients of gingivitis and periodontitis with history of no systemic disease

Exclusion criteria:

- Patients on medicines since six months
- Patients with any known systemic disease
- Patients receiving any periodontal treatment since 2 years

- Pregnant women
- Lactating mothers

The patients were divided in to four groups

- Group 1: Control group received no treatment
- Group 2: Standard treatment group
- Group 3: Gel treated group
- Group 4: Mouthwash treated group

Sample collection and estimation of PGE₂: The saliva samples of the patients were collected in sterilized vials at day 0 and after 30 days. The samples were collected in the morning between 11-12 am to prevent changes in antioxidants. The sample vials were coded and immediately centrifuged at 12,000 g for 10 minutes. The clear supernatant centrifuged fluid was shifted to -20°C refrigerator. The clear fluid was used to measure the level of PGE₂ at day 0 and at day 30 in patients by using enzyme-linked immunosorbent assay (Glory Science Co., Ltd, USA) kits¹⁰.

Intra-crevicular gel application and estimation of clinical parameters: In gel treated group the gel was applied into the periodontal pocket of the patients by using 25 gauge syringe having blunted needle after drying the quadrant using air jet¹¹.

Probing depth: The measurement of probing depth was done using WHO probe also called as CPITN probe. In each tooth six sites were probed^{11, 12}.

Attachment level (CAL): The measurements were done using the WHO probe. In each tooth six sites were probed^{11, 12}.

Tooth mobility: Horizontal tooth mobility and vertical tooth mobility was measured^{11, 12}.

Bleeding on probing: Bleeding on probing was determined by probing gently along the wall of the gingival tissue of the sulcus^{11, 12}.

Plaque index: Four surfaces of tooth were examined for plaque index^{11, 12}.

Gingival index: Four surfaces of tooth were examined for gingival index^{11, 12}.

Statistical analysis: Data was analyzed by using SPSS 21 using one way ANOVA. Post-hoc analysis using Bonferroni test was used for comparison among the groups. The p-value of ≤ 0.05 was considered significant.

RESULTS

Table 1a and 1b indicates that 1% aspirin gel and mouthwash showed highly significant reduction in all clinical parameters ($p \leq 0.001$) except tooth mobility as compared to standard and control group after 30 days. The standard treatment also showed reduction in bleeding ($p \leq 0.001$) as compared to control group. 1% aspirin mouthwash highly reduced the bleeding and plaque index ($p \leq 0.001$) as compared to 1% gel whereas 1% aspirin gel highly reduced the gingival index ($p \leq 0.001$) as compared to 1% mouthwash after 30 days. Table 2 indicates that the level of PGE₂ was highly reduced by 1% aspirin gel and mouthwash ($p \leq 0.001$) as

compared to standard and control after 30 days. 1% PGE₂ level after 30 days as compared to 1% gel. mouthwash showed highly significant reduction in

Table No. 1a: Clinical parameters after administration of 1% Aspirin Gel and 1% Aspirin Mouthwash

Groups	Periodontal Pocket Depth		Attachment Level		Bleeding on Probing	
	Day 0	Day 30	Day 0	Day 30	Day 0	Day 30
Control Group	3.69 ± 1.08	3.91 ± 0.83	3.96 ± 0.81	3.97 ± 0.81	1.00 ± 0.25	0.90 ± 0.32
Standard Group	3.90 ± 0.83	3.77 ± 0.95	3.79 ± 0.55	3.57 ± 1.00	0.90 ± 0.32	0.54 ± 0.25***
1% Aspirin Gel	3.89 ± 0.78	2.40 ± 0.84****	4.28 ± 0.96	2.75 ± 1.00****	1.00 ± 0.00	0.12 ± .14****
1% Aspirin Mouthwash	3.87 ± 0.92	2.57 ± 1.12****	4.07 ± 0.91	2.82 ± 1.17****	0.98 ± 0.05	0.07 ± 0.12****++

n=10. Data is presented as Mean ± SD.

*** p≤ 0.001= highly significant with control group.

p≤ 0.001= highly significant with standard group.

+++ p≤ 0.001= highly significant between aspirin gel v/s aspirin mouthwash.

Table No. 1b: Clinical parameters after administration of 1% Aspirin Gel and 1% Aspirin Mouthwash

Groups	Tooth Mobility		Plaque Index		Gingival Index	
	Day 0	Day 30	Day 0	Day 30	Day 0	Day 30
Control Group	0.60 ± 0.70	0.80 ± 0.53	2.66 ± 0.21	2.67 ± 0.76	2.45 ± 0.36	2.47 ± 0.35
Standard Group	0.70 ± 0.67	0.70 ± 0.67	2.64 ± 0.18	2.31 ± 0.15	2.63 ± 0.37	1.89 ± 0.77
1% Aspirin Gel	0.60 ± 0.70	0.50 ± 0.53	2.79 ± 0.20	0.51 ± 0.29****	2.60 ± 0.33	0.27 ± 0.08****++
1% Aspirin Mouthwash	0.60 ± 0.70	0.50 ± 0.53	2.57 ± 0.14	0.22 ± 0.17****++	2.46 ± 0.86	0.32 ± 0.21****

n=10. Data is presented as Mean ± SD. *** p≤ 0.001= highly significant with control group.

p≤ 0.001= highly significant with standard group.

+++ p≤ 0.001= highly significant between aspirin gel v/s aspirin mouthwash.

Table No.2: Level of PGE₂ after administration of 1% Aspirin Gel and 1% Aspirin Mouthwash

Groups	Day 0	Day 30
Control group	90.83 ± 1.93	91.54 ± 1.76
Standard group	94.90 ± 2.26	92.9 ± 2.47
1% Aspirin Gel	91.51 ± 2.24	42.20 ± 2.42****
1% Aspirin Mouthwash	118.91 ± 1.04	12.75 ± 1.14****++

n=10. Data is presented as Mean ± SD. *** p≤ 0.001= highly significant with control group.

p≤ 0.001= highly significant with standard group.

+++ p≤ 0.001= highly significant between aspirin gel v/s aspirin mouthwash.

DISCUSSION

Gingivitis and periodontitis are the two common diseases that affect the periodontium which is the supporting structure of the tooth. The main cause of these diseases is bacterial plaque which is responsible for the destruction of gingival tissues and periodontal

attachment loss^{13,14}. The collagen supporting the periodontium is affected, the alveolar bone is resorbed and there is a migration of gingival epithelium along the side of the tooth surfaces resulting in “pocket formation”. This periodontal pocket provides an excellent environment for the growth of anaerobic bacteria. The anaerobic bacteria which gain access into the periodontal pocket causes the activation of neutrophils which results in increased production of pro-inflammatory cytokines. Continuous exposure to these pro-inflammatory cytokines leads to periodontal tissue destruction and may even cause the loss of the tooth^{15,16}.

There are certain procedures through which these diseases are treated. The treatment includes surgical as well as non-surgical procedures. Nowadays local drug delivery systems are popular among the dentists to treat gingivitis and periodontitis in order to avoid the adverse effects associated with systemic use of drugs. However, regular visits are required by the patients for the complete treatment of the disease.

In this study we prepared 1% aspirin gel and mouthwash and applied into the periodontal pocket in the patients with periodontal disease. All the clinical parameters were highly reduced by both the gel and mouthwash preparation as compared to conventional treatment and control. 1% aspirin mouthwash reduced the bleeding and plaque index because the mouth rinse provides a good control on bacterial plaque in a very short time period¹⁷. The effect of the mouthwash was not significant in reducing the gingival index as compared to 1% gel. This may be due to the muco-adhesive property¹⁸ of 1% ASA gel which retained it in the dental pocket and attached to the oral mucous membrane directly, thus producing significant response. PGE₂ is a very important inflammatory biomarker in the diagnosis of periodontal disease¹⁹. The use of the systemic aspirin reduces the inflammation by decreasing the level of PGE₂²⁰. In our study both the gel and mouthwash preparation significantly reduced the level of PGE₂ without altering the efficacy of the preparations in the environment of oral cavity. Our study also showed that the level of PGE₂ was not reduced by conventional treatment however; the use of 1% ASA mouthwash and gel showed a highly significant reduction in PGE₂ level. Thus, our study favors the use of gels and mouthwash administration after conventional scaling and root planning treatment. The mouthwash has rapid absorption ability; it can remove plaque and lowers anaerobic bacterial count. This is in accordance to our results on clinical parameters where we observed reduction in the level of bleeding and plaque indices after the administration of 1% ASA mouthwash. This effect is also associated with the reduction in the level of PGE₂. The mouthwash also showed more reduction in the level of PGE₂ as compared to the gel formulation.

CONCLUSION

Thus we can conclude from this study that local drug preparations produce significant effects in the treatment of periodontal diseases and can prove an alternate to the systemic treatment. It also suggests that the local preparations retained all the effects of the drug and the drug showed same efficacy in different local formulations.

Recommendations: Further researches are required to develop different local drug preparations to treat the periodontal diseases and to avoid systemic adverse effects associated with their long term oral use.

Author's Contribution:

Concept & Design of Study:	Faiza Hasan
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Data Analysis:	Rahila Najam
Revisiting Critically:	Muhammad Usman
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Community Based Evaluation of Malaria Rapid Diagnostic Test (ICT) Comparing with Conventional Method of Microscopy

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ABSTRACT

Objective: to estimate the validity of immunochromatographic test (ICT) while comparing it with the conventional method of microscopy.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Community Medicine, Liaquat College of Medicine & Dentistry, Karachi from July 2015 to November 2015.

Materials and Methods: A sample of 296 community members of both sexes and above one year age was taken who were diagnosed clinically as a suspected case of malaria through Community based surveillance in katchi abadi, Karachi. Selected subjects were interviewed using a structured and pre-tested questionnaire regarding socio-demographic variables, their symptoms of malaria. A venous blood sample by the standard venipuncture procedure was collected from each subject and blood CP, ICT and microscopy was performed for Plasmodium Falciparum or Plasmodium Vivax malaria diagnosis and confirmation of the parasite. Data was analyzed on SPSS version 20. The validity of each test was calculated by OpenEpi software.

Results: Using a Wilson score method, the sensitivity of ICT was 82.14% and specificity was 97.01%. The Positive Predictive Value (PPV) for ICT was 74.19% whilst the Negative Predictive Value (NPV) was 98.11%.

Conclusion: Compared with the results of the direct microscopy, ICT gave almost perfect agreement and near-perfect sensitivities and specificities in the detection of the clinically most important species of Plasmodium.

Key Words: Malaria, Rapid diagnostic tests, Microscopy, Sensitivity, Specificity

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INTRODUCTION

Despite decades of malaria control efforts in tropical and subtropical regions of the world, Malaria is still remains a main reason of morbidity and mortality in these regions. According to WHO, the global burden of malaria in 2015 were 212 million new cases and 429,000 deaths.² Based on the reported data in 2012, it is estimated that 45% of the population of the Eastern Mediterranean Region are living in areas at risk of local malaria transmission.

In eastern Mediterranean regions 45% of the population living in areas at risk of local malaria transmission reported in 2012. EMRO region countries are currently in different phases of control of malaria. Malaria is endemic in Pakistan and in the control phase for both *P. falciparum* and *P. vivax*. In 2013 WHO reported total estimated population at risk of malaria transmission in Pakistan, with local transmission is 98.3% of the total population.³ In 2015, National malaria disease surveillance system reported 202,013 confirmed malaria cases in country and in the same year 3.1 million cases were clinically diagnosed and treated at public sector outpatient health care facilities.⁴

Rapid and accurate diagnosis is the key to effective disease management and one of the basic technical elements of the strategy for malaria control.³ So far the light microscopic examination (ME) of the stained blood smears have been considered as the standard gold test for the diagnosis of malaria. ME however, requires well trained and experienced malaria microscopists and it is also rather time consuming. Therefore, the recent introduction of rapid diagnostic tests for malaria is of considerable interest. Such tests are based on antigen capture assay and application of the immunochromato-

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graphy (ICT) method for detection of Plasmodium specific antigen in a finger prick blood sample prepared from suspected malaria patients.^{5,6}

Rapid antigen assays is a valuable tool for the detection of malaria in symptomatic patients. The diagnosis of falciparum malaria with parasitemias of $> \text{or} = 500$ trophozoites/microL through ICT Malaria Pf/Pv test showed 100% sensitivity and 99.7% specificity in previous studies.⁷ The performance of Rapid diagnostic tests (RDTs) was measured against microscopy and showed a 97% and 100% specificity and sensitivity, respectively. ICT was 97% sensitive and 98.3% specific for *P. falciparum* and 89.7% sensitive and 97.9% specific for *P. vivax*.⁸ Khurshid et al also reported that ICT tests are simple to use and effective diagnostic tool for detection of malaria but expensive than other tests.⁹ ICT is very helpful for the remote areas as well as for clinics and health centers where the necessary facilities for ME are not accessible for the prompt diagnosis of falciparum infection, particularly in patients with severe and complicated malaria.⁵

MATERIALS AND METHODS

A sample of 296 community members of both sexes and above one year age was taken who were diagnosed clinically as a suspected case of malaria through Community based surveillance in katchi abadi, Karachi. The subjects were selected cases (male or female) of suspected malaria (defined as presentation with fever or headache or chills), attending health camps for an initial visit and who consented to participate. Patients attending the health camps for follow-up visits, severely ill patients needing referral, patients with an obvious non-malarial fever, and pregnant women were excluded. Written informed consent was obtained from each subject. Selected subjects were interviewed using a structured and pre-tested questionnaire regarding socio-demographic variables, their symptoms of malaria (high grade intermittent fever, headache, body ache), if they were using any medication, about pregnancy in married women and history of recent blood transfusion. A venous blood sample by the standard venipuncture procedure was collected was from each subject and blood CP, ICT and microscopy was performed for Plasmodium falciparum and Plasmodium vivax malaria diagnosis and confirmation of the parasite. The procedure was pre-tested on a small sub sample. Data was analyzed on SPSS version 20. Qualitative variables were presented as frequency and percentages while quantitative mean and standard deviation. Sensitivity and of specificity of each test was calculated and predictability was calculated by Open Epi software.

RESULTS

A total of two hundred and ninety six (296) participants were involved in this study. Out of this 145(49%) were

females and 151(51%) were males. The mean age of study participants was 24 ± 11 and ranged from 1 to 46 years (Table 1). Whilst 112 (37.8%) of the study participants were mohagirs, 76 (25.6%) were Pathans, 59 (19.9%) were Sindhi, 26 (8.7%) were Punjabi and 23 (8%) were from other ethnic groups (Figure 1). Microscopy and ICT malaria test were done for all 296 study participants. Using a Wilson score method, the sensitivity of ICT was 82.14% (95%CI: 64.41, 92.12) and specificity was 97.01% (95%CI: 94.22, 98.48). The Positive Predictive Value (PPV) for ICT was 74.19% (95%CI: 56.75, 86.3) whilst the Negative Predictive Value (NPV) was 98.11% (95%CI: 95.66, 99.19) (Table 2). In terms of the identification of the Plasmodium species present, the ICT gave generally good agreement ($k = 0.76$) with the results of the direct microscopy.

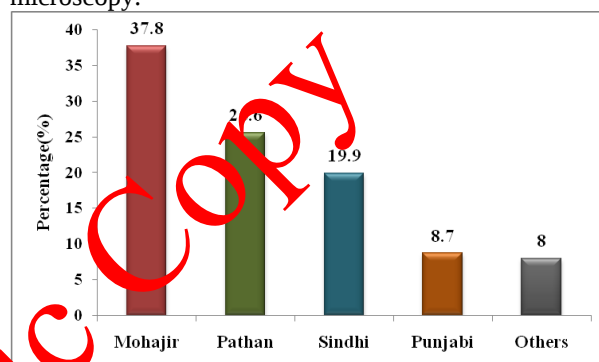


Figure No.1: Ethnicity wise distribution of study participants (n=296)

Table No.1: Characteristics of study participants

Characteristic	n(%)
Age (yrs)	
Range	1 – 46
Median	23.8
Gender	
Male	145(%)
Female	151(%)
Presence of fever	198
Presence of chills	67
Presence of sweating	72
Presence of headache	103

Table No.2: Validity test results for ICT

Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	Diagnostic Accuracy
82.14% (64.41, 92.12)	97.01% (94.22, 98.48)	74.19% (56.75, 86.3)	98.11% (95.66, 99.19)	95.61%

DISCUSSION

Malaria remains a noteworthy issue all through the tropics following 50 years of annihilation endeavors. In many parts of the world, doctors regularly diagnose malaria determination in light of clinical manifestations and signs. This strategy has poor specificity and

positive predictive value. It doesn't permit separation of various types of malaria.¹⁰ So far, the light microscopic examination (ME) of the stained blood smear has been considered as the best quality level test and gold standard for the diagnosis of malaria. Microscopic examination of blood smear notwithstanding requires very much trained and experienced microbiologist and it is likewise time consuming.¹¹

Moody revealed ICT technique is a straightforward, fast and reliable tool for recognition of malarial parasite.¹² In the present study, we discovered all age groups ranging from 1-46 years were affected by malaria. Comparative discoveries were found by an investigation in 2016 from Egypt where mean age of patients affected by malaria was 23.7 ± 17.9 (range 6-42 years).¹³ In the present study, we discovered 28(60.20%) were test positive by microscopic examination of peripheral blood film, 31(58.16%) were positive by ICT in the clinically presumed cases. In a study by Khan et al. in 2004 from Pakistan discovered 45.5% positive by microscopic examination of peripheral blood film and 43.2% positive by ICT for antigen.¹⁴ In another investigation done by Iqbal et al. in 2003 from Pakistan discovered 42% were positive by microscopy and 32 % were positive by ICT for antigen.¹⁵

In the present study, we found sensitivity of 93.22% and specificity of 94.87% by ICT for antigen, when compared with microscopic examination of peripheral blood film. In studies that verified RDTs with microscopy, tests that used a *P. vivax* specific antibody line to identify *P. vivax* had a pooled sensitivity of 95% (95% CI 86% to 99%) and a pooled specificity of 99% (95% CI 99% to 100%). Rapid diagnostic tests for diagnosing uncomplicated non-falciparum or *Plasmodium vivax* malaria in endemic countries.¹⁶ Mohammad et al reported that ICT yielded a very high sensitivity (96.1%) and Specificity (95.7%) for Malaria.¹⁷ In another study Iqbal et al found The overall sensitivity of ICT was 99%, while specificity was 98%, with a PPV of 96% and NPV of 99%. Test efficiency was calculated as 98%.¹⁸ Previous studies and systematic reviews also reported the sensitivity and specificity of ICT ranging from 92-100% and 90-99% respectively.^{13,19,20}

However, this study could not measure the sensitivity of ICT to detect parasitaemia <100 parasites/ μ l of blood. More studies are needed to assess the accuracy of the ICT designed to detect *Plasmodium* species specifically, particularly in areas with low prevalence.

CONCLUSION

Compared with the results of the direct microscopy, ICT gave almost perfect agreement and near-perfect sensitivities and specificities in the detection of *P. falciparum*, the clinically most important species of *Plasmodium*. ICT may be useful in areas where the

majority of malaria is caused by *P. falciparum* or *vivax* and where good quality microscopy is not available at community level.

Author's Contribution:

Concept & Design of Study:	Dr. Riaz Arshad Warriach
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Data Analysis:	Dr. Muhammad Athar Khan, Dr. Sania Tabbasum
Revisiting Critically:	Dr. Muhammad Athar Khan
Final Approval of version:	Dr. Riaz Arshad Warriach

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

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Bacteriological Profile of Burned Patients with Septicaemia

Bacteriological
Profile of Burned
Patients with
Septicaemia

Rakhshinda Younus¹, Ghulam Shah Nizamani² and Summaya Anas¹

ABSTRACT

Objective: The objective of the current study was to evaluate the bacterial profile of burned patients causing septicemia in Karachi.

Study Design: Descriptive / cross sectional study.

Place and Duration: Sample were received Department of Microbiology, Basic Medical Sciences Institute (BMSI), Jinnah Postgraduate Medical Centre (JPMC) Karachi from February 2011 to June 2011.

Materials and Methods: Altogether, 42 registered hospitalized burned patients who were admitted in different teaching hospitals of Karachi were included. After taking necessary aseptic measures, the samples were collected and necessary data was filled accordingly. Established microbiological methods, which include colonial morphology, Gram's staining and biochemical characteristics were used for identification.

Results: A total of 23.8% samples were culture positive. Specimens yielded 15 microorganisms. Of this number, 86.66% showed Gram-negative and 13.3% were Gram-positive microbial growth. Among the Gram-negative, *Pseudomonas aeruginosa* were the most common accounting for 46.66% followed by *Proteus vulgaris* accounting for 20% and less common was *Escherichia coli* with 6.66%. *Staphylococcus aureus* (13.33%) was the only Gram positive organism isolated.

Conclusion: In burned patients with septicemia, Gram-negative, *Pseudomonas aeruginosa* was the most common organism seen in positive cultures.

Key Words: Burned patients, septicemia, Gram positive bacteria, Gram negative bacteria and *Pseudomonas aeruginosa*

Citation of articles: Younus R, Nizamani GS, Anas S. Bacteriological Profile of Burned Patients with Septicaemia. Med Forum 2017;28(7):64-66.

INTRODUCTION

Infection with microorganisms due to thermal injury in burns patients is always a main problem in their treatment process¹. Injury caused by heat damages the skin barriers which tend to stop the entry of tiny microscopic creatures²⁻⁵. Complex alterations in hemostasis are due to severe burns which can hardly be compared to different types of injuries while there is a high death rate is usual in initial phase, thus allowing microbial colonization of burn wound^{6,7}. In the human body, the widest area is covered by skin. There are various mechanisms such as conservation of body fluids, homeostasis, heat regulation as well as guarding of host from infection is important because of an organ called skin⁸. It was surprisingly seen that during initial 15 days after burn injury, majority of septic episodes happened in this time period.

However, it is mostly caused by Bronchopneumonia, pyelonephritis, thrombophlebitis or infection of burn wound itself. The major cause of death in burn patients is due to huge burns⁶.

In group of non-fermentative gram negative bacilli, *Pseudomonas aeruginosa* is coming up as a vital microorganism⁹. It sustains as a main nosocomial infection fear to burn patients. It has been observed that treatment of patients having *Pseudomonas aeruginosa* infection becomes difficult when there is reduced susceptibility of many routine antibiotics¹⁰. There is an increasing evidence of *Pseudomonas aeruginosa* infections occurring these days. In burns patients the various microorganisms may cause skin contamination followed by septicemia in about 11% to 30% of cases. The primary sources of these may be from the normal flora of the skin, GIT and respiratory tract flora⁶. The objective of present study was to evaluate the most common causative microorganisms present in septicemic hospitalized burned patients.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted between February 2011 to June 2011 in the Department of Microbiology, Basic Medical Sciences Institute (BMSI), Jinnah Postgraduate Medical Centre (JPMC) Karachi. Approval from the institutional review

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committee and written consent from each patient/guardian was obtained.

Irrespective of age or gender, degree, percentage or duration of burn, total 42 blood samples were taken from suspected patients of septicaemia from 42 patients. After taking necessary aseptic measures, the samples were collected and necessary data was filled accordingly. 5-10 ml of blood was collected in a disposable syringe aseptically. Blood was injected into a bottle containing 50 ml of brain heart infusion broth where blood was mixed in broth by tilting or rotating the bottle gently and was transported to the Microbiology Department of BMSI in minimum time¹¹. The blood culture broth was incubated at 37°C for 7 days. Three sub cultures were made after 24 hours, 72 hours and on the 7th day over Blood and MacConkey agar respectively¹². Various standard bacteriological methods were used in order to identify specific colonial morphology, Gram's staining and biochemical feature of microorganisms from these specimens.

RESULTS

A total of 42 blood specimens taken from 42 septicemic burned patients were studied. Percentages of positive and negative blood cultures in septicemic burned patients were identified as are shown in Figure 1. Out of 42 blood specimens microbial growth was found in 10 (23.8%) cases. Data shows low percentage of positive cultures in blood specimens. However, 32 (76.2%) blood specimens did not show any microbial growth.

Table 1 shows different pathogens (n=15) isolated from patients suffering from septicaemia. Most predominant pathogen isolated was *Pseudomonas aeruginosa*, i.e. 7 (46.66%).

Table No.1: Microorganisms isolated from patients of septicaemia (n=15)

Organisms	Number	Percentage
<i>Pseudomonas aeruginosa</i>	7	46.66
<i>Proteus vulgaris</i>	3	20.00
<i>Klebsiella pneumoniae</i>	2	13.33
<i>Escherichia coli</i>	1	6.66
<i>Staphylococcus aureus</i>	2	13.33

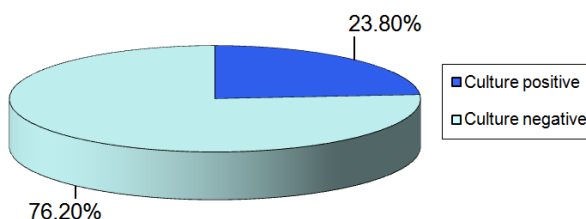


Figure No.1: Percentages of positive and negative blood cultures in septicemic burned patients

Figure 2 reveals that among 10 patients of septicemia, 50% were suffering from infection due to single

pathogen while 50% were having infection due to more than one pathogen.

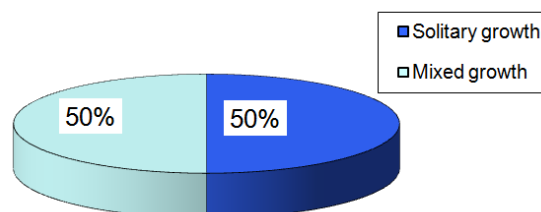


Figure No.2: Percentage of solitary and mixed growth from blood specimens in patients of septicaemia

DISCUSSION

Burn patients are more vulnerable to infection according to different studies. In the present study septicaemia occurred in 10/100 (10%) patients that is similar with the studies conducted by Ekrami and Kalantar (2007)¹³ and Alpt et al (2011)¹⁴ in which septicaemia occurred in 18.6% and 17% patients respectively, which is in accordance to our study. Another study done in tertiary care unit in Bangladesh showed no growth in 5 blood samples⁶. Another study done by Ressler et al (2008)¹⁵ reported 92/1258 (7.31%) bacteremic burned patients. The most common pathogens were *Staphylococcus aureus* and *Pseudomonas aeruginosa* while in our study *Pseudomonas* was the most highly isolated organism. The findings of our study are partially similar to this study. The main source of sepsis in these groups of patient was the burn wound. It might be due to the fact that in hospitalized burned patients their normal flora gets replaced, as a matter of fact with higher number of resistant micro-organisms in some days.

The change in the bacterial profile of the burns patients is widely reported worldwide. In fact there is lack of reliable evidences that can suggest this change in epidemiology of microorganisms causing involved in the burns patients, however nosocomial transmission is reported for the *Pseudomonas aeruginosa* patients in different parts of the world. Murray et al. (2007)¹⁶ showed most recovered bacteria from blood culture were *Pseudomonas aeruginosa* (26.09%) 19/73. Mahar et al. (2010)¹⁷ observed 62.7% prevalence of NFGNB in bacteremia. The finding of our study is in accordance to this study (70%). Moreover, this variation in burn patients emphasizes the empirical use of antibiotics in their burn units. Overcrowding, massive contaminated environment, lack of isolation and improper hand washing are few common etiologies of higher rate of infections of burn wounds and sepsis¹⁸. In addition, we have found in sepsis the main culprit is non other than burn wound itself.

Although with the improvement in the use of locally applicable altogether with injectable antimicrobial medications and the prompt excision in these patients

sepsis is always on top in causing death due to burns. Major malfunctioning of defense mechanism, a huge skin colonization of infected stuff, the chances of gastrointestinal migration, a long hospitalization and invasive diagnostic and management procedure are combinely contributing in sepsis¹⁹.

CONCLUSION

In burned patients with septicaemia, Gram-negative, pseudomonas aeruginosa was the most common organism seen in positive cultures.

Author's Contribution:

Concept & Design of Study: Dr. Rakhshinda Younas
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Scrotal Swelling: Its Evaluation by Doppler Ultrasonography

Muhammad Ashraf Kasi

ABSTRACT

Objective: To determine the role of Doppler Ultrasound in the evaluation of scrotal swelling.

Study Design: Descriptive study.

Place and Duration of Study: This study was conducted at the Department of Radiology, Bolan Medical Complex Hospital Quetta from Jan 2016 to Dec 2016.

Materials and Methods: The 102 patients were selected from the outdoor, indoor and emergency departments of Bolan medical complex hospital Quetta. Patients presented with clinical signs and symptoms and Doppler ultrasound findings suggestive of scrotal pathologies. Colour doppler ultrasonography was used in the evaluation of scrotal pathologies. The patients were examined in various positions and with valsalva maneuver.

Results: The 102 patients of all ages were included in this study which comprises hydrocele 28 (27.4%), epididymo-orchitis 19 (18.6%), varicocele 18 (17.6%), Spermatocele/epididymal cysts 22(21.5%), testicular growth 3 (2.9%), inguinal hernia 6 (5.8%), testicular torsion 2 (1.9%), scrotal trauma 2 (1.9%) and pyocele 2 (1.9%). Intratesticular lesions were 32(31.3%) and extratesticular lesions were 70(68.6%).

Conclusion: Doppler ultrasound was used as an effective tool in the diagnosis of scrotal pathologies. Ultrasound is a non invasive imaging tool, cost effective and easily available.

Key Words: Scrotal Swelling, Evaluation, Doppler Ultrasonography

Citation of articles: Kasi MA. Scrotal Swelling: Its Evaluation by Doppler Ultrasonography. Med Forum 2017;28(7):67-69.

INTRODUCTION

Normal adult testes are ovoid and measure approximately 3cm (AP) X 2-4cm (TR) X 3-5 (length) with volume of 12.5-19cc². However, the size of the testes decreases with age¹.

A high frequency linear transducer (7.5 – 10 MHz) is used. The scrotum and its contents are scanned in at least two planes. The testicle and epididymis are scanned from one extreme to another, noting echotexture and abnormalities. Doppler parameters are set to their most sensitive setting without introducing significant artifacts. Power and pulsed doppler should be optimized to display low flow velocities to demonstrate blood flow in the testes and adjacent structures.

Scrotal masses are caused by variety of disorders ranging from benign conditions to those requiring emergent surgical intervention. Painful scrotal masses require urgent evaluation²

Torsion of testis and strangulated hernia are surgical emergency, whereas epididymorchitis is treated by medicines.

Testicular trauma and obstructed hernia can be differentiated by taking history from the patient. Physical examination adds only a little information. Color doppler ultrasound is the modality of choice to differentiate testicular torsion from inflammatory conditions and thus help avoiding unnecessary surgical explorations.³

The history and physical examination findings of various etiologies of acute scrotal pain have a significant overlap, therefore making it difficult to differentiate these entities clinically.⁴

MATERIALS AND METHODS

This study was conducted in the department of radiology Bolan medical complex hospital Quetta during the year January 2016 to December 2016. This is a descriptive study comprises of 102 patients.

The patients were selected from the emergency, outdoor and indoor departments with the clinical signs and symptoms suggestive of scrotal pathologies.

The patients usually presents with pain and scrotal swelling.

The study was conducted by color doppler ultrasonography with high frequency 7 -10 MHZ linear transducer. The scrotum and its contents are scanned in at least two planes, in the transverse and longitudinal axis.

The scrotal pathologies especially the acute conditions are difficult to diagnose by clinical examination alone. Doppler ultrasound is the imaging modality of choice

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in the diagnosis of scrotal pathologies. Acute scrotal pain is commonly caused by testicular torsion. Any patient presenting with acute scrotal pain and or swelling should be urgently evaluated for testicular torsion because timely diagnosis is key to preserving testicular function.

RESULTS

A total of 102 patients were included in the study. 21 - 30 age group was the most common with 34(33.3%) followed by 31-40 years with 24(23.5%). Hydrocele was the most common disease with 28(27.4%) and the least common diseases were testicular torsion, pyocele and scrotal trauma having 2(1.9%) each. Out of 102 patients 32(31.3%) were having intratesticular lesions and 70(68.6%) were extratesticular.

Table No.1: Age Presentation of Different Diseases

Years	No.Patient	percentages
1-10	07	6.8%
11-20	11	10.7%
21-30	34	33.3%
31-40	24	23.5%
41-50	06	5.8%
51-60	02	1.9%
61-70	00	00%
71-80	00	00%
81-90	01	0.9%

Table No.2: Diseases with Percentages

S. No	Diagnosis	No of patients	percentages
1.	Hydrocele	28	27.4%
3.	Epididymo-orchitis	19	18.6%
4.	Varicocele	18	17.6%
5.	Epididymal Cyst/spermatocele	22	21.5%
6.	Testicular growth	3	2.9%
7.	Inguinal Hernia	6	5.8%
8.	Testicular torsion	2	1.9%
9.	Scrotal trauma	2	1.9%
10.	pyocele	2	1.9%
	Total number of patients	102	

DISCUSSION

Doppler Ultrasonography is excellent, easily available, cost-effective and non invasive imaging tool for the diagnosis of scrotal swelling.

The patient is placed in a supine position with legs slightly apart. High frequency linear probes of 7 -10 MHZ are used⁵.

Hydrocele is the most common cause of scrotal swelling. The abnormal collection of fluid in the space

between the visceral and parietal layers of the tunica vaginalis results in a hydrocele⁶

The hydrocele can be easily diagnosed by ultrasound by having anechoic fluid.

In a young patient with acute scrotal pain and swelling may be due to testicular torsion. Early diagnosis within six hours by doppler ultrasound is mandatory to preserve the testis.

The ultrasound findings are usually hypoechoic, swollen testis without any doppler flow⁷

The pyocele is having fluid in the scrotal sac with internal debris, swelling and inflammatory changes within the scrotal contents.

Acute epididymorchitis consist of pain, swelling and inflammation of epididymis with or without inflammation of the testes. The most common route of infection is local extension and is mainly due to infection spread from the urethra sexually transmitted disease or from the bladder. Mumps should also be considered as an etiology. Testicular torsion is the main differential diagnosis.

The ultrasound findings are swollen/edematous testicles/epididymis with increased doppler flow noted. Scrotal wall thickening and inflammatory hydrocele are noted⁸.

Inguinal hernias account for 75% of abdominal wall hernias, with life time risk of 27% in men and 3% in women⁹.

A spermatocele is a cystic accumulation of sperm that contains fluid typically arising from the head of the epididymis. It is a common benign finding and usually smaller than 1 cm. less commonly, they may enlarge to several centimeters. Pain and discomfort may need surgical exploration. Ultrasound shows cystic mass lesion with internal debris. Spermatocele have been incidentally identified in 30% of patients undergoing scrotal ultrasonography for other reasons.

Primary testicular tumors are the most common solid tumor in men between the ages of 20 and 35 years. The cause of testicular cancer is not known. The genetic factors have a role in the development of testicular cancer¹⁰.

A varicocele is a dilatation of the pampiniform venous plexus. Varicocele is the recognized cause of decreased testicular function and can lead to infertility. Approximately 15-20% of the healthy fertile male population is estimated to have varicocele. Varicocele are much more common approximately 80-90% in the left testicle than in the right due to various factors. A patient with varicocele is usually asymptomatic. He may report scrotal pain and or heaviness¹¹. Ultrasonography of the varicocele shows dilated tortuous venous structures within the scrotum which increases in size with valsava maneuvers.

A wide variety of traumatic mechanisms have been reported in scrotal trauma with blunt and or penetrating trauma to the scrotal area. The trauma manifests as

scrotal swelling with intratesticular and or scrotal hematoma in ultrasound¹².

CONCLUSION

Doppler ultrasonography is the modality of choice in the diagnosis of scrotal swelling. Ultrasonography is safe and non invasive imaging tool to differentiate the various scrotal pathologies and to avoid unnecessary surgical explorations.

Author's Contribution:

Concept & Design of Study: Muhammad Ashraf Kasi

Drafting: Muhammad Ashraf Kasi

Data Analysis: Muhammad Ashraf Kasi

Revisiting Critically: Muhammad Ashraf Kasi

Final Approval of version: Muhammad Ashraf Kasi

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

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Presentation of Snake Bite and Treatment Outcome in Medical Unit-III at PMCH Nawabshah

Jeando Khan Daidano¹, Noor Ali Samo¹, Akbar Yousfani², Rafique Ahmed Memon¹ and Saeed Khan¹

ABSTRACT

Objective: Snakebite is a major public health problem in Pakistan; our objective is to determine the presentation of snakebite and treatment outcome.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Medical Unit III, PUMHS Nawabshah from Jan 2016 to Dec 2016.

Materials and Methods: 112 patients were selected for this study; both male and female were selected for this study. Patients were selected after clotting time.

Results: Total patients were 112 in which 85 males, 27 females, on identification of snakes by patients and their relatives they reported 94(viper) 7(cobra) 11(unidentified), site of bite was on legs and feet 103 and hands 9. Clotting time was prolonged in all 112 patients. ASV was injected to 112 patients. Out of 112 patients 111 survived after ASV and one patient died.

Conclusion: Snakebite is a major public health problem in Pakistan especially rural areas. Highest number of bites were caused by viper, majority of snake bites occurred at night and early in the morning, lower limb was commonly involved in snake bite, early arrival of patient in teaching hospital and treatment with ASV life can be saved. Education of the public is necessary about snakebite treatment. Preventive measures including wearing of long shoes, use of torch and lantern are necessary.

Key Words: Snake bite, Viper, Cobra, ASV

Citation of articles: Daidano JK, Samo NA, Yousfani A, Memon RA, Khan S. Presentation of Snake Bite and Treatment Outcome in Medical Unit-III at PMCH Nawabshah. Med Forum 2017;28(7):70-74.

INTRODUCTION

Snake bite is major public health problem in many countries including Pakistan.

About 3000 snake species exist in the world out of these 600 are venomous (poisonous).

Snakes inject modified saliva (venom).

Venomous snakes are present in most parts of world¹

In Pakistan common snakes are viper, cobra, krait. Krait are commonly present in desert of district Tharparkar Pakistan.

Each year there are 1.8 to 2.5 million poisonous snake bites. Resultant 100000 to 125000 death occurs annually. Death due to snake bite is due to poor medical care in many countries. Regions where incidence of snake bites and death occur include India, Pakistan, Srilanka, Bangladesh, sub-Saharan,

Africa and latin america². Majority of snake bites has been seen in young population.³

More than 3million bites per year with the result death occur more than 150,000.

According to world health organization snake bites are neglected disease⁴. In Nigerian savanna 10% of hospital beds are occupied by snake bite patients.

Incidence of snake bite in benue vally of Nigeria is 497 per 100,000 population per year with 10 to 20% untreated mortality.

Carpet viper(Echisocellatus) is the most common cause of morbidity and mortality in the region.

The african cobras(naja ssp), commonly bite humans as atractaspis ssp and small vipers rarely bite⁵. Patients belonged to rural areas especially farmers are mainly affected. Clinical features include hemorrhage, incoagulable blood, shock, local swelling, bleeding, bullae formation and in some cases necrosis⁶.

Other systems involved in snake bite central nervous system with intracranial hemorrhage.⁷

Neurotoxicity can occur due to cobra bites. Other complication amputation blindness due to the bite of spitting cobra, wound infection, tetanus, malignant transformation, anxiety, stress, hysteria, and worry⁸ and Renal failure.

Snake bite venom most commonly occur in lower limb, during walking very close to snake⁹

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In western countries snakes are kept as pets, so common bites site is upper limb⁹

Snake venom is collection of peptides, enzymes and other toxins

Clinically toxins cause tissue necrosis affect neurological, cardiovascular and coagulation systems⁹.

There are multiple compounds in snake venom, cause neurotoxicity, pre and post synaptic blockers to cytotoxic compounds such as phospholipase A₂ that cause necrosis on this site of snake bites¹⁰.

Management: Correct identification of snake is compulsory for the management. Snake species varies from one geographical area to another. In most cases patient can not identify snake and make mistake for different species. There are different thoughts about treatment. Avoid tourniquet, patient should be shifted to near teaching Hospital¹¹. All patients of snake bite should be admitted in medical ward, for pain relief give paracetamol and narcotics, avoid intramuscular injection and NSAIDs drugs. Main treatment is anti snake venom and protect 80% patient mortality from carpet viper bites¹². Inappropriate or ineffective antivenom cause mortality and mortality can be reduced by giving appropriate antivenom 70-80%¹³. Anti snake venom can cause anaphylactic reactions. Patient information about treatment and adverse reactions are necessary. Along with anti snake venom analgesics, tetanus toxoid, parental fluid and blood transfusion.

MATERIALS AND METHODS

This cross sectional descriptive study was conducted in the Medical Unit II at PMCH Nawabshah from Jan 2016 to Dec 2016. 112 patients were selected for this study informed consent was taken from all patients, questionnaire was given to all patients or their relatives study was done according to questionnaire, including residential area, age, sex, literacy level, time, fang marks and identification of snake. Identification of snakes was done showing pictures of snakes

Inclusion criteria. Patients with prolonged clotting were included for this study.

Age -12 to 60 years

Prolonged clotting time

Fang mark of snake

Exclusion criteria

Age below 12 years and above 60 years

Normal clotting time

No fang mark

RESULTS

112 patients enrolled for this study 85 males and 27 females

Age	No. of patients
15-25 years	22
26-50 years	70
51-60 years	20

Snakes

Snake type	No of patients
Viper	94
Un identified	11
Cobra	7

Snake

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Viper	94	83.9	83.9	83.9
Cobra	7	6.3	6.3	90.2
Uniden- tified	11	9.8	9.8	100.0
Total	112	100.0	100.0	

Occupation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Farmer	90	80.4	80.4	80.4
businessman	5	4.5	4.5	84.8
unemployed	17	15.2	15.2	100.0
Total	112	100.0	100.0	

Sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	87	77.7	77.7	77.7
female	25	22.3	22.3	100.0
Total	112	100.0	100.0	

Clotting time

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 29	2	1.8	1.8	1.8
31	1	.9	.9	2.7
32	1	.9	.9	3.6
33	3	2.7	2.7	6.3
34	2	1.8	1.8	8.0
35	3	2.7	2.7	10.7
36	3	2.7	2.7	13.4
37	3	2.7	2.7	16.1
38	6	5.4	5.4	21.4
39	12	10.7	10.7	32.1
40	6	5.4	5.4	37.5
41	18	16.1	16.1	53.6
42	10	8.9	8.9	62.5
43	12	10.7	10.7	73.2
44	12	10.7	10.7	83.9
45	6	5.4	5.4	89.3
46	3	2.7	2.7	92.0
47	5	4.5	4.5	96.4
48	1	.9	.9	97.3
49	2	1.8	1.8	99.1
50	1	.9	.9	100.0
Total	112	100.0	100.0	

Symptoms: Hematuria was present in 60 patients, local limb swelling in 80 patients, epistaxis 15 patients, hematemesis in 17 patients, restlessness in 8 patients, headache in 12 patients, bleeding from the gums 18 patients, hypertension in 22 patients, diabetes mellitus 11 patients.

Clotting time, prothrombin time and APTT was prolonged in all patients as stated in statistical analysis.

Occupation

Farmers 90, Businessmen 4 un employed 18.

Antivenom and patients

55 patients 4 vials, 44 patients 10 vials, 10 patients 12 vials and 2 patients received 20 vials.

Clotting time was prolonged more than half an hour in all patients. Blood transfusion was given to 37 patients and fresh frozen plasma was given to 16 patients.

Blood CP

Hb% 5-7 30 patients

Hb% 8-10 69 patients

Hb% 11-13 13 patients

ATS was given to all patients, antibiotics Ceftriaxone and Cephradine was given to all patients to control wound infection. Out of 112 patients one patient died. Statistical analysis was done using SPSS 15 Version.

Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation
Age	112	20	60	37.52	10.452
Sex	112	1	2	1.22	.418
Occupation	112	1	3	1.35	.732
Snake	112	1	3	1.26	.626
C.time	112	29	50	40.97	4.108
PT	112	15	20	16.71	.907
APTT	112	34	39	36.65	.975
Hb	112	1	13	8.83	2.066
L.Count	112	10000	130560	14351.97	11228.378
P.Count	112	122000	270000	191080.36	21855.025
Urea	112	29	41	37.73	1.908
Creatinine	112	.9	1.3	.998	.1200
Valid N (listwise)	112				

snake * Occupation * Sex Cross tabulation

Count

Sex			Occupation			Total
			farmer	businessman	unemployed	
Male	snake	viper	65	2	0	76
		cobra	3	0	2	5
		unidentified	2	0	3	6
	Total		70	2	5	87
Female	snake	viper	13	2	3	18
		cobra	2	0	0	2
		unidentified	4	1	0	5
	Total		19	3	3	25

Anova

		Sum of Squares	df	Mean Square	F	Sig.
Snake	Between Groups	16.191	38	.426	1.139	.311
	Within Groups	27.300	73	.374		
	Total	43.491	111			
C.time	Between Groups	911.203	38	23.979	1.820	.014
	Within Groups	961.717	73	13.174		
	Total	1872.920	111			

Anova

		Sum of Squares	df	Mean Square	F	Sig.
snake	Between Groups	16.191	38	.426	1.139	.311
	Within Groups	27.300	73	.374		
	Total	43.491	111			
PT	Between Groups	38.102	38	1.003	1.377	.121
	Within Groups	53.175	73	.728		
	Total	91.277	111			

Clotting time PT APTT * snake

Snake		C.time	PT	APTT
Viper	Mean	41.20	16.68	36.70
	N	94	94	94
	Std. Deviation	4.081	.858	.948
Cobra	Mean	37.57	16.86	36.71
	N	7	7	7
	Std. Deviation	4.353	.690	1.254
unIdentified	Mean	41.18	16.82	36.18
	N	11	11	11
	Std. Deviation	3.516	1.401	.982
Total	Mean	40.97	16.71	36.65
	N	112	112	112
	Std. Deviation	4.108	.907	.975



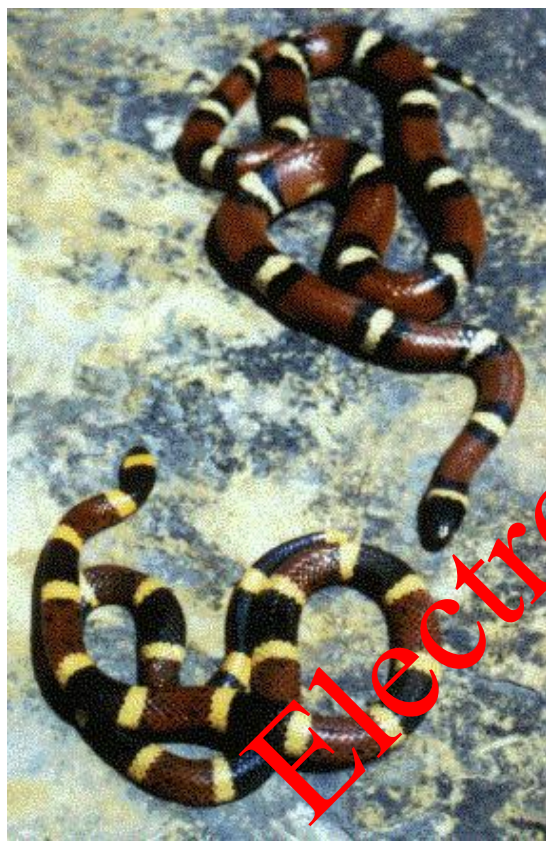
Krait



Cobra



Viper



Non Poisonous Snake

DISCUSSION

Globally there are 1200000-5500000 incidence of snake bite. Majority of snake bite is in south and Southeast Asia; sub Saharan Africa, central and south America. Death ratio due to snake bite is lower in latin American countries. Global incidence of snake bite and mortality rate is difficult to estimate. Majority of snake bites occur in rural areas and poor countries. Snake bites varies seasonally in different countries, in some countries high incidence are during monsoon agricultural working days. Many people do not get hospital treatment and prefer traditional remedies.

Some die at home and their death ratio is not recorded. Studies from rural Nigeria and Kenya have reported 8.5 and 27% snake bite patients got hospital treatment¹⁴. In Bangladesh hospitals 54% were bitten by non poisonous snakes 46% were bitten by poisonous snakes¹⁵. Majority of bites were caused by elapids and vipers. The species of snake s and venoms vary from one region of world to another. In some regions of world, it was reported that bites occur in head and neck area. bites occur during sleep¹⁶, sleeping on the floor are bitten by nocturnal snakes. During sleep commonly bites caused by kraits(Bangarus careulew) . Bite by Cobra occurs in late after noon. In Sri Lanka snake bite by pit viper caused local swelling systemic symptoms and coagulopathy¹⁶ and lower limb was commonly bite during day time¹⁷. Kraits bite their victims most commonly during sleep at night, respiratory paralysis occur 77-100% without treatment¹⁶. Krait bite most commonly noted in Thar Pakistan. The severity of envenomation vary from species to species and life style of snakes. Death ratio is increased by the bite of poisonous snakes¹⁸. In some regions it has been demonstrated that the median time to arrival at the hospital after a bite was 9 hours¹⁶. Difference could be due to facilities. According to Makino et al it was observed that patient administered anti venom had a shorter hospital stay¹⁷. Until 1990 anti snake venom was administered subcutaneously or intramuscularly¹⁹. Intravenous administration of antivenom had started in 1990.

CONCLUSION

Snake bite is common problem in Pakistan remote areas. Farmers are the victims of snake bite due to bare foot working in the grassy field. Viper is commonly found in sindh; cobra bite is rare and krait bite is common in desert of thar. Early arrivals of patient in teaching hospitals lives can be saved with antivenom .Education to people about snake bite and treatment is necessary,avoid herbal remedies, sucking wound, tourniquet and other remedies. Snake bite is common between 6 pm to 8 am. Education not to walk bare feet, use of at night time and incase snake bite early hospitalization is necessary.

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A Retrospective - Two Years Study of Ectopic Pregnancy in a Tertiary Care Hospital

Aneela Gul Shaikh and Sabahat Fatima Shah

ABSTRACT

Objective: To determine the frequency, clinical presentation of ectopic pregnancy and assess the management with respect to morbidity and mortality.

Study Design: Descriptive Study

Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynecology, KMC Civil Hospital, Khairpur Mir's from August 2014 to July 2016.

Materials and Methods: A total of 60 cases diagnosed with ectopic pregnancy were included in this study. Data was collected from case sheets and operative registers, the data was analyzed with descriptive statistics.

Results: In two years review period, there were total of 11053 deliveries, 7743 gynecological admissions and 60 cases of ectopic pregnancies recorded. This gave a frequency of ectopic pregnancy 0.5% of total deliveries and 0.7% of gynecological admission. The majority of patients were 20 to 30 years (n=36,60%), it was noted more cases in multigravida (n=30,50%). Almost all patients came with abdominal pain (n=59,98%) whereas history of amenorrhea present in 93% and fainting attack was found in 66% of patients. Ectopic pregnancy was found to be ruptured in 98% cases, all were tubal ectopic except one case which was abdominal pregnancy. Laparotomy done in all cases. In relation to morbidity, anemia was present in 83% of cases and blood transfusion was done in 50 cases. There was no mortality in this study.

Conclusion: Ectopic pregnancy was found in multigravida. Abdominal pain was the only symptoms which was present in almost all patients due to rupture ectopic pregnancy. In order to reduce morbidity there is need of a thorough clinical evaluation and appropriate investigation for patients with high suspicion of ectopic pregnancy so that our poor patients can be benefited by recent therapeutic modalities with avoidance of open surgery and better fertility conservation.

Key Words: Ectopic pregnancy, Fallopian Tube, Ultrasonography

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INTRODUCTION

An ectopic pregnancy is complication of pregnancy in which the embryo implants outside the uterine cavity.¹ E.P pregnancy is a high risk condition that occurs in 1.9% of reported pregnancies.² The incidents of recurrent EP is between 5% and 20% and rises up to 32% following two EP.³ The real concerns are its increased incidence and impairment in fertility.⁴ Pregnancy – related maternal mortalities in the first trimester account for 4-10% of all pregnancy related deaths.⁵

E.P in an important cause of maternal morbidity and mortality especially in developing countries, where the majority of patients presents late with rupture and hemodynamic compromise.⁶

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The etiology of ectopic pregnancy not well understood. However several risk factors for ectopic pregnancy has been identified including a history pelvic inflammatory disease (PID), smoking at the time of conception, previous ectopic pregnancy, previous pelvic surgery, induction ovulation and intra uterine device usage.⁷ There is increased frequency of EP after in-vitro fertilization (IVF) and related techniques.⁸

Clinical manifestation is connected with localization of ectopic pregnancy. FT is the most common area of ectopic implantation, represented in 97% of all ectopic pregnancies. Approximately, 80% of all ectopic pregnancies are localized in tubal ampulla, 12% isthmic part, 5% fimbrias and 2% in intestinal part. Other localization are not common; these are ovarian cervical and abdominal.⁹ Spontaneous bilateral E P is rare entity, conservation of fertility become an issue as bilateral salpingectomy is often required.¹⁰

EP is an important diagnosis to be excluded when a woman presents with bleeding in early pregnancy. As a consequence the clinical presentation of EP has changed from a life threatening disease, necessitating emergency surgery to a more benign condition in an asymptomatic patient for whom non-surgical treatment options are available.¹¹

Diagnosis can be made by USG, serum Beta hCG, although the gold standard is laparoscopy.¹² Various studies of transabdominal sonography for detection of EP have shown clear diagnosis in 70% to 89% cases. However, transvaginal scan is superior to trans abdominal scan in most cases of pelvic pathologic.¹³ Early diagnosis reduces the risk of tubal rupture and allows more conservative treatment to be employed.¹⁴ Successful implementation of risk reducing counselling program before conception provides high risk patients with screening to identify and manage ectopic pregnancy.¹⁵

With respect to the management of EP, there has been tremendous technical advances. The early diagnosis and treatment of this condition over the past two decades allowed a definitive medical management of unruptured ectopic pregnancies.¹⁶

Surgical treatment may either be an open laparotomy or laposcopic depending on surgeons' skills equipment availability and condition of the patient.¹⁷

MATERIAL AND METHODS

This was retrospective study of all cases of ectopic pregnancy admitted in department of obstetrics and Gynecology Civil hospital, Khairpur Medical College, Khairpur Mir's from August 2014 to July 2016. All cases of diagnosed EP admitted through the emergency or outpatient department.

The diagnosis of EP was made by history, clinical physical examination, and laboratory investigations and USG. 60 patients were admitted with EP during last two years. Data on age, parity, clinical presentation, USG findings, finding at laparotomy and outcome of treatment were collected using case sheets and operative registers.

The total birth records and Gynecological admission for the study period were also collected from the Gynecology and labor room record books. Statistical analysis were performed using SPSS v. 21 and process involved descriptive Statistics using percentages.

RESULTS

In two years review period, there were total of 11053 deliveries, 7743 gynecological admission and 60 cases of ectopic pregnancies recorded. This give a frequency of E.P of 0.5% total deliveries and 0.7% of gynecological admission.

The majority of patients were 20 to 30 years. (n=36,60%), it was noted more cases in multi gravida (n=30,50%). Almost all patients came with abdominal pain (n=59,98%) whereas history of amenorrhea present in 93% and fainting attack was found in 66% of patients.

Ectopic pregnancy was founded to be ruptured in 98% cases, all were tubal ectopic except one case which was abdominal pregnancy. Laprotomy done in all cases.

In relation of morbidity anemia was present in 83% of cases blood transfusion was done in 50 cases. There was no mortality in this study.

Table No.1: Age Distribution

	No.	%
<20	10	16.6%
20-30	36	60%
>30	14	23%
Ectopic Pregnancy Gravidity		
Primigravida	6	10%
2nd – 4th	30	50%
>4	24	40%

Table No.2: Clinical Presentation

	No.	%
Abdominal pain	59	98%
Amenorrhea	56	93%
Fainting attacks	10	16%
Vaginal bleeding	40	66%
Shocks	4	6.6%
Shoulder tip pain	5	8.3%
G.I symptoms	3	5%

Table No.3: Ultrasound Findings

	No.	%
Rupture ectopic	59	98%
Unrupture ectopic	1	2%

Table No. 4: Morbidity & Mortality

	No.	%
Anemia	50	83%
Previa	5	8.3%
Wound sepsis	3	5%
Paralytic ileus	3	5%
Maternal death	Nil	Nil

Table No.5: Operative Findings

	No.	%
Haemoperitonium	59	98%
Ruptured ectopic	59	98%
Unreptured ectopic(abdominal)	1	2%

DISCUSSION

Ruptured EP is a life threatening gynecological emergency especially in developing countries where very poor maternal health and indexes.

In Nigeria the incidence of ectopic pregnancy is 2.3%.⁶ In our study EP accounted for 0.5% of total deliveries and 0.7% for total gynecological admission, which is comparable with one study done in Pakistan but is low as compare to other studies in Pakistan.¹⁸

The incidence of EP was found to be highest in 20 to 30 years of age group in our study, which is consistent with the finding by the other researchers.¹⁹ This corresponds to the age of reproduction and peak sexual activity.

The highest incidence of EP was noted among parous women which is closed to other studies.¹⁸ it is not surprising as this may be explainable by the fact that a major risk factors of previous miscarriages precede the EP.¹⁹

Abdominal pain was a commonest clinical presentation in all patients that is 98% and this is often secondary to rupture due to late diagnosis and late presentation. Other clinical presentation included amenorrhea, shock, fainting attacks and vaginal bleeding. These occurred as a result of complications associated with ruptured ectopic gestation and could be life threatening without timely and effective intervention. This confirms the uniformity of a clinical presentation worldwide.

In our study the majority 98% of patients had ruptured EP that is because none of them diagnosed before the appearance of symptoms. Our diagnosis was mainly based on history and physical examination. Pregnancy tests were used to support the diagnosis and diagnosis confirmed by transabdominal ultrasound USG. This is similar to finding from the developing countries where 70-95% of cases are ruptured at presentation.¹⁹

In our study anemia was present in 83% resulting in multiple blood transfusions. No other significant morbidity was encountered in our study. There was no mortality in this study. Other studies had mortality rate of 1.5 to 3.7%.¹¹ One study in Pakistan has shown a mortality rate of 1.6% among 62 patients with EP.²⁰ Mortality depends on the size of the study population and the clinical state of patients at presentation.

CONCLUSION

Ectopic pregnancy was found in multigravida. Abdominal pain was the only symptoms which was present in almost all patients due to rupture ectopic pregnancy. In order to reduce morbidity there is need of a thorough clinical evaluation and appropriate investigation for patient with high suspicion. In our poor patients can be benefited by recent therapeutic modalities with avoidance of open surgery and better fertility conservation.

Author's Contribution:

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

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Variations in the Anatomy of Diaphragmatic Crura

Zahid Shah¹, Munila Shabnam Khattak¹, Sadaf Ambreen, Shahbuddin² and Abdul Sahib Khan³

ABSTRACT

Objective: The aim of this study was to note down the variations in the attachment of diaphragmatic crura in respect to their role in gastro esophageal reflux disease, crural tumours and thickening of crura in chest trauma.

Study Design: Descriptive study.

Place and Duration of Study: This study was conducted at the Anatomy department of Khyber Medical College Peshawar and Khyber Girls Medical College Peshawar from 2008 to 2016.

Material and Methods: 32 human cadavers were dissected irrespective of age and sex. After the removal of abdominal viscera attachment of right and left diaphragmatic crura noted. Data was analyzed by SPSS version 10. Result: On the right side crura was attached to the bodies of L1 to L3 vertebra in 78.13% and on the left side from L1 to L2 in 75%. However in 18.75 % the lower most attachment extended to L4 vertebra on the right side and L3 in 25 % on the left side. Crura in 21.87% of cases were on the right side and 18.75% of cases on the left side merge with anterior longitudinal ligament.

Conclusion: There is a marked anatomical variations in the attachment of diaphragmatic crura. Recognition of the variant will be helpful in diagnosis and treatment of hiatal hernia, crural tumour and crural injury.

Key Words: Diaphragmatic crura, Gastroesophageal reflux, hiatal hernia, crural tumour, crural injury

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INTRODUCTION

The diaphragm is a primary muscle of respiration. It is a dome shaped musculoaponeurotic sheet that separates the thoracic cavity from the abdominal cavity. The muscular part of the diaphragm has 3 parts, sternal, costal and lumbar, based on the region of their attachment. The lumbar part arises from the arcuate ligament and from lumbar vertebrae by means of vertical columns known as crura. The crura of diaphragm arise from the anterolateral surface of the bodies and intervertebral discs of lumbar vertebrae. They are musculotendinous bands that merge with the anterior longitudinal ligament of vertebral column. The right crura is stronger, broader and longer than the left, originating from the bodies and intervertebral disc of the first three lumbar vertebrae while the left crura from the first two lumbar vertebrae. The tendinous medial margin of the crura pass medially and anteriorly to meet in the mid line to form arch in front of the aorta called median arcuate ligament¹.

The area behind this is known to be aortic hiatus. The fibers originating from the xiphoid process, from the medial and lateral arcuate ligament especially from the ribs and their cartilages converge to be inserted into the central tendon². D Troyer et al notified in their study that while the costal diaphragm expands the lower rib cage, the crural diaphragm negligibly changes the dimension of the rib cage³. It seems that the crural diaphragm has a significant role in maintaining gastroesophageal reflux barrier and minor role in respiration.

The antireflux mechanism is maintained by the two sphincters at the esophagogastric junction, smooth muscle (lower esophageal end) and a skeletal muscle (crural diaphragm). The amount of contribution of the crural diaphragm compared to the lower esophageal sphincter as an antireflux barrier is difficult to determine because they are superimposed on each other⁴. The information regarding the sphincteric action of respiratory diaphragm and its relation to esophagogastric junction in previous studies have shown that the most of the physiologists were aware of the value of crural diaphragm in preventing the reflux of the gastric content into esophagus from stomach. Gastroesophageal reflux occurs when antireflux mechanism is ineffective, allowing the acidic gastric content to esophagus^{5,6}. In swallowing during inspiration the crural diaphragm briefly ceases to contract while the rest of diaphragm is contracting and allowing the bolus to pass across the diaphragm. This dramatic divergence of the activity of crural and costal diaphragm is seen during swallowing and esophageal

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distention⁷. The exact mechanism that lead to the reflux inhibition of the crural diaphragm during esophageal distension is somewhat unclear^{8,9}. Mital et al observed in their study that the difference in the pressure gradient in esophagus (negative) and stomach (positive) during inspiration favours reflux but simultaneous contraction of the crura reinforce the esophagogastric junction. He also observed that after cruralmyotomy, the lower esophageal sphincter cannot compensate for the loss of crural muscle. During their study they came to the conclusion that some of the patients suffering from gastroesophageal disease have impaired crural function. He further stated that the incidences need to be studied further¹⁰.

Allen and Greer demonstrated that crural and costal part of diaphragm is not only different anatomically and functionally but also developmentally. During the intrauterine life costal diaphragm develop from the myoblast that probably derived from the 3rd,4th and 5th cervical somites that invade the pleuroperitoneum¹¹. However in contrast to costal diaphragm, crura develop from myoblasts that grow into the dorsal mesentery¹. The motor nerve supply to the diaphragm is via phrenic nerve through separate branches to the crural and costal region^{12,13}. Esophageal hiatus is an opening at the level of T12 vertebral body in the muscular part of the diaphragm, formed by the right crus of diaphragm and is the only opening of diaphragm that is susceptible to visceral herniation i.e. hiatal hernia¹⁴.

MATERIALS AND METHODS

This descriptive study was conducted on human cadavers irrespective of age and sex during regular dissection classes to medical students in the department of anatomy Khyber medical college Peshawar and Khyber Girls Medical College Peshawar from 2008 to 2016. After removal of the abdominal viscera, the attachment of right and left crura of diaphragm was noted. The data was statistically analyzed by using SPSS version 10.

RESULTS

A total of 32 human cadavers were dissected and the attachment of diaphragmatic crura were identified on the lumbar vertebrae (Figure 1). Out of them in 25(78.13%) specimens the diaphragmatic attachment is observed to the bodies of L1 to L3 vertebra on right side and L1 to L2 vertebral bodies on the left side in 23(71.87%) specimens. However in 6(18.75%) specimens attachment found to be from L1 to L4 vertebral bodies on the right side and in 7(21.87%) specimens from L1 to L3 vertebral bodies on the left side. (Table 1). The lower most attachment extended up to L4 vertebra on the right side in 6(18.75%) specimens and on the left side up to L3 vertebra in 7(21.88%) specimens (Table 2). Crura did not merge

with the anterior longitudinal ligament on the right side in 25(78.13%) specimens and on the left side in 26(81.25%) specimens (Table 3).

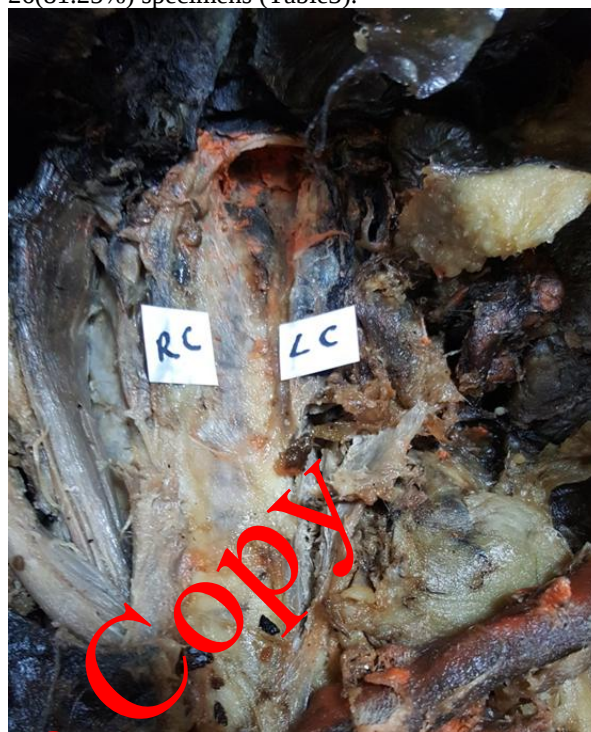


Figure No.1: Lumbar Vertebrae

Table No.1: Crural attachment to vertebral bodies

	Crura of Diaphragm	Frequency	Percent (%)
Right Crura	T12-L3	1	3.12%
	L1-L3	25	78.13%
	L1-L4	6	18.75%
Total		32	100%
Left Crus	T12-L2	2	6.26%
	L1-L2	23	71.87%
	L1-L3	7	21.87%
Total		32	100%

Table No. 2: Lower most level of crural extension to vertebral bodies

	Crura of Diaphragm	Frequency	Percent (%)
Right Crura	L3	26	81.25%
	L4	6	18.75%
	Total	32	100%
Left Crura	L2	25	78.12%
	L3	7	21.88%
	Total	32	100%

Table No. 3: Crural attachment to anterior longitudinal ligament

	Crura of Diaphragm	Frequency	Percent (%)
Right Crura	Present	7	21.87%
	Absent	25	78.13%
	Total	32	100%
Left Crura	Present	6	18.75%
	Absent	26	81.25%
	Total	32	100%

DISCUSSION

The term crura is derived from the Latin word *crurelis* meaning leg¹⁵. The primary muscular tumour of the diaphragmatic crura namely desmoid tumour, lipoma, leiomyosarcoma and rhabdomyosarcoma have been reported. Some of the intrathoracic malignancies such as metastatic or lung malignancies may invade the diaphragmatic crura. The knowledge regarding variations of the diaphragmatic crura is helpful in diagnosis and treatment of the crural tumour^{16,17}. Where the thickening of the diaphragmatic crura in trauma is an indicator of the injury¹⁸. Majority of the studies performed earlier reported that the attachment of diaphragmatic crura on the bodies and intervertebral discs on the right side usually extend from L1 to L3 and on the left side from L1 to L2 vertebra⁵. However, one study differs in that where in maximum cases the attachment of crus of diaphragm can extend to lower border of L4 vertebra on the right side and L3 vertebra on the left side¹⁹. In the present study, majority of the specimens the diaphragmatic crural attachment on the right side was extended from L1 to L3 vertebra in 78.13%, from T12 to L2 vertebra in 3.12% and from L1 to L4 vertebra in 18.75%. On the left side diaphragmatic crural attachment extended from T12 to L2 in 6.26%, from L1 to L2 in 71.87% and from L1-L3 in 21.87% (Table 1). However, in 81.25% the lower most diaphragmatic crural attachment extended to L3 vertebra on right side and L2 vertebra in 78.12% on the left side (Table 2). Right crura in 21.87% and left crura in 18.75% blended with anterior longitudinal ligament (Table 3). The present study correlates with the study of Imtiaz Ahmad et al where on the right side crural attachment extends up to L3 in 73.3%, and on left side up to L2 in 64.4%. On the right side in 24.4% and left side in 22.2% crura blended with the anterior longitudinal ligament²⁰.

CONCLUSION

There is a marked anatomical variation in the attachment of diaphragmatic crura. Recognition of

variant will be helpful in diagnosis and treatment of hiatal hernia, crural tumour and crural injury.

Author's Contribution:

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Women Empowerment and Family Planning in South Asian Perspective: An Empirical Evidence from the Rural Areas of Pakistan

Shumaila Humayun

ABSTRACT

Objective: To assess the decision making power of women in their married family life specially regarding family planning.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Department of Community Medicine, Foundation University Medical College, Rawalpindi from 1st April to 31st Oct, 2014.

Materials and Methods: Two hundred households were selected through simple random sampling technique and data was collected from women in each house, married at least for two years, using a self-administered structured questionnaire translated in Urdu language, and assessed using SPSS 19.

Results: Women were found to have a little say in decision making about the food preparation (37.5%), household purchase (25%), medical treatment (4.1%), working outside (5.2%), family planning consultation (40%), number of children (3.7%), contraception techniques (15.4%), tubal ligation (9.4%), circumcision of sons (1.9%), aqeeqa ceremony (2.2%), deciding about the place of delivery (52.1%). Almost 47.6% were pressurized by in-laws in decision making about family planning techniques.

Conclusion: The study revealed that in-laws, had a major influence on the decision-making of women specially regarding family planning. Hence interventions need to be implemented to raise women empowerment by involving in-laws in health education campaigns.

Key Words: cross-sectional, decision making, empowerment, family planning, influence

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INTRODUCTION

The 'power to' means the ability to complete an action or behavior¹. This power is unequally distributed between the two genders in this world, the females being the sufferers as they are generally considered weak, ignorant and born to obey. Low female autonomy affects various aspects of their lives and this disparity clearly stands out in their reproductive health decisions.^{3,4}

As the population time bomb is ticking at a fast pace, there is need for an arousal of the densely populated, poor and developing nations of this world for the control of their population growth rate through increased adoption of family planning techniques. The average global birth rate was 18.6 births per 1,000 total population in 2014⁵. A 2014 paper by demographers from several universities and the United Nations Population Division⁶, forecasts that the population of

the world will reach about 10.9 billion in 2100 and will continue to grow after that. Pakistan has attained 6th position and will rank 5th in the world by 2050, due to high birth rate⁷. A high birth rate poses a serious threat to the country's economic progress, advancement, health, law and order, food security and environmental stability. The most effective solution of high birth rate is family planning which is a means by which married couples have anticipation and attainment of their desired number of children, the spacing or gap between pregnancies, without having any side effects⁸. The whole burden is put on the shoulders of women, assuming that they are responsible. Yet, in poor are as particularly in villages a typical joint family setup, and societal and cultural taboos impose restrictions on daughters-in-law, affecting their decision-making. So despite the tremendous life saving and economical benefits, the contraceptive prevalence rate is still low, specially in the poorer and densely populated countries of the world, like Pakistan (35.4%). Various researchers have tried to study the reasons behind this contrasting phenomenon. The decisions of women, regarding the adoption of family planning practices are handed over to their control authorities after marriage, i.e., their in-laws. This is evidenced by various researchers like Moghadam⁹. It has resulted in a constant rise in the fertility rate over the years. A study from India reveals that mothers-in-law play a major role in distributing meals portion among household members and in

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matters regarding the need for seeking healthcare¹⁰ A study carried out in Mali explores the intra familial power dynamics on maternal healthcare practices and the relative influence of women, their husbands and mothers-in-law. The study showed that the preferences and opinions of mothers-in-law had strong effects on the maternal health behaviours of their daughters in law¹¹. A study from Karachi, Pakistan, shows the influences on contraception use among the young women in Urban Squatter Settlements¹². According to multivariate analyses, women who were literate, had high economic status, whose mothers-in-law reported discussing family planning with them were 2-3 times more likely to use contraceptives than other women. In most of the developing countries of Asia, like Bangladesh, Pakistan, Afghanistan¹³ a newly-wed woman becomes a part of her husband's family and socially and culturally she becomes their property. If she is unable to produce enough children specially sons, life is tough on her.

A study was planned in Basali village, Punjab with the aim of assessing the decision-making level of women in household and reproductive health matters. The village Basali is at a distance of 23 km from Rawalpindi to the North, in the Potohar region, with a population of 1743 people. Union Council Basali is in Tehsil and District Rawalpindi. As no such survey has been conducted in past, the findings of my research will contribute to the understanding of the influential factor of society i.e., the in-laws factor that affects women decision-making thereby informing the design of the strategic program and policies to improve the reproductive health of women in rural areas.

MATERIALS AND METHODS

A descriptive cross-sectional study was carried out in 200 households in Basali village, near Rawalpindi using simple random sampling in order to see the level of decision making of women in their married lives. The data was collected from 1st April to 31st Oct 2014. All women married for at least two years and having atleast one child were included in the study. All menopausal, infertile, or mentally or physically incapable women were excluded from the interview. The total number of respondents was 267.

Written informed consent was obtained from all the participants after explaining to them the nature and purpose of the study. Permission was taken from the head of every household interviewed. It was made clear that their names and information obtained would stay confidential and that they were allowed to withdraw from the study at any stage if they desired.

Data was self-collected by interviewing females using a pretested self-administered structured questionnaire, translated in Urdu language. Before entering data into computer, all questions were checked for mistakes and omissions. Data analysis was done by SPSS version 19

and results were mainly presented in frequencies and percentages.

RESULTS

Demographic Profile of the Respondents: Analysis of the demographic data indicated that a dominating majority (88%) of the respondents were house wives whereas 12% were working women. More than half (53%) of the respondents had married life of 2 to 8 years, that is active reproductive life. Majority (83%) of the respondents got married at the age of 18 to 24 yrs. A little more than one fifth (22%) of the respondents were illiterate whereas a majority (59%) of them were matriculate. Almost one fifth (19%) of them went to college after high school education.

The Role of women in Decision Making: Decisions regarding food preparation were taken by the mothers-in-law in exactly one third (33%) of the respondents. About 37.5% of the daughters in law decided themselves regarding the daily food preparation, rest one third was distributed among other family members. So far as purchase of household items was concerned, husbands appeared to be more active (63.7%) in that, only 25% women had their role in it.

Data analysis revealed that medical treatment decisions were taken either by husbands (48%) or mothers-in-law (13.5%) while few daughters in law had a role (4.1%) in that. In most of cases (69%), husbands decided whether their wives should work outside the house or not and appeared to be more dominant (76%) in taking decisions regarding the family size.

In decision making regarding family planning consultation, role of women was only 40%, and husbands had 43% role. In majority of the cases (80%), husbands decided about the desired number of sons and daughters females had a very little (3.7%) role in this decision making. Husbands also seemed to be active (73%) in taking decisions regarding the contraception techniques.

Table No. I: Age at Marriage

Age at Marriage (in years)	Frequency	Percentage(%)
< 18	42	15.7
18 - 24	221	82.8
25 - 31	3	1.1
32 - 39	0	0
>40	1	.4
Total	267	100.0

More than half (52.1%) of the women decided themselves about the delivery place, whether at hospital or at home. Husbands did not have much (21%) to say in this issue. Decisions regarding the tubal ligation of females were taken by the husbands in a dominant majority (81%) of the cases. Even mothers-in-law did not influence much (8%) into that. A majority (71%) of

the husbands decided themselves, about the circumcision of their sons, and Aqeeqa Ceremony (64%). Almost half of the respondents (47.6%) were pressurized by the family members as regards to adoption of family planning techniques. Within this, husbands (25%) and mothers in law (19%) played a major role. Co-relation between education of the respondent and having been pressurized by in-laws in decisions regarding adoption of family planning techniques, was significant at $p < 0.05$.

Table No.2: Decision-making About Contraception Techniques

Decisions to be Taken by	Frequency	Percentage
Mother in Law	25	9.4
Husband	194	72.7
Sister in Law	3	1.1
I Decide Myself	41	15.4
We All Decide	3	1.1
Any Other	1	.4
Total	267	100.0

Table No.3: Cross tabulation between Type of Family*, Pressurized by In-Laws in decisions regarding adoption of Family Planning Techniques

		Pressurized by In-Laws in decisions regarding adoption of Family Planning Techniques		Total
		Yes	No	
Type of Family	Nuclear	26	84	110
	Joint	101	56	157
Total		127	140	267

Table No. 4: Co- relation between Education of the respondent*, Pressurized by In-Laws in decisions regarding adoption of Family Planning Techniques

Co-relation			
		Education of Respondents	Pressurized by In Laws in decisions regarding adoption of Family Planning Techniques
Education of Respondents	Pearson Correlation	1	.333**
	Sig. (2-tailed)		.000
	N	267	267
Pressurized by In Laws in decisions regarding adoption of Family Planning Techniques	Pearson Correlation	.333**	1
	Sig. (2-tailed)	.000	
	N	267	267

** . Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

The study has brought forth important findings from this village. Analysis reveals that 16% of the respondents got married at the age of 16 to 18, which indicates that despite the regulations, people still get their daughters married at very young ages. The age group of 25-35 years in respondents appears to be more influential in decision making in the family. Women married for 5-8 years have a significant say. Daughters in law from nuclear families seem to be in authority as compared to those living in joint families. A study in Nepal showed that woman's autonomy in household purchases was 15.5% for major purchases and 18% for daily purchases¹⁴ whereas it was 25% in our study. This is perhaps due to similar Asian culture. Our study showed women's decision-making in terms of medical consultation was 4%, contrary to a study by Mumtaz done in a village named Pind, in Punjab, where husbands did not participate in any decision making regarding antenatal visits or medical consultation⁴. Mothers in law seemed to be totally in control. Woman's decision-making in our study was directly dependent on her social class and education. In our study, husbands played a major role in decisions regarding working of wife outside the house. This is an issue that has lot to do with the cultural values of male dominated societies. A study in India revealed that acceptance of family planning methods increased with increasing age and literacy of women under study, as well as in a nuclear family setup instead of a joint family setup¹⁰. A similar research by Khokhar also supported the results¹⁵. A cross-sectional study performed in an urban slum of India showed that 54.42% husbands disapproved family planning as it was thought to cause family disharmony¹⁶. It also revealed that family planning increased with women educational level, age and occupation. Deeply rooted socio-cultural factors discriminate men and women in many societies. This has a great impact on the health of women and adolescent girls. Our study has brought forth that there is a considerable influence of in-laws, specially husbands on women in Basali. A similar study performed in Nigeria revealed the same¹⁷. Two urban slums in Nigeria were studied for male partner's influence on family planning adoption. Focus group discussions showed that male partners' influence was positive and the reason was pronatalist tendencies and the prevailing traditional beliefs. Husband's influence is established in most of the poor Asian and African countries of the world specially in rural areas¹⁸, due to a similarity of socio economic conditions, traditions and cultures.

CONCLUSION

Based on the findings of study, it is concluded that decisions taken by women were influenced by other

family members specially their mothers-in-law and husbands. Women don't have a complete say in their families, specially in matters regarding family planning. Their decision making in various aspects is an amalgam of the inter-family influences and final verdict of the authority at home.

Recommendations: With the advent of modernization, access to education and exposure to media, women can realize their rights to health. Stress should be laid on increasing awareness of mothers in law and the male members of the village by involving them in health education campaigns. A family-focused education programme is required, combined with the involvement of the local, and mass media, and the LHWs regarding role, and place of women in society to help change their attitude. There is need for providing incentives to the LHWs in order to boost up their energies, and to ensure that they will approach the in-laws and take them into confidence. Efforts should be made at the government level using mass media, to signify the role of young mothers in the family set up. Increasing educational and employment facilities and counselling in-laws, and specially husbands, the major stakeholders, can bring a change in the status of women in household by empowering them, and making them aware of their fundamental rights.

Author's Contribution:

Concept & Design of Study: Shumaila Humayun
 Drafting: Shumaila Humayun
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Peripheral Blood Counts Abnormalities in Malaria Patients

Subhan ud Din¹, Amjad Ali² and Naveed Khan²

ABSTRACT

Objective: To evaluate Peripheral Blood counts abnormalities and hematological changes in Patients with malaria.

Study Design: Observational / analytical Study.

Place and Duration of Study: This study was conducted at the Pathology Department of Bacha Khan Medical College Mardan and Department of Medicine Mardan Medical Complex (MMC) Teaching Hospital Mardan from June 2016 to April 2017.

Materials and Methods: This study included a total of 100 patients, 50 as a control group and 50 as malaria diagnosed by thin and thick films under microscopy. Complete blood counts (CBC) were performed by Hematology Analyzer (an automated Mandray Machine.)

Results: 45 out 50 patients (90%) of the malaria had anemia, Hb level was 8.95 g/dl and 40 out 50 patients (80%) had thrombocytopenia. Platelets count was 110/cmm in 10 out of 50 patients. 20% had leucopenia and the rest (80%) had normal white cell counts but Anemia and thrombocytopenia were present in more patients than control group. p-value were 0.002 and 0.003 respectively.

Conclusion: Hematological changes and peripheral blood counts abnormalities are significant findings in malaria patients and so keeping these changes in mind, any patient presenting with anemia, thrombocytopenia, bicytopenia or pancytopenia should be properly examined for malaria before advising other diagnostic procedures especially bone-marrow aspiration and provide prompt treatment.

Key Words: Malaria, Anemia, Thrombocytopenia

Citation of articles: Din S, Ali A, Khan N. Peripheral Blood Counts Abnormalities in Malaria Patients. Med Forum 2017;28(7):86-88.

INTRODUCTION

Malaria is a major cause of death among children and adults in tropical and subtropical parts of the world like in Pakistan.¹

Malaria is responsible for significant number of deaths in countries where malaria is endemic.²

Despite full eradication efforts about 40% of the world population is at risk of malaria particularly South East Asian region.³

Pakistan also has high incidence of malaria, being a part of this endemic region.⁴

Few studies report that about 5 millions persons are affected in Pakistan annually.⁵

Upto 500 millions cases are estimated to occur and 1.6 million malaria related deaths occur each year in the world. All deaths are caused by plasmodium falciparum, plasmodium vivax, plasmodium ovale and plasmodium malariae. P.vivax and P.falciparum are the most common species in Pakistan.⁶

Peripheral blood abnormalities are associated with malaria, effecting all cell-lines but anemia and thrombocytopenia are the commonist findings.⁷

Hematological abnormalities show direct correlation with malaria infection and is a hallmark of malaria and these hematological abnormalities may lead to high clinical suspicion of malaria.⁸

These hematological changes in malaria include anemia, thrombocytopenia, atypical lymphocytosis, and disseminated intravascular coagulation (DIC). These changes improve with prompt diagnosis and treatment.⁹ Malaria is an important cause of death and illness in developing countries specially the falciparum Malaria.¹⁰ Plasmodium falciparum and P.vivax are the most common causes of anemia and thrombocytopenia.

The aim of the study is to properly evaluate patients presenting with anemia or thrombocytopenia for malaria infection as prompt diagnosis and immediate treatment can reduce morbidity and mortality from malaria. As these patients are mostly referred for bone marrow aspiration because of bicytopenia or pancytopenia, therefore proper diagnosis reduces the unnecessary use of bone marrow aspiration..

MATERIALS AND METHODS

This Study was conducted in the medicine and pathology departments of Bacha Khan Medical College MMC teaching hospital Mardan from June 2016 to April 2017. A total of hundred patients included in

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study. They were divided in two groups. Group A healthy individuals and group B malaria patients. 50 patients in each group. Malaria was diagnosed by the goldstandard method of peripheral smear examination. All the smears of patients in group B were positive for malaria parasites. Majority of cases were of plasmodium vivax and few were plasmodium falciparum. The complete blood Counts for both groups were performed by hematology analyzer (Mandrav company) for which blood sample of 5 ml was collected in EDTA Tube containing 1.8 ml EDTA. Statistical analysis included descriptive statistics bivariate analysis i.e. t- test, chi square and analysis of variances. Level of significance was set at < 0.05 .

RESULTS

There were a total of 100 patients divided into two groups A and B containing 50 patients each. Group A has 50 Normal healthy individuals as a control group while group B has 50 Malaria patients diagnosed on peripheral smear examination. Complete blood counts were performed on both the groups. Most of the patients in malaria group had hematological abnormalities as compared to the control group, (Table I). In group B 40 out of the 50 parasitemic patients had anemia, Hb level of 8.9 G/dl, 45 out of 50 Patients had thrombocytopenia, platelet count was 110/cmm and 25 out of 50 patients had leucopenia, while rest of the patients had normal TLC count, (Table 2). In the present study Hemoglobin in parasitemic patients was significantly lower than the control group, Platelet are also lower as compared to control group. Leucopenia was also noted but not significantly lower than the control.

Table No.1: Percentage of patients having hematological abnormalities in Malaria patients.

S.No.	Hematological parameters	Percentage of patients
1	Anemia's	40/50 (80 %)
2	Thrombocytopenias	45/50 (90 %)
3	Total leucocyte count	20/50 (40 %)

Table No.2: Mean and standard values of Hb, platelets and TLC count of patients and control group.

S.No.	Mean values of Hb., platelets and TLC count in Malaria patients	Mean value of control group	P.value
Hb level	8.95± 0.86 g/dl	12.789 ±0.532 g/dl	<.002
Platelets	110 ±20.673 x 10 ³ /μL	350±20253 x 10 ³ /μL	.0032
TLC	3.65±.567 x 10 ³ /μL	5.6±1.457 x 10 ³ /μL	.0052

DISCUSSION

Peripheral blood count abnormalities are common in malaria infection. These complications are caused mainly by plasmodium vivax and plasmodium falciparum and include anemia, thrombocytopenia and leucopenia. Plasmodium Vivax is the most common malaria in our region. In the present study all the malaria infected patients had hematological abnormalities either in the form of anemia, thrombocytopenia, Bicytopenia or pancytopenia. Many of these patients were referred for bone Marrow aspiration but they were diagnosed on proper smear examination. These patients had anemia, Hb level of 8 gm/dl.

Thrombocytopenia 110x103/cmm And white cell counts were 3.65±0.5x103/cmm in about half of patients while others had normal WBC count. A similar study had been conducted by abro et al on a total of 133 malaria patients out of which 64% had anemia, 83% had thrombocytopenia & 24% lymphopenia¹².

Patel et al also conducted a similar study on malaria patients and showed hematological abnormalities such as anemia, thrombocytopenia, atypical lymphocytosis and leucopenia¹³.

Bashwari AM et al conducted a study on malaria patients and showed that 59% had anemia 55% had thrombocytopenia and 42% had leucopenia¹⁴.

Malaria is one of the most prevalent infectious diseases and hematological complications are significant findings in these patients. Many studies are available. Peripheral blood count abnormalities are important manifestation in these patients. Akhtar, sect and bignegthu etc showed that anemia thrombocytopenia and leucopenia are significant hematological complications in malaria patients¹⁵⁻¹⁶.

The pathogenesis of anemia is multifactorial, however it is thought to result from destruction of RBC infected with parasites, bone marrow failure and level of parasitemia¹⁷.

Tumor Necrosis Factor (TNF) has also been implicated and may cause ineffective erythropoiesis, dyserythropoiesis and anemia of chronic disease¹⁸⁻¹⁹.

Suggested mechanisms of thrombocytopenia are peripheral destruction, Splenic pooling of platelets, antibody mediated platelet destruction, adenosin release from hemolysed RBCs, dysmegakaryopoiesis, platelet aggregation, parasitic invasion of platelets, platelet phagocytosis, platelet adhesion to erythrocytes and oxidative stress²⁰⁻²¹.

Anemia and thrombocytopenia have also been reported in malaria in mostly of the patients but total leucocytic count was reported normal by Surve KM et in his study²².

Some patients had leucopenia in the Present study. Some studies have different results regarding the total white blood cell counts in malaria patients. George et al reported leucopenia in their study while Adapo et al

reported leucocytosis in their study and Imoru et al reported no significant changes in total leucocytic count in malaria patients²³⁻²⁵. leucocytosis has also been reported in malaria by Mulla et al²⁶. Actually malaria is a typical blood disorder and effects all the hematological cellular components severely.

CONCLUSION

Hematological changes and peripheral blood counts abnormalities are significant findings in malaria patients and so keeping these changes in mind, any patient presenting with anemia, thrombocytopenia, bicytopenia or pancytopenia should be properly examined for malaria before Advising other diagnostic procedures especially bone-marrow aspiration and provide prompt treatment.

Author's Contribution:

Concept & Design of Study: Subhan ud Din

Drafting: Amjad Ali

Data Analysis: Naveed Khan

Revisiting Critically: Amjad Ali

Final Approval of version: Subhan ud Din

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Parental Consanguinity and Increased Risk of Idiopathic Congenital Talipes Equinovarus (CTEV)

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ABSTRACT

Objective: The objective of this study was to establish relationship of parental consanguinity as a risk factor for congenital Talipes Equinovarus.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Department of Orthopedics Surgery, Lady Reading Hospital Peshawar from 1st July 2014 to 30th June 2015.

Materials and Methods: This study comprised 140 patients. Patients with CTEV presenting to the outdoor department were included and data was taken through a simple questionnaire including consanguinity and nonconsanguinity.

Results: There were 86 (61.42%) males and 54 (38.57%) females. Eighty eight (62.85%) patients have bilateral deformities while the rest 52 (38.57%) patients have unilateral deformities. Out of the 52 patients with unilateral deformity. The right side was involved in 37 (71.15%) patient and the left side in 15 (28.84%) patients. Out of these 140 patients with CTEV, 71 (50.71%) patients were born to parents having cousin marriage while the rest of 69 (49.28%) had marriages outside their family.

Conclusion: Consanguineous marriage was significantly associated with an increased risk of idiopathic CTEV. Even after adjusting for potential confounding variables the association remained significant.

Key Words: CTEV; Consanguinity; Idiopathic

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INTRODUCTION

Congenital talipes equinovarus, is one of the most common congenital orthopedic anomaly. Isolated talipes equinovarus, has a birth prevalence of 1.29 per 1,000 livebirths.¹ This congenital anomaly has a male-to-female ratio of 2:1.²⁻⁴ Both the limbs are involved in upto 30-50% of cases. It has been reported that the involvement of right leg is more than the left leg. Chances of a subsequent child to be affected with CTEV increases by 10 % if the parents already have a child with a clubfoot.⁵

CTEV is usually diagnosed on clinical examination (equinus of the hind foot, varus of the hind foot, adduction of the forefoot, cavus of the mid foot).⁷⁻⁹ In utero ultrasound can also be used to make a diagnosis.¹⁰ Congenital clubfoot has no established cause. Although it is suggested that clubfoot has many risk factors, genetic factors clearly are important.⁷

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Most infants who have clubfoot have no genetic or extrinsic cause. Cytogenetic abnormalities (such as congenital talipes equinovarus) involving chromosomal deletion is seen to be a part of different syndromes. It has been suggested that idiopathic CTEV is usually the result of a multifactorial system of inheritance.¹¹ Pregnant women having low folate level is identified as a cause of several congenital malformations, and prevalence of idiopathic CTEV was observed to be reduced after fortification of grains with folic acid, or supplementation in the United States and Denmark.¹² Correlation has been identified between the incidence of CTEV and maternal smoking during pregnancy.^{13,14,15} Maternal smoking is suggested to cause reduction in fetal and placental circulation due the vasoactivity of nicotine, abnormal arterial pattern in the affected foot and fetal tissue hypoxia.¹⁶

Consanguinity, the marriage of individuals with a common ancestor, often has genetic implications for offspring. Several articles have suggested consanguinity as one of the important causal factor in birth defects, including CTEV. In our society the tradition of cousin marriages is more common as compared to the western countries. We found that the occurrence of CTEV is much more common in children who are born of parents who had cousin marriages as compared to others. So we conducted a prospective study to establish the association of CTEV with cousins marriages.

MATERIALS AND METHODS

This prospective study was conducted in the Orthopaedics Department of Lady Reading Hospital Peshawar, over period of one year from 1st July 2014 to 30th June 2015. The study included all the patients who presented to the outdoor patient department. The diagnosis of the CTEV was purely on clinical grounds. After the diagnosis of CTEV was established, data was collected on proforma already designed for this purpose. The proforma used for data collection was simple and included the biodata of the patient along with a simple inquiry from the parents about the cousin marriage. Each patient's family was interviewed in the OPD by a structured questionnaire including demographic and consanguinity information. Informed consent was taken from the parents of the children to be included in the study.

RESULTS

Table No. 1: Descriptive statistics of the patients

Variable	No.	%
Gender		
Male	86	61.42
Female	54	38.57
Deformity		
Bilateral	88	62.85
Unilateral	52	37.14

Table No.2: Side of unilateral deformity (n – 52)

Unilateral deformity	No.	%
Right side	37	71.15
Left side	15	28.84

Table No.3: Frequency of consanguinity of the patients

Consanguinity	No.	%
Non-consanguineous marriage	69	49.28
Consanguineous marriage	71	50.71

Table No.4: Comparison of consanguinity of patients according to genders

Consanguinity	Male	Female	Total
Non-consanguineous marriage	47 (68.11%)	22 (31.88%)	69 (49.28)
Consanguineous marriage	39 (54.92%)	32 (55.07%)	71 (50.82%)
Total	86 (61.42%)	54 (38.57%)	140 (100%)

A total of 140 patients with CTEV presented to the outdoor patient department during one year mentioned study period. Out of 140 patients 86 (61.42%) were males and 54 (38.57%) were females. Eighty eight (62.85%) patients have bilateral deformities while the rest 52 (38.57%) patients have unilateral deformities. Out of the 52 patients with unilateral deformity. The

right side was involved in 37 (71.15%) patient and the left side in 15 (28.84%) patients. Out of these 140 patients with CTEV, 71 (50.71%) patients were born to parents having cousin marriage while the rest of 69 (49.28%) had marriages outside their family.

DISCUSSION

Talipes equinovarus is a congenital disorder of the foot and ankle that may be unilateral or bilateral. The fore foot is adducted, hind foot in varus and equinus and mid foot in cavus.¹⁷ TEV is often an isolated finding (ITEV) or it may occur as a part of a different genetic syndrome. The management of CTEV become more difficult when it occurs as part of a syndrome or with other abnormalities (such as neural tube defects, i.e. spina bifida).¹⁸

This study further evidence provide support of a causal role of Parental consanguinity in clubfoot. It has been identified that Parental consanguinity is associated with isolated clubfoot. The causative factor of isolated clubfoot, or idiopathic talipes equinovarus, is unknown, but different etiologic theories had been previously suggested in the literature.¹⁹ Male gender had been suggested to have a high risk of involvement, with a 2:1 (male:female) ratio found across different demographic groups.⁷ In our study, the ratio of male to female is 1.6:1. Mechanical forces due to insufficient expansion of the uterus and low amniotic fluid volume is also associated with CTEV. Increased incidence is seen in first-born children and in pregnancies in which there is low amniotic volume and twin pregnancies.^{20,21} Advanced maternal age is also an important risk factor for ITEV.²² CTEV is common in First-born children than children from subsequent pregnancies.²³ The effect of maternal smoking on the risk of clubfoot are consistent in the literature. Previously studies have identified associations between maternal smoking and foot deformities that was statistically significant.^{14,24} An association between CTEV and maternal anemia has also been mentioned in a study.²¹

A relationship between consanguineous marriages and idiopathic congenital talipes equinovarus has previously been established. A study conducted in the rural area of turkey reported that that babies born of 1st cousins parents have 4 times more risk of developing CTEV as compared to the babies who are born of parents who are not relative to each other.²⁵ Another study conducted by Sreenivas et al reported that Out of 174 children included in their study with CTEV, 54 (31%) children were born out, of consanguineous marriage.²⁶ In our study we found that out of these 140 patients with CTEV, 71 (50.71%) patients were born to parents having cousin marriage while the rest of 69 (49.28%) had marriages outside their family. 86 (61.42%) patients were male and 54 (38.57%) were female with a male to female ratio of 1.6:1. Eighty Eight 88 (62.85%) patients have bilateral deformities while the

rest 52 (37.14 %) patients have unilateral deformities. Out of the 52 patients with unilateral deformity, the right side was involved in 37 (71.15%) patient and the left side in 17 (28.84%) patients.

CONCLUSION

Consanguineous marriage was significantly associated with an increased risk of idiopathic CTEV. Even after adjusting for potential confounding variables the association remained significant.

Author's Contribution:

Concept & Design of Study: Sajid Akhtar
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 Data Analysis: Faiz Ali Shah
 Revisiting Critically: Shahab ud Din
 Final Approval of version: Sajid Akhtar

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

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Comparison of Performance Characteristics Between FIA 8000 and Vitros ECiQ Analyzer for Cardiac Troponin I Estimation

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ABSTRACT

Objective: We compared the diagnostic performance of FIA 8000 Quantitative immunoassay point-of-care device for cardiac troponin I (TropP) with fully automated central laboratory Vitros ECiQ Immunodiagnostic Systems (TropV).

Study Design: Experimental study.

Place and Duration of Study: This study was conducted at the Emergency and Pathology Department of Quaid-e-Azam Medical College Bahawalpur over a period of 12 months from September 2015 to October 2016.

Materials and Methods: Blood specimens for cTn I measurement from patients suspected of Myocardial infarction in the ED were divided into two parts. One was analyzed on the FIA 8000. Other was analyzed on Vitros. The calculation of sensitivity, specificity, positive and negative predictive values for TropP were made. In TropP elevated samples imprecision, bias and comparative analysis were performed with respect to TropV.

Results: The specificity and false negative results for TropP were more than TropV. The kappa analysis revealed moderate agreement ($\kappa=0.596$). Of the 263 elevated TropP, 18 were negative by TropV, overall TropV results were higher. Coefficient of variations (CVs) was less than 10% in both within and between run assays. Initial comparison of results using Spearman test showed correlation coefficient (r) of 0.98. The results showed good correspondence, when Bland–Altman and Passing–Bablok regression analysis were performed.

Conclusion: The FIA 8000 is helpful in early and reliable diagnosis of myocardial infarction in emergency department.

Key Words: Diagnostic performance, Cardiac troponin I, Vitros ECiQ, FIA 8000

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INTRODUCTION

Myocardial infarction (MI) is necrosis and damage of myocardial cells due to significant narrowing of coronary arteries. Myocardial damage can be detected by measurement of one of the major sensitive and specific cardiac biomarker troponin I (cTnI) in blood^{1,2}. The rise and/or fall of the troponin level, along with clinical symptoms and/or electrocardiogram is necessary to diagnose acute myocardial infarction³. Recently proposed guidelines advocate measurement of

troponin I for diagnosis and risk assessment of coronary syndrome (ACS)⁴. The speedy and fast decisions about management of patients either in ward or intensive cardiac unit are possible by cTnI measurement.⁵ The POCT device can be used for rapid and accurate cTnI measurement in making decision about myocardial infarction and decreasing mortality and fatality risks associated with it.⁶ An increased cTn concentration is defined as 1 level higher than the 99th percentile of disease free population, on condition that precision is optimal at this level. The precision criteria of co-efficient of variation (CV) <10% at 99th percentile⁷ is met by few manufacturers of POCT assay. So measurement of cTnI at co-efficient of variation <20% is acceptable⁸. The recent guidelines favor turnaround time of less than 30 minutes for cardiac troponin biomarkers⁹. This rapid turnaround time not only facilitate timely diagnosis but also has valuable role in treatment of acute myocardial infarction.¹⁰ The suggested turnaround time is not achieved by most central laboratories.¹⁴ So hospitals have to rely on rapid point-of-care system to assess patients presenting with cardiac symptoms. It eliminates most pre and postanalytical delays and gives urgent diagnosis in a

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time sensitive manner.^{11,12} But most point of care devices have reduced analytical sensitivity and false negative trop I measurements may lead to misdiagnosis of acute coronary syndrome while false positive results in unnecessary hospital admission and medical intervention.¹³ Central laboratory turnaround times consistently less than 60 minutes are clinically appropriate but often difficult to achieve. The approach of using point-of-care (POC) system in emergency department and immunoassay troponin I method during the stay of patient in cardiology unit is followed by many hospitals. This Inter method difference can be especially troublesome for the physicians.¹⁵ This study is performed to appraise the performance of the poc device being used in our emergency department and to compare the result of first drawn specimen for trop I to that measured on central lab device.

Assay principle

The Vitros ECiQ Immunodiagnostic System is an electro-chemiluminescence immuno assay technique. The measurement range of cTnI kit is 0.012–80 ng/mL. In GP (Gelatin Biotech Inc, Luhe District, Nanjing, China) cTnI Fast Test Kit antigen(sample) and gold labeled antibody form complex. Then another antibody present on test line captures the complex resulting in purplish red line on test zone. The color intensity of test line is proportional to the amount of cTnI in the sample. FIA 8000 Quantitative immunoassay instrument reads the inserted test card and displays the concentration of measured cTnI on the screen. The limit of detection has been determined to be 0.5ng/mL. The reportable range of the assay is 0.5–50 ng/mL.

MATERIALS AND METHODS

The study was conducted in Quaid-e-Azam Medical College from September 2015- October 2016. The study was conducted after approval from Ethical committee. We included 630 subjects who admitted in emergency department with symptoms of chest pain. Those who were diagnosed cases of MI were excluded from the study. Troponin tests were done using both methodologies on blood samples collected at the same draw by dividing the sample into 2 aliquots after receiving samples in the emergency lab (the first 2

Troponin values for each other) according to manufacturer's instructions.

Control materials

Two levels of commercial quality controls (Liquicheck Cardiac Markers Plus, Bio-Rad Laboratories, Hercules, CA, USA) with different concentrations of cTnI (1.57 and 18.8 mg/L) were analyzed on both instruments. They were tested 20 times during a day in the same analytical run for calculating the within-run imprecision. In addition 20 aliquots per level were frozen for the between-run imprecision determination. One aliquot per level was thawed and analyzed over twenty days. Coefficient of variation (%CV) for within-run and between-run imprecision were calculated.

Statistical Analysis: SPSS software version - 20 (SPSS Inc, Chicago) was employed to perform statistical analysis. The calculation of sensitivity, specificity, positive and negative predictive values for troponins was performed. Kappa analysis was carried out to demonstrate correspondence of results. Mean and standard deviation were used to present the variables. The strength of linear relationship between cTnI measurements by laboratory methods was determined by Pearson correlation (r). Bias and agreement between two measured techniques were constructed by Bland and Altman plot using Graph Pad Prism 6 software.

RESULTS

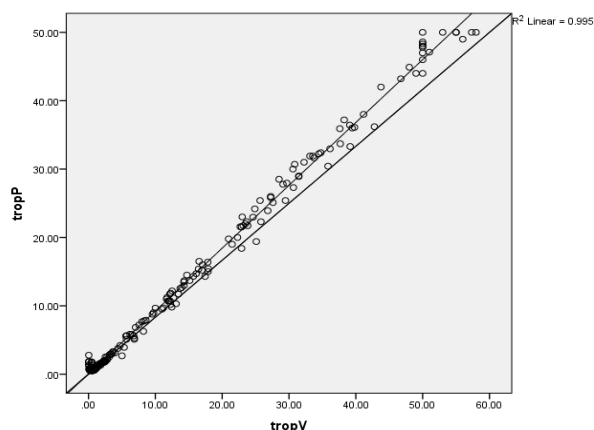
The mean age of patients included in the study was 68.5 ± 10.2 years (range 43 – 84 years). There were 367 (59%) males and 263 (41%) females. The patients with increased cTnI levels obtained from Vitros analyzer (tropV) was assigned as positive case of MI. The results obtained from FIA 8000 showed sensitivity 69%, specificity 93.4%, positive predictive value 93.1%, negative predictive value 69% and likelihood ratio 10.41. The concordance of cTnI result using kappa analysis showed moderate agreement between Vitros and FIA 8000. ($p < 0.001$, $\kappa = 0.596$). The test performed on FIA8000 showed lower values as compared to Vitros. But the results of 18 out of 263 Trop P positive patients were found to be negative when sample were analyzed on Vitros. The test values of Trop V results were 0.06 - 0.21 ng/mL lower than that of TropP.

Table No.I: Imprecision of TropV and Trop P

		Mean (ng/ml)	Standard deviation(SD)	Coefficient of variation(CV)%
Within run Imprecision	Trop V(level 1)	1.56	0.02	3.12
	Trop P(level 1)	1.42	0.11	7.74
	Trop V(level 2)	18.65	0.43	2.13
	Trop P(level 2)	16.79	1.37	8.58
Between run Imprecision	Trop V(level1)	1.51	0.06	3.97
	Trop P(level 1)	1.49	0.09	6.04
	Trop V(level 2)	18.23	0.49	2.63
	Trop P(level 2)	16.38	1.31	7.99

Table No.2: Comparative analysis between TropP and TropV:-

	Trop V+	Trop V-	Total
Trop P+	245	18	263
Trop P-	153	186	339
Total	398	204	602

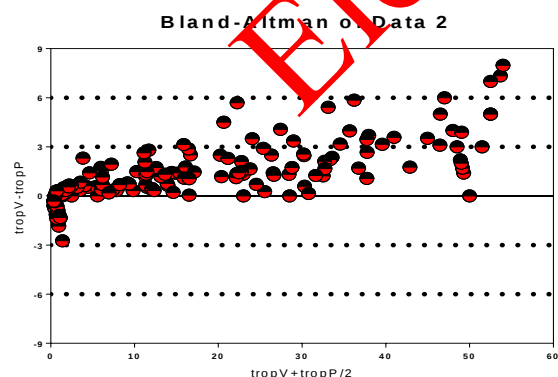
**Figure No. 1: Scatter graph of cTnI measured by FIA 8000 and Vitros**

The calculated relationship was $\text{TropV} = 0.919 \times \text{TropP} + 0.052$.

Table No.3: Results for the comparison between the Trop P and Trop V Results (at 95% confidence intervals)

Regression equation	$Y = 0.9192 \times X + 0.05231$
Intercept	0.05231 (-0.1637 - 0.2683)
Slope	0.9192 (0.9099 - 0.9286)
r	0.9813 (0.9750 - 0.9881)
r ²	0.9950
Bias	1.32(-2.081 - 4.543)

Bland Altman plot between TropP and TropVtest results showed good correspondence, 95% of results were within the ± 2 SD from the mean.

**Figure No.2: Bland Altman of Data 2**

The initial comparison of results using Spearman test showed a correlation coefficient (r) of 0.98. Passing and Bablok for linear regression analysis gave a positive correlation between two techniques.

DISCUSSION

Emergency departments have to rapidly assess and evaluate the cardiac patients to make appropriate decision about timely disposition and proper management of their condition. Many main labs of hospitals are not able to achieve the turnaround time set for cardiac marker testing in spite of better available analytical techniques.¹⁶ Our study indicated the performance of the 2 analysis techniques that may be helpful for the clinicians in diagnosis and management of patients admitted to the ED. The new point-of-care FIA analyzer showed more specificity and positive predictive value. But false negative rate was high. The high-specificity of cardiac Troponin testing may help us in the appropriate diagnosis of a cardiac event. It may facilitate in speedy treatment of all true cardiac events thereby improving the patient's recovery and reduction of mortality. It also showed fair degree of agreement of results to auto analyzer by kappa analysis. The low sensitivity is probably due to the fact that we took only the first Troponin measurements for a patient. The studies conducted by Noyen and Hjortshøj^{17,18} showed the similar results using other poct devices. The POCT instrument used in our study has turnaround time (TAT) of 15 minutes. This favors the current guideline recommendations which suggest that lab should analyze and report Trop results within 60 min after the patient has admitted to the cardiology care unit or emergency department.¹⁹ Patients with symptoms of chest pain can be rapidly assessed with estimation of cTnI levels. FIA 8000 has successfully fulfill the role of ruling out patients with symptoms of acute MI. This instrument like other POCT devices has decrease readmission of patients with similar complaints and aid in saving the hospital financial resources.²⁰ But as with many point-of-care cardiac troponin devices, it is less sensitive than central immunoassay automated analyzers.²¹ In our study, the cTnI levels measured by two different instruments purposed linear

relationship but at elevated concentration the best fit line showed substantial proportional bias. ($\text{TropV} = 0.919 \times \text{TropP} + 0.052$).

Our results are in concordant with the other studies using different POCT devices^{22, 23}. Similarly the Bland-Altman analysis showed a systematic negative bias for the POCT test results compared to the laboratory troponin values. These results are similar to those obtained in other comparison studies^{24, 25}.

CONCLUSION

The FIA 8000 Quantitative immunoassay instrument is an easy, rapid and reliable method for the quantitative analysis of cardiac troponin I. But this POCT device faces problem to establish recommendations for rapid turnaround times, high precision and excellent low-end sensitivity.

Recommendations: It is recommended to have serial measurements for at least 6-8 hours in patients suspected of having a heart event rather than first drawn sample used in our study. Point of care testing is a useful tool to rule out ACS, it shortens the stay of patients in emergency department resulting in early discharge and proves to be cost effective. So physicians must balance the need for earlier receiving of troponin results against analytical characteristics of POCT technique. Different scientific organizations are working together to standardize troponin measurement similar to other lab parameters. So it will be possible in future that compatible troponin results can be obtained independent of analytical instruments and laboratory setting.

Author's Contribution:

Concept & Design of Study: Farheen / Aslam
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Use of Antidepressant Drugs for Medium or Long Term May Cause Obesity, Diabetes or Renal dysfunction in Women of Reproductive Age Group

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ABSTRACT

Objective: To assess the use of Anti-depressant drugs are supposed to cause obesity, diabetes or renal dysfunction.

Study Design: Cross sectional study.

Place and Duration of the Study: The study was conducted in two tertiary care hospitals of Peshawar City of Khyber Pakhtunkhwa in Pakistan i.e. Khyber Teaching Hospital (A public sector health care facility) and Shafique psychiatric clinic (A Private health care facility) Peshawar from February 19, 2016 to May 15; 2016.

Materials and Methods: This cross sectional analytical study was carried out in Khyber Pakhtunkhwa in Pakistan to study the side effects of medium term use (03- 36 months) of anti-depressant drugs on the metabolism of glucose and renal functions in women of reproductive age. The study population consists of 165 female (18-45 years). Five ml of fresh fasting venous blood was collected from each subject and was analyzed for HbA1c and renal markers using standard methods & kits.

Results: The average serum urea level for both the patients group (SSRI: 22.55 ± 6.41 mg/dl and TCA: 18.33 ± 4.53 mg/dl) was lower than the control group (24.50 ± 5.14 mg/dl).

Similarly the creatinine level of the control group (1.10 ± 0.23 mg/dl) was also higher than both the patients group (for SSRI group was 0.62 ± 0.19 and for TCA was 0.53 ± 0.20 mg/dl).

The average value of HbA1c was 5.94 ± 0.39 , 4.84 ± 0.89 , 4.91 ± 0.70 (%) for control, SSRI and TCA groups respectively. Positive correlation was observed between serum urea and drug dosage in mg/day in TCA group ($p=0.01$). No significant correlation was found for serum creatinine, HbA1c and average glucose level in the patients group (SSRI, TCA) for other variables of interest.

Conclusion: Anti-depressant drugs may induce obesity in women of reproductive age if used for medium term, while it may not cause diabetes or renal damage. The effect on the HbA1c level is still not fully understood where as some studies reports its elevation in long term use.

Key Words: Anti-depressant, Urea, Creatinine, Serum

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INTRODUCTION

The spills of current wave of violence in Pakistan and disruption in social structure in the society are the leading causes of mental and psychological problems in our country^{1, 2}. The exact prevalence rate of mental disorders in Pakistan is not known, as there is no authentic data available. A few studies report a prevalence rate to be between 10% and 50%^{3,4}.

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Worldwide studies revealed that women live longer than men but they do not live healthier and better lives than their male counterparts. The women are exposed to greater risk for the onset of anxiety, depression and eating disorders⁵. The prevalence rate of depressive disorders among women is stated to be higher (41.9%) than men (29.3%). The main causes of anxiety and depression in women are their gender specific roles and responsibilities, cultural and social factors prevalent in Pakistani society. Other causes responsible for stress are gender based discrimination, poverty, hunger, malnutrition, family preference for a male child, lack of support from in-laws and domestic violence⁵⁻⁷. The prevalence rate of depression and anxiety in Pakistan is about 34% and is mainly due to social problems. About 33% depressed patients are taking various anti-depressant drugs like Selective Serotonin Reuptake Inhibitors (SSRIs) and Tricyclic Anti-depressants (TCAs)^{8,9}.

These drugs when used for longer time, causes damage to kidneys and may disturb glucose metabolism¹⁰.

One study carried out by UK General Practice Research has reported that those patients who had taken antidepressants drugs for more than two years had a higher risk of diabetes¹¹.

Ryan MC, et al also found that more than 50% of non-diabetic patients who were using anti-depressant drugs had higher level of HbA1c levels (> 7.0)¹².

Van Wyck et al. observed in their study that Bupropion use (Antidepressant drug) can cause polyuria (2-5 %),¹³ while Turpeinen, et al reported that it may elevate serum creatinine level¹⁴.

Weinstein JR et al observed in their study that long term therapy with Lithium may be linked with CKD in some patients¹⁵.

The aim of the present cross sectional analytical study was to investigate the effects of the medium term use of antidepressant drugs on glucose metabolism and renal functions in women population in the reproductive age in northern Pakistan in the province of Khyber Pakhtunkhawa.

MATERIALS AND METHODS

Study population/ study site: The present cross sectional analytical study was conducted from February 19, 2016 to May 15, 2016 in two tertiary care hospitals of Peshawar City of Khyber Pakhtunkhawa in Pakistan i.e. Khyber Teaching Hospital (A public sector health care facility) and Shafique psychiatric clinic (A Private health care facility) Peshawar. Approval letter no. 766/KTH/E-111 of the present study was given by the ethical committee of Khyber teaching hospital (KTH) in Peshawar Khyber Pakhtunkhawa, Pakistan. The target patients were women of reproductive age (18-45 years) visiting the above hospitals.

The exclusion criteria for the study population were diabetes, hypertension, renal disorders and use of antidepressant drugs for short term (< 02 months) and long term (> 03 years).

Informed consent was taken from each patient personally or through her attendant and the data was collected from the target patients on well-designed proforma using purposive sampling method. The study population consists of 165 female in the reproductive age (18-45 years). Five ml of fresh fasting venous blood was collected from each subject and was then

analysed in the central Pathology laboratory of KTH for the required biochemical tests using standard methods and kits.

Determination of Renal Markers: Kinetic UV method was used for the determination of Serum urea¹⁶ while serum creatinine was determined by Jaffe method¹⁷ on chemistry auto analyser (Erbamannhein chemistry auto analyser, Germany). The normal range for urea was 05-45 mg/dl and for Creatinine was 0.5-1.5 mg/dl respectively.

HbA1c Determination: HbA1c was tested by Fast ion-exchange resin separation method¹⁸.

Statistical Analysis: The data of the study group was statistically analysed on SPSS for windows 21.0 software (SPSS Inc. Chicago, IL, USA) and Microsoft Excel. The values were reported as Mean $\pm$ Standard Deviation (SD). Pearson's correlation analysis for the required parameters was also done to determine the kind of association between these parameters. A two-tailed p value < 0.05 was considered statistically significant.

RESULTS

The study population consists of 165 women in reproductive age (18 to 45 years) were divided into two groups, the Control Group (CG), using not any antidepressant drugs and the Patient Group (PG), using various antidepressant drugs for various duration and in different dosages. The results are given below.

Baseline Characteristics of CG and PG

Age: The average age of CG was 29.10 ± 7.52 years, for PG in SSRI & TCA group was 27.92 ± 7.90 and 29.63 ± 10.64 years respectively.

BMI: The mean BMI of CG was $24.54 \pm 2.01 \text{ Kg/m}^2$ for PG in SSRI & TCA group was $25.35 \pm 6.86 \text{ Kg/m}^2$ and $30.76 \pm 4.66 \text{ Kg/m}^2$ respectively.

Comparison serum urea, creatinine & HbA1c of Control & Patients

The average serum urea of CG was $24.50 \pm 5.14 \text{ mg/dl}$, for PG in SSRI & TCA group was $22.65 \pm 6.41 \text{ mg/dl}$ and $18.33 \pm 4.53 \text{ mg/dl}$ respectively.

Similarly the mean values of serum creatinine of CG was $1.10 \pm 0.23 \text{ mg/dl}$, for PG in SSRI & TCA group were $0.62 \pm 0.19 \text{ mg/dl}$ and $0.53 \pm 0.20 \text{ mg/dl}$ respectively. The mean value of HbA1c was higher in CG ($5.94 \pm 0.39\%$) than PG (SSRI: 4.84 ± 0.89 , and for TCA: $4.91 \pm 0.70\%$).

Table No.1: Baseline characteristics of CG & PG

S. No	Group ID		Age (years)				BMI (Kg/m ²)			
			Max	Min	Mean	S.D	Max	Min	Mean	S.D
1	CG n= 80		40.0	18.00	29.10	7.52	28.00	20.20	24.54	2.01
2	PG n= 85	SSRI n= 50	40.0	18.00	27.92	7.90	44.50	17.00	25.35	6.86
		TCA n= 35	43.00	18.00	29.63	10.64	39.40	24.20	30.76	4.66

CG: Control Group, **PG:** Patient Group, **TCA:** Tricyclic Antidepressant, **SSRI:** Selective Serotonin Reuptake Inhibitor

Table No. 2: Comparison of serum urea creatinine & HbA1c of CG and PG

S.no	Group ID	Serum Urea (mg/dl)		Serum Creatinine (mg/dl)		HbA1c (%)	
1	CG n= 80	Mean	S.D	Mean	S.D	Mean	S.D
		24.50	5.14	1.10	0.23	5.94	0.39
2	PG n=85	SSRI n=50	22.65	6.41	0.62	0.19	4.84
		TCA n=35	18.33	4.53	0.53	0.20	4.91
							0.70

TCA= Tricyclic Antidepressant

SSRI= Selective Serotonin Reuptake Inhibitor

Table No.3: Correlation Analysis of Serum urea & Creatinine in PG

S.no	Group ID PG n= 85	Parameters	Renal Markers		Diabetic marker
			Serum Urea r (p)	Serum Creatinine r (p)	HbA1c(%) r(p)
1	SSRI group n= 50	Age (Years)	-0.04 (0.90)	0.27 (0.40)	-0.539(0.09)
		BMI (Kg/m ²)	-0.23 (0.48)	-0.13 (0.68)	-0.446(0.17)
		Duration in months	-0.06 (0.85)	0.50 (0.19)	-0.05(0.89)
		Dosage in mg/day	-0.21 (0.52)	-0.02 (0.96)	-0.26(0.43)
2	TCA group n= 35	Age (Years)	0.27 (0.52)	-0.50 (0.21)	0.40(.30)
		BMI (Kg/m ²)	0.40 (0.32)	0.34 (0.42)	0.35(.36)
		Duration in months	-0.51 (0.21)	-0.13 (0.77)	-0.25(0.52)
		Dosage in mg/day	0.87** (0.01)	-0.14 (0.74)	0.62(0.08)

TCA= Tricyclic Antidepressant

SSRI= Selective Serotonin Reuptake Inhibitor

Correlation analysis of renal& diabetic markers in PG: Pearson's correlation analysis of serum creatinine, urea and HbA1c was carried out with all the require variables. The results of the analysis are presented in table 3.

Insignificant negative correlation was found between serum Urea, BMI, age, Dosage in mg/day and duration of medication in months, while positive correlation was observed for urea in TCA group with drug dosage in mg/day ($p= 0.01$). For serum creatinine no significant correlation was observed.

Negative insignificant correlation for HbA1c with age, BMI, dosage in mg/day, duration in months was found for PG in SSRI group.

The HbA1c for TCA group was negatively correlated with duration in month and positive correlation was found with Age, BMI; Dosage in mg/day.

DISCUSSION

Diabetes and renal impairment are co-morbid with anxiety and depression. This relationship has been confirmed by a number of epidemiological studies.

The present cross sectional study was carried to look for the association between anti-depressants use, HbA1c and renal markers level in women of reproductive age having depressive illness.

The study population includes 165 female aging 18-45 year, 85 of them were patients (PG) using various antidepressant drugs and 80 were normal (CG), who were not user of drugs. The prevalence rate of obesity was higher in PG (44.50 Kg/m² for SSRI & 39.40 Kg/m² for TCA) than the CG (28.00 Kg/m²)¹⁷⁻¹⁹. This finding is in consistence with other similar studies which reported an increase in BMI in the patients treated with anti-depressant drugs²⁰. The HbA1c level of CG was found to be higher than PG. Similar results have been

reported by Lustman et al. 2006, who observed lower level of HbA1c in patients irrespective of the type of antidepressant used²¹. Pyykkonen et al. 2011 found mixed results between antidepressant use and glycemic control in adults. Researchers had also found an association between antidepressants use and increased insulin resistance as evaluated by Homeostasis Model Assessment of Insulin Resistance (HOMAIR)²².

Renal function the study population was evaluated by determining Serum urea and creatinine.

Our results revealed that subjects who were using SSRIs and TCAs have lower level of urea and creatinine as compared to subjects in CG. Different results have been reported for other similar studies where an association has been established between antidepressant use and renal damage and elevation in serum creatinine level²³. Our results suggest that antidepressants users may not be at risk of developing kidney diseases.

The period of medication with the anti-depressant drugs is also important in the onset of diabetes and consequently on the renal damage. In this study an insignificant negative correlation was found between Serum urea, age, BMI, dosage in mg/day and duration in months.

A very significant positive correlation was observed between serum urea and drug dosage in mg/day in TCA group ($p= 0.01$), while no significant correlation was found between serum creatinine and other parameters in PG (SSRI, TCA). Positive correlations of HbA1c with age and BMI, while negative correlations with duration in month and dosage in mg per day in SSRI (PG) were observed.

The study of Diabetes Prevention Program reports that long term use of the antidepressants can increase the risk of diabetes twice²⁴.

Some surveys have found a very weak association between the antidepressants drug use and the risk of diabetes²⁵.

Lustman et al. 2000, hypothesized that change in hormones level caused by depression can stimulate the cortisol level in the body to increase and weakens the insulin tolerance²⁶.

The important aspects of this study are that we have focused on a segment of our society who is facing enormous health issues due to poverty and other social factors. The limitations of the study are small sample size of 165 women in a certain age group, data collection from only two centers, lack of finances and time limitation.

Further studies are required involving larger population for better results.

CONCLUSION

The medium term use of antidepressant drugs may induce obesity in women of reproductive age but may not impair glucose metabolism and renal function.

Author's Contribution:

Concept & Design of Study: MM Yousaf
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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A Study of 100 Cases of Thrombocytopenia in Malaria in Swat

Abdul Ahad, Bacha Amin Khan and Abdul Jabbar

ABSTRACT

Objective: Scheme of this study was to observe the contingency of thrombocytopenia in patients with malaria.

Study Design: Prospective Study

Place and Duration of Study: This study was conducted at the Department of Medicine, Saidu Teaching Hospital, Swat from Jan 2015 to Nov 2016.

Materials and Methods: In the Medical unit of Saidu Teaching Hospital, this study was performed on 100 patients having malaria who were positive for malaria parasite. Platelet count was done at the time of presentation by hematology analyzer.

Results: 16 patients were found to have normal platelet count. 68 patients were having platelet count between 50000-150000 (mild thrombocytopenia). 11 patients were having platelet count between 20000-50000 (moderate thrombocytopenia). 5 patients were having platelet count less than 20000 (severe thrombocytopenia). Male female ratio in this study was almost equal 1.04:1 i.e. 51 males and 49 females. Thrombocytopenia was more common in age group 31-50 years.

Conclusion: Mild to moderate thrombocytopenia is found in malaria. Thrombocytopenia is not diagnostic of malaria but can raise malaria suspicion.

Key Words: Plasmodium, MP, malaria, thrombocytopenia.

Citation of articles: Ahad A, Khan BA, Jabbar A. A Study of 100 Cases of Thrombocytopenia in Malaria in Swat. Med Forum 2017;28(7):102-104.

INTRODUCTION

Malaria is a serious, often life-threatening disease which is spread by bite of Anopheles mosquitoes and caused by parasites of the genus Plasmodium.

The incidence of malaria worldwide is about 300-500 million cases per year causing deaths in 20 million affected people annually¹. Annually half a million cases of malaria are reported in Pakistan. The annual mortality rate due to malaria in Pakistan is about 10 percent (Fifty Thousand) of the total affected cases. This result shows that in this country malaria is a major health concern².

Various derangements of hematological parameter are found in Malaria and one of the most common associations is mild to moderate thrombocytopenia but there is a rare association with disseminated intravascular coagulation or hemorrhagic manifestations³.

The association of thrombocytopenia in malaria is not well understood, but some mechanisms have been

described such as sequestration of these cells in spleen, immune-mediated lysis, and abnormal formations of platelets have been implicated. As a consequence of malaria, structural and functional abnormalities in platelets have been explained. In rare conditions, malaria parasite by itself can invade the platelets cells⁴. In patients with the finding of thrombocytopenia, it is important to rule out malaria by careful examination of blood smear. Especially in a febrile patient along with thrombocytopenia, workup to exclude malaria is of immense importance. Travelers' returning from tropical areas with acute febrile illness, presence of thrombocytopenia is considered as a sensitive clinical marker for diagnosis of malaria⁵. These findings are based on studies performed to evaluate thrombocytopenia in patients who were smear positive for malaria.

MATERIALS AND METHODS

From Jan 2015 to Nov 2015, this descriptive study was conducted in Medicine Department of Saidu Teaching Hospital, Saidu Sharif Swat. In this study, a total of 100 patients whom MP was positive were included. Hematology analyzer was used to determine full blood count. Hematologist used Giemsa stain to assess thick and thin smear. Manual method was used for re-evaluation in those patients with decreased platelets count. Three categories were made for patients with thrombocytopenia:

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1. Platelet count 50,000 – 150,000 : Mild thrombocytopenia
2. Platelet count 20,000 – 50,000 : Moderate thrombocytopenia
3. Platelet count less than 20,000 : Severe thrombocytopenia
4. Analyzation of data was performed with SPSS.

Inclusion Criteria: All MP positive patients were included.

Exclusion Criteria: Patients having thrombocytopenia secondary to other causes were not included.

RESULTS

100 patients with positive MP were evaluated from Jan 2015 to Nov 2016. Out of these, male patients were 51 (51%), while female patients comprised 49 (49%) of the total. The ratio of male to female was 1.04: 1, indicating almost equal distribution in both sexes. Fig 1 shows gender distribution.

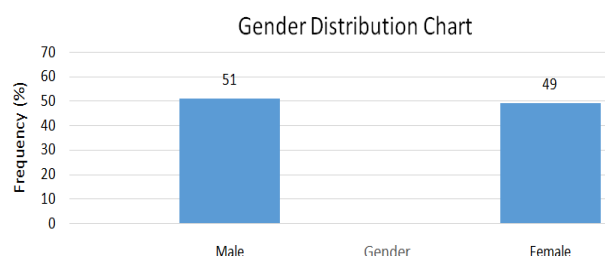


Figure No.1: Ratio of Male to Female: 1.04: 1

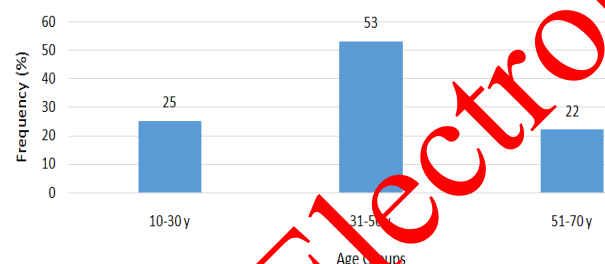


Figure No. 2: Age distribution chart

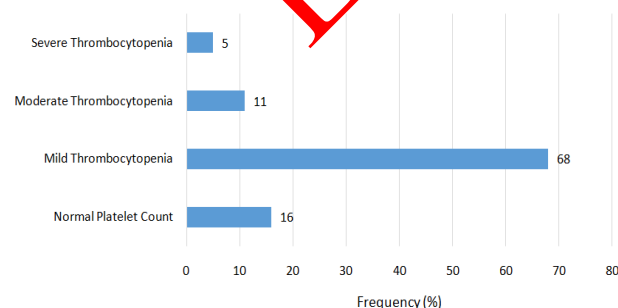


Figure No. 3: Frequency of severity of thrombocytopenia in malaria patients.

Out of these 100 patients, 25 were of age group 10-30 years. 53 belonged to age group 31-50 years, while 22 fell in age group 51-70 years. Fig 2 is showing age distribution.

68 patients had mild thrombocytopenia. 11 patients had moderate while 5 had severe thrombocytopenia. 16 patients had normal platelet count. Fig 3 shows the frequency of severity of thrombocytopenia.

DISCUSSION

In malaria, thrombocytopenia is usually mild to moderate and rarely has any symptoms. Derangement of hematological parameters is common in malaria. Thrombocytopenia is found in 60-80%⁶ of cases while anemia in 25% of cases⁷.

In a patient with acute febrile illness, presence of thrombocytopenia with anemia is essential guide for malaria⁸. In this study, there is some degree of thrombocytopenia in 84% patients. Looking at this figure, it is higher as compare to studies conducted by others, as 71% by Robinson⁹ and 58.97% by Rodrinquez et al¹⁰.

Thrombocytopenia in 53% malaria patients has been reported in Saudi Arabia by Bashwari et al¹¹. Thrombocytopenia with anemia in a patient with acute febrile illness is an important diagnostic clue as also reported by Ladhani et al¹². In Liberia, Mehmood et al¹³ studied 145 MP positive patients. Among these, thrombocytopenia is found in 109 (75.18%) patients. Now this has been agreed upon that thrombocytopenia is very common finding in malaria^{14, 15}. Recent studies from India also suggest strong association of thrombocytopenia with malaria^{16,17}. Other studies performed in Qatar and Venezuela have also reported thrombocytopenia in malaria^{18, 19}. Studies from Brazil have also found similar results²⁰.

CONCLUSION

In malaria, high frequency of mild to moderate thrombocytopenia has been reported. The combination of thrombocytopenia and anemia in patients with acute febrile illness raises possibility of malaria infection.

Author's Contribution:

Concept & Design of Study: Abdul Ahad
 Drafting: Abdul Jabbar
 Data Analysis: Bacha Amin Khan
 Revisiting Critically: Bacha Amin Khan
 Final Approval of version: Abdul Ahad

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

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Effect of Propranolol on Hepatic Blood Flow for Reduction of the Hepatotoxicity of Rifampicin in Rabbits

Effect of
Propranolol for
Reduction of the
Hepatotoxicity of
Rifampicin

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ABSTRACT

Objective: The study was undertaken in rabbits to investigate the effect of propranolol to reduce hepatotoxicity of rifampicin (RIF).

Study Design: Experimental study.

Place and duration of study: The study was conducted in Animal House of Baqai Medical University, from March 2015 to August 2015.

Materials and Methods: Animals were divided into three groups; control, RIF 100mg/kg for 28 days as single daily dose in oral solution and RIF plus propranolol (30 mg/Kg for 28 days) treated group. Liver function test and histological evaluation by H and E staining was carried at the end of dosing by using standard procedures.

Results: RIF caused significantly ($P < 0.05$) elevated the serum levels of ALT, ALP, AST and bilirubin as compared to control. These levels were also higher in RIF plus propranolol treated group but when comparing the levels in between group B and C, it was illustrated that propranolol provide significant protection to the RIF induced damage. Histology of liver sections also supported these results. Liver damage induced by RIF expressed as central vein dilation, infiltration of inflammatory cells, portal vein dilation and damage of hepatocytes. All of these changes successfully turned to normal by combined administration of propranolol.

Conclusion: Propranolol is non cardioselective beta blocker used to treat various cardiac and non-cardiac diseases including arrhythmia, hypertension, and portal hypertension and oesophageal varices. It was disclosed from above results that propranolol offer significant protection against RIF induced hepatotoxicity by decreasing the hepatic blood flow.

Key Words: Oesophageal varices, hepatotoxicity, portal hypertension, H and E staining, central vein, hepatocytes, inflammatory cells.

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INTRODUCTION

Pharmaceutical agents and herbal products should always be considered as a possible cause of liver injury¹. Rarely hepatitis and death due to liver failure have been observed in patients who received RIF. RIF may cause cholestatic jaundice and strongly induce cytochrome P450 which increases the elimination of several other drugs².

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Chronic liver disease, alcoholism and old age appeared to increase the incidence of severe hepatic problem when RIF is given alone or concurrently with isoniazid³. Weight reduction during antitubercular treatment was the most considerable risk factor for drug induced hepatotoxicity imposing interruption of anti-TB treatment⁴. The pathogenesis ranges from hepatic adaptive changes to hepatocellular damage⁵.

Propranolol is effective in the prevention of esophageal variceal bleeding⁶. This effect of propranolol is due to reduction in portal blood flow⁷⁻⁹. As propranolol reduces the portal blood flow, that might be effective in reducing the hepatotoxicity of RIF. Therefore, present study was designed to focus the effect of reduced hepatic blood flow induced by propranolol in reduction of hepatotoxicity of RIF.

MATERIALS AND METHODS

Animals: In the present study rabbits were selected as experimental animals due to the similarity in hematological biochemistry to human beings¹⁰. Thirty healthy male rabbit of weight 1200 to 1400 grams were

recruited from the animal house of Baqai Medical University, Karachi, Pakistan. All the animals were acclimatized for housing condition before starting the experiment.

Experimental design: All the animals were randomly divided into three groups and each group comprised of 10 animals. Drugs were administered orally for 28 days as following schedule.

Group A: Control group received distilled water.

Group B: received RIF 100mg/kg as single daily dose¹¹.

Group C: received RIF 100mg/kg and propranolol 30mg/kg single daily dose¹².

Sacrifice of animals and collection of blood sample: After 24 hours of last dose, the thoracic cage was exposed, approximately 5ml of blood was collected from each rabbit by cardiac puncture technique¹³. Blood sample were then transferred into gel tube and sent to the laboratory, where serum was separated by centrifugation at 4000rpm for 8 min. Alkaline phosphatase (ALP), alanine transaminase (ALT/SGPT) and γ -glutamyl transaminase (γ GT) and total bilirubin were estimated within 2 hrs of serum separation on automatic analyzer. All the animals were sacrificed and tissue samples were collected.

Preparation of liver tissue for histological examination: The liver of the animals were also collected and flushed with saline and put into 10 % normal buffered formalin. After 24 hours, liver tissues were embedded in paraffin wax as standard protocol. Five micrometer thick section were carried out from these block and put into poly-L-lysine coated glass slide and stained with haematoxylin and eosin as standard procedure¹⁴. The slides were observed under light microscope for histological changes induced by RIF alone and in combination with propranolol.

Statistical analysis of data: All the quantitative results were analyzed statistically using SPSS software version 21. Values were compared with control using ANOVA, considered $p < 0.05$ was significant.

RESULTS

Gross toxicity estimation: The animals of group A were active, healthy and well-responsive to external stimuli. The animals of group B looked lethargic, less active and ill as compared to control animals. But all the animals were alive and responsive. The livers of group B animals had regular architecture with smooth surface. The color of livers also appeared normal but they are slightly bigger as compared to control. The animals of group C were active and responsive but not as healthy as the control animals. All the animals of this group are alive and alert for external stimuli. The livers of group C animals had the smooth surface and regular architecture with typical color. The livers were also not adhesive to any other tissues and not contractive in group B and C.

Biochemical assessment for liver functions: The serum analysis of bilirubin and liver enzymes SGPT (ALT), ALT, GGT between control and treated groups were used for assessment of hepatic injury.

Mean serum level of ALT (IU/L), ALP (IU/L), GT (IU/L) and bilirubin (μ mol/L) of rabbits in group A, B and C and its comparison: Table 1 and 2 showed the mean serum levels of ALT, ALP, GT and bilirubin and their comparison in group A, B and C.

The data showed the significant increase in the ALT level in RIF treated group when compared with control while there is insignificant ($P > 0.05$) increase in ALT level was illustrated in RIF and propranolol treated group as compared to control. It was also indicated that there was significant ($P < 0.05$) difference in the mean between RIF treated and RIF plus propranolol treated groups.

Table No.1: Mean serum level of ALT, ALP, γ GT and bilirubin in group A, B and C

Parameters	Group A n=10	Group B n=10	Group C n=10
ALT(IU/L)	40.80 ± 1.14	87.10 $\pm$ 3.97	47.80 $\pm$ 1.81
ALP(IU/L)	42.60 $\pm$ 2.79	70.40 $\pm$ 3.35	27.20 $\pm$ 1.43
γ GT(IU/L)	8.00 $\pm$ 0.93	20.70 $\pm$ 1.28	12.60 $\pm$ 0.60
Total Bilirubin (μ mol/L)	8.52 $\pm$ 1.03	38.75 $\pm$ 2.50	19.10 $\pm$ 1.16

Data expressed as Mean $\pm$ SEM

Table No.2: Comparison of serum level of ALT, ALP, γ GT and bilirubin in group A, B and C

Parameters	A vs B		A vs C		B vs C	
	Difference of mean	p-Value	Difference of mean	p-Value	Difference of mean	p-Value
ALT (IU/L)	-46.30*	0.00	-7.00	0.158	39.30*	0.00
ALP(IU/L)	-27.80*	0.00	-15.40*	0.01	43.20*	0.00
γ GT (IU/L)	-12.70*	0.00	-4.60*	0.07	8.10*	0.00
TOTAL BILIRUBIN (μ mol/L)	-30.23*	0.00	-10.58*	0.00	19.65*	0.00

* $P < 0.05$

When comparing the differences of means of ALP levels between these groups, it was showed that there is a significant ($p < 0.05$) differences in mean between control group A verses group B, B verses C and A verses C.

The data of comparison of means showed the significant ($p < 0.05$) increase in the γ GT levels in group D as compare to group A and group B as compare to group C. The difference of means of γ GT was insignificant ($p > 0.05$) between group A and C.

The data showed that there was no significant ($p > 0.05$) increase in the serum bilirubin level in group C verses A. But there was significant difference ($p < 0.05$) in the level of bilirubin in group A verses B and group B verses C.

Microscopic examination

At 100X, liver sections of group A animals showed normal architecture of hepatic lobules. Each lobule is illustrated by a radial arrangement of hepatocytes around the central vein. The cell cords are separated by narrow blood sinusoid (a). At 400X magnification, the structure within the portal triad showed portal vein, hepatic artery and 1-2 bile ducts (b).

At 100X magnification, liver sections of RIF treated rabbit liver showed slightly disturbed hepatic architecture with moderate sinusoidal dilation especially in pericentral area. The central vein was observed moderately dilated and congested (c). The portal tract is moderately infiltrated with mononuclear cells and with moderate congestion. At 400X, mononuclear cell infiltrations observed with dilated and congested portal vein (d).

At 100X magnifications, liver sections of RIF and propranolol treated rabbit liver showed normal hepatic lobule radiating from the central vein with almost normal sinusoidal spaces. The central vein also appeared normal and congestion and inflammation is nearly absent (e). At 400X minimal inflammatory cells were spotted in portal tract. Portal tract consist of portal vein artery and bile duct also appeared normal and uncongested (f).

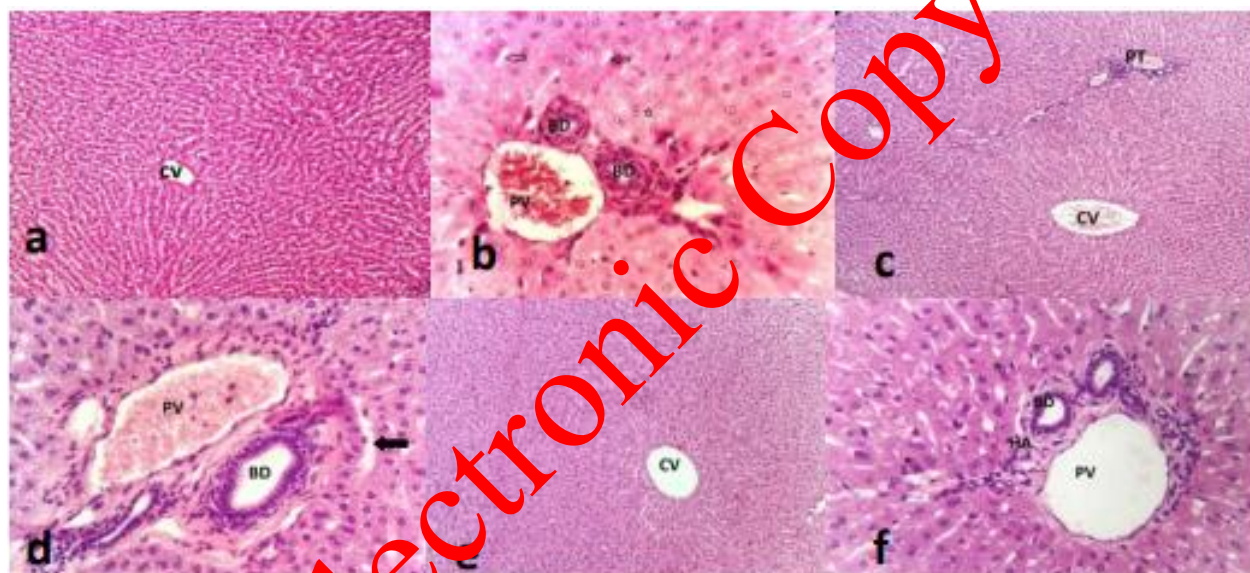


Figure No.1; Photomicrograph of 5 micron thick H & E stained paraffin section from liver of rabbits. (a) and (b) group A (control); (c) and (d) group B (RIF treated group); and (e) and (f) (RIF and propranolol treated group). Central vein (CV), portal vein (PV), duct (BD),

DISCUSSION

Hepatotoxicity of antitubercular drug is very important and unavoidable adverse effect. As RIF is the vital component of antitubercular therapy. Large body of literature discussed the hepatotoxicity of RIF in combination with other antitubercular drugs and alone. In this research RIF alone and in combination with propranolol were administered to report the hepatotoxic effects of RIF and outcome of propranolol on RIF hepatotoxicity in rabbits. The animals of group B i.e. RIF treated group are lethargic and less active as compared to group A and group C. The liver of group B is slightly enlarged. But the liver of group C is nearly appeared as control.

Enzymatic and non enzymatic evaluation of hepatic functions considered as preliminary testing of hepatotoxicity¹⁵. In the present study the serum levels of ALT, ALP, γ GT and bilirubin were considerably high in group B as compared to group A and C (table 1). The comparison of mean values of ALT, ALP, γ GT and bilirubin (table 2) in group B and C was also statistically significant which revealed that RIF potentially raised the hepatic function which was also documented by many scientist^{16, 17}. But coadministration of propranolol effectively reversed the raised levels of ALT, ALP, γ GT and bilirubin although these values are high in group C as compared to group A except mean value of serum ALT. It has been reported that propranolol alone and in combination with ginger can reduce the serum levels of ALP and ALT¹⁸.

Histological evaluations of liver tissues of group B showed variable degree of damage presented as inflammation and dilation of central and portal vein with congestion. Minor fatty changes were also observed with swollen hepatocytes. Fatty changes and mononuclear cell infiltration within portal tract and pericentral area was mainly due to RIF itself and its toxic metabolites formed during biotransformation¹⁹⁻²¹. RIF and INH cause portal triditis, necrosis specially piecemeal necrosis and it was also concluded that 50 mg/Kg of both drugs are enough to produce hepatotoxic model²². It has been reported that eosinophilic infiltrations in portal tracts, lobular inflammation, Kupffer cells hyperplasia apoptotic hepatocytes, sinusoidal dilations and central vein damage produced by combination of INH and RIF^{23, 24}. In present study RIF alone also produced these kinds of hepatic changes especially sinusoidal dilation, portal triditis and apoptotic hepatocytes. In group C the rabbit liver showed mild degree of inflammation and slight sinusoidal dilation. The portal tract was also mildly congested with dilated portal vein. The comparison of group B and C disclosed that RIF induced toxicity was reduced by propranolol. The hepatotoxicity of RIF was reduced by cimetidine as it is the potent inhibitor of cytochrome P 450²⁴. Hepatotoxic effects of RIF and INH was also reduced by vitamin E and these effects are highly comparable with cimetidine²⁵. It has been recently reported that propranolol can reduced the hepatotoxicity of RIF showed by micrometric estimation of H and E stained liver tissue and scanning electron microscopy²⁶. Similar results were observed in group C rabbits that RIF and propranolol was co administered and hepatotoxicity produced by RIF was reduced.

CONCLUSION

Thus it is concluded that propranolol is effective in reduction various hepatic complications. RIF is reported hepatotoxic drugs and produced classical signs of hepatotoxicity manifested as alteration in hepatic biochemistry and histology. These alterations were not exactly but to the significant level reversed by propranolol.

Author's Contribution:

Concept & Design of Study: Hina Abrar
 Drafting: Muhammad Rashid Ahmed
 Data Analysis: Asma Basharat Ali
 Revisiting Critically: Hina Yasin, Sadaf Ibrahim
 Final Approval of version: Hina Abrar

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

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Effects of Cleome Brachycarpa Ethanol Extract on Liver and Kidney Tissues of Rats: A Prospective Study Focusing on Histopathological Variations

Hira Naeem¹, Rehana Parveen¹, Ijaz Hussain Zaidi² and Mohammad
Mahmood³

ABSTRACT

Objective: To know the histological and morphological changes after treating Cleome brachycarpa ethanol extract on liver and kidney tissues in rats.

Study Designs: Experimental/interventional comparative study.

Place and Duration of Study: This study was conducted at the Department of Pharmacology, Baqai Medical College University, Karachi from 20 June 2014 to 15 Oct 2015.

Materials and Methods: Albino rats (200±5 grams) were collected from a maintained and well established animal house of Hussain Ebrahim Jamal (HEJ) Research Institute of Chemistry, University of Karachi. The animals were housed for 12/12 hours light/dark cycle in the animal house of Baqai Medical University at a temperature of about 25±2°C. Animals in Group A (Control, n=09), albino rats (200±5 grams) were given normal saline orally. In Group B: (Test, n=09) in this group albino rats (200±5 grams) received Cleome brachycarpa extract 200 mg/kg orally for fifteen days.

Results: Few morphological and pathological changes were observed in the liver & kidney tissues of treated animals at the dose of 200 mg/kg. Normal parenchyma (B) cells of liver were found, but in kidney tissues figure 2(B) mild tubulitis but in figure 2(C) intra-tubular neutrophilic cast (A) was found in figure 2(D) & no any other changes observed. Significant congestion of portal tract (A) was found. Significant lobular inflammation (A) was found. Inflammatory cells were present in central vein and portal tract (A) Figure 1(d). No any fatty alteration and necrotic changes were found. Fibrotic changes, Steatosis and Cholestasis were not found but in kidney tissues figure 2(b) and c showed patchy tubulitis. Intratubular neutrophilic cast (A) was found in figure 1(d) and no any other change observed.

Conclusion: This study established that Cleome brachycarpa do not have marked effect on histopathological features of liver and kidneys. However, mild inflammation was seen in liver and kidneys which may be beneficial in remedial progression. Therefore the extract of Cleome brachycarpa is less toxic and further studies are required to determine its human consumption.

Key Words: Cleome brachycarpa, liver and kidney tissues

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INTRODUCTION

Cleome brachycarpa is an annual woody herb up to 50 cm high. It is branched with leaflets of about 5-15 mm long, 2-4 mm broad.

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Petioles of Cleome brachycarpa are long up to 25-35 mm and its smooth pedicels are 10-15 mm long. Flowers are bright yellowish and 6-8 mm across. Sepals are 2-3 mm while petals are usually 6-8 mm elongated and 2-2.5 mm wide with tiny scale-like basal attachment (Flora of Pakistan)¹.

The herb of Cleome brachycarpa usually recognized as Ponwar, bitter in taste and is used in the treatment of different diseases like arthritis, inflammation, itching, leprosy, leukoderma, rheumatism, scabies, swelling etc. Its different extracts used in treating wide range of medical problems e: g it works best as an antioxidant agent. Pakistan, Iran and India are chief countries of its cultivation. Different parts of the plant Cleome brachycarpa are frequently used including leaves, root and flowers in managing a number of ailments. (Herbopathy)².

Ahmad et al. (1986)³ worked on *Cleome brachycarpa* and isolated a new terpenoid, recognized as trinortriterpenoid. Ahmad et al. (1990)⁴ evaluated different parts of the *Cleome brachycarpa* and alienated a new triterpenoid, named as, cleocarbpone from it. Different species of *Cleome* including *droserifolia*, *amplyocarpa*, *brachycarpa*, *chrysantha* were searched by Sharaf et al. (1992)⁵ and they isolated 10 different methylated flavonoids from the diverse parts of the plant. General pollen characteristics and morphology of *Cleome brachycarpa* was studied by Perveen and Qaiser (2001)⁶ with the help of light and scanning microscope. Rahman et al. (2004)⁷ enlightened the anti-inflammatory property of *Cleome brachycarpa* leaves in the rheumatic pain management. The use of whole plant of *Cleome brachycarpa* in joint pain and inflammation was demonstrated by Mushtaq et al. (2006)⁸. In Dera Ismail Khan, District the use of whole plant of *Cleome brachycarpa* was described. According to their research it has great potential of treating scabies and abdominal pain. Local name of *Cleome brachycarpa* is Dhanar Khathuri reported by Rahmatullah et al. (2010)⁹. They also described the utilization of whole plant of *Cleome brachycarpa* in the joint pain and in inflammation. Ali et al. (2012)¹⁰ testified the anti-oxidant action of ethanol extract of *Cleome brachycarpa*. Mohammad and Salman (2013)¹¹ choose chicks as experimental animals, to evaluate the anti-emetic property of *Cleome brachycarpa* and *Cleome viscosa* leaves. Schmelzer and Gurib-Fakim (2013)¹² defined the whole plant of *Cleome brachycarpa* and described the use of the different parts of the plant, *Cleome brachycarpa*, in different regions of the world. The dried powder of the herb, *Cleome brachycarpa*, used for the controlling of infants fever and in reducing inflamed body parts. Other uses of the plant was mentioned as an appetizer and as animal feed. In Pakistan *Cleome brachycarpa* is used in the powder form in stomach problems, scabies, rheumatism, abdominal pain and inflammation treatment and management.

MATERIALS AND METHODS

Animal and plant material: Albino rats of weight 200 ± 5 grams were gathered from a conserved and well reputable animal stock of Baqai Medical University and were kept in a light/dark cycle of 12/12 hours at approximately $25 \pm 2^\circ\text{C}$ temperature. Ethical Committee of Baqai Medical University approved the experimental work before the start of the research. Experimental animals were provided with a balanced diet and were weighted approximately 200 ± 5 grams one week earlier to the study. Fifty four (54) albino rats of weight approximately 200 ± 5 grams were selected and histopathological effects of *Cleome brachycarpa* extract were evaluated. All the research animals (Wister strain albino rats) were separated into two groups (A and B)

comprising of 9 rats in each group. The experiment was repeated three times for the accuracy purpose.

The plant *Cleome brachycarpa* was taken from department of pharmacognosy, faculty of pharmacy, University of Karachi.

Experimental design:

Treatment: Control group A of animals consisting of 9 rats ($n=09$) of 200 ± 5 grams weight were treated with only normal saline orally for fifteen days. The test Group B containing up of 9 rats ($n=09$) of 200 ± 5 grams weight treated with the ethanolic extract of *Cleome brachycarpa* 200 mg/kg orally for fifteen days.

Sacrifice of animals: Anesthesia was produced through chloroform inhalation and dissection was performed to remove the organs like liver and kidney after opening the abdominal region. Sectioning and staining of both organs were performed and well-preserved in 10% formalin solution. Histopathological variations produced after the treatment were noticed and examined by making slides of the preserved treated organs (liver and kidney).

Tissue processing: Samples of treated rat's organs including liver and kidney were kept in formalin solution for about 24-48 hours then dehydrated with 60%-70% ethanol and then to 90%-95% ethanol for one hour approximately till the clear stage was attained. The absolute alcohol and xylene gave element transparency to organ tissues. Tissues of experimental animals, albino rats were surrounded by liquefied parablax at 58°C in metal fragments. The blocks prepared were cooled, labeled and sliced by Rotary microtome to five (5) microns thickness. Sections were mounted on clean gelatinized slides and placed on hot plates at about 37°C for 24 hours for suitable fixation. The H and E stains (Hematoxylin and Eosin stains) were used to stain the sides.

The dried and labelled slides were reserved in plastic and wooden boxes (Bancroft and Stevens, 1990) and were studied under microscope through 10x, 20x and 40x objectives.

RESULTS

In this research effort, liver and kidney of experimental animals were taken part to perceive the differences in the different parameters including morphological and histological structures after giving the dose of *Cleome brachycarpa* at 200 mg/kg/body weight to the experimental animals (rats). Treated and untreated experimental animals (albino rats) were inspected for their morphologically and histologically changes. The treated outcomes were observed and listed in table 1

Liver histological and pathological changes after *Cleome brachycarpa* dosing on rats: Liver and kidney tissues of treated animals (Albino rats, Wister Strain) and untreated group of experimental animals (Albino rats, Wister Strain) were examined and compared to note the changes after treatment. The liver

of experimental animals of control group comprises up of lobules, each lobule is hexagonal and is positioned on hepatic vein named as central vein moreover sinusoids and hepatocytes were also seen, mentioned and labelled as (A), (B) and (C) respectively as shown in Figure 1(a)

Some changes were observed in the morphology of liver tissues of the treated rats at the dose of 200 mg/kg. Parenchymal cells of liver were found normal mentioned as (B) in Figure 1(b, c). Congestion was noticed in the portal tract which was quite significant and mentioned as (A) in Figure 1(b). Significant inflammation was found in the lobular region of the liver mentioned as (A) in Figure 1(c)

Some of the inflammatory cells were seen in central vein and portal tract which were mentioned as (A) in Figure 1(d). Certainly not any fatty and necrotic modification were found. Cholestasis, Steatosis and Fibrotic modification were not bring into being after the treatment.

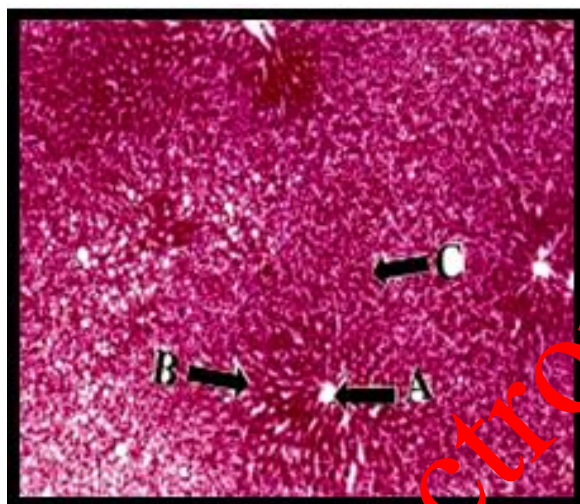


Figure No.1(a): Control

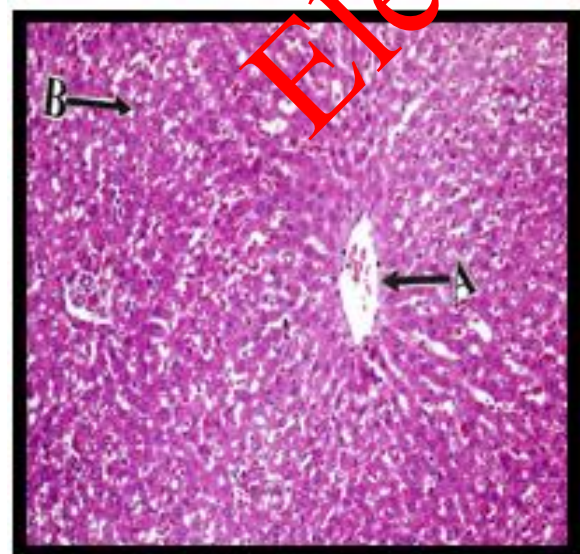


Figure No.1(b): Treated

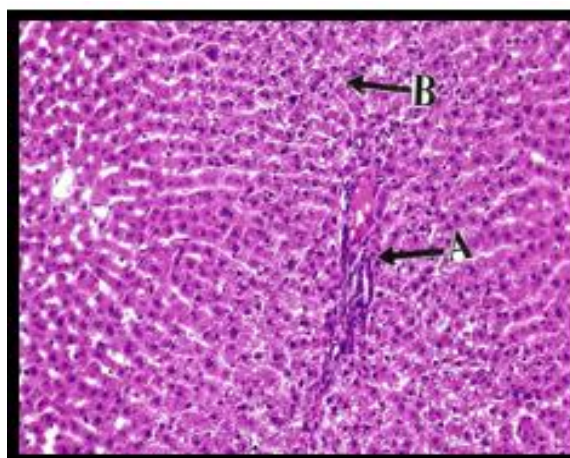


Figure No.1(c): Treated

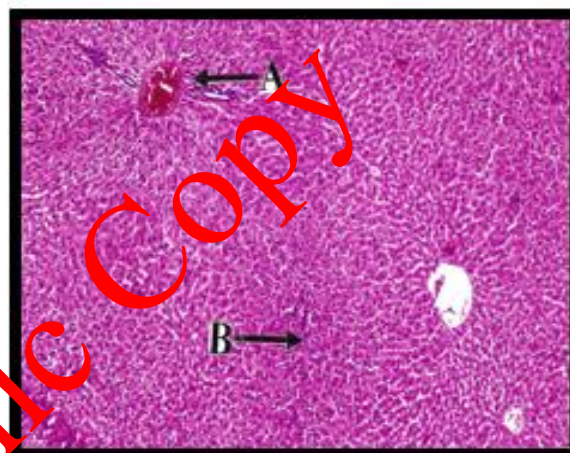


Figure No.1(d): Treated

Figure No.1: Sections (a) of liver of rat (control) showing normal central vein (A), sinusoids (B) and hepatocytes (C); (b) portal tract congestion (A), Normal parenchyma (B); (c) lobular inflammation (A), Normal parenchyma (B); (d) portal tract inflammation (A) following treatment of rates with cleome brachycarpa

Kidneys histological and pathological changes after Cleome brachycarpa dosing on rats:

General architecture of the kidney through microscopic examination was found normal in the control group of experimental animals (Albino rats, Wister Strain) including normal renal corpuscle and renal tubules mentioned as (A) and (B) respectively in Figure 2 (a).

Some changes were observed in the morphology of kidney tissues of the treated rats at the dose of 200 mg/kg of Cleome brachycarpa.

Glomeruli of the kidney was found normal and mentioned as (A) but mild to moderate patchy tubulitis was also established which was marked as (B) in Figure 2 (b). Insignificant tubulitis was also found in another slide and was mentioned as (A) in Figure 2 (c). No any shrinkage of glomeruli of the kidney was noticed but intratubular neutrophilic cast, marked as (A) was found

in Figure 2 (d). Hemolysis and edema were not observed after treatment moreover no fibrotic variations in interstitial was initiated.

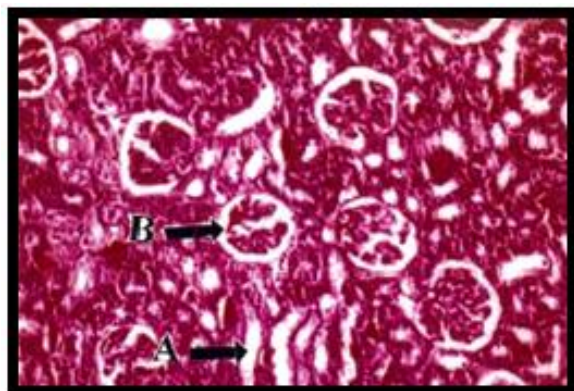


Figure No.2(a): Control

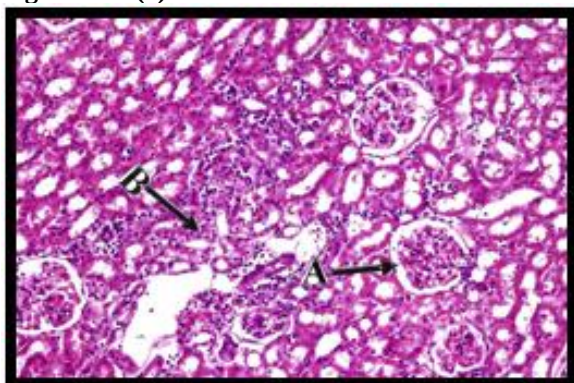


Figure No.2(b): Treated

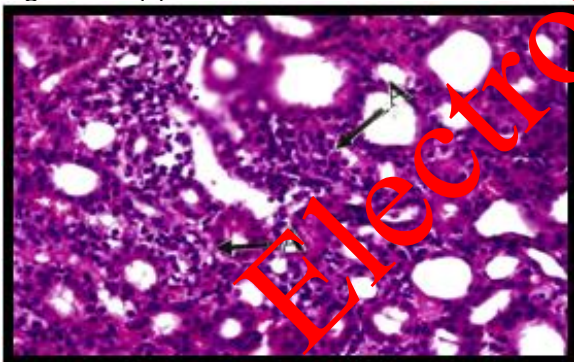


Figure No.2(c): Treated

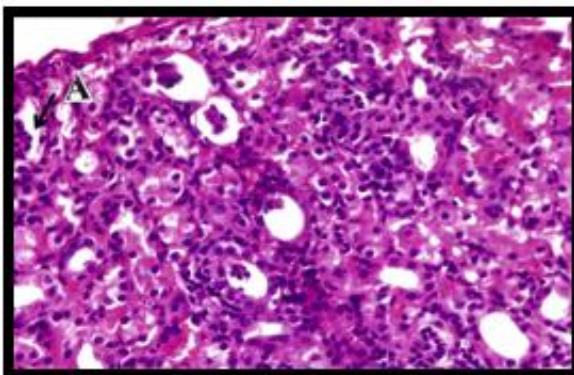


Figure No.2(d): Treated

Figure No.2: Sections (a) of rat kidney (control) showing renal corpuscle (A) and tubules (B); (b) showing normal glomeruli (A), mild-moderate patchy tubulitis (B); (c) Mild tubulitis (A) and (d) showing Intratubular neutrophilic cast (A) following treatment of rats cleome brachycarpa (200mg/kg)

Table No.1: Gross Features of Liver and Kidney Tissues of Rats

Features	Control	Treated
Liver Tissues		
General Architecture	Normal and intact	Normal and intact
Central Vein	No congestion and delation was present	Dilatation of portal tract was found
Inflammatory cells	Not present	No any necrotic changes were observed
Necrosis	Not present	No any necrotic changes were observed.
Fibrotic changes	Not present	Fibrotic changes were not seen.
Fatty changes	Not present	No any fatty alteration was found.
Portal tract	No congestion and dilation	Significant congestion of portal tract was found.
Kidney Tissues		
General Architecture	Normal and intact	Normal and intact
Renal tubules	Normal	Congestion is renal tubulus were found Milk tubulitis and intratubular neutrophilic cast was found.
Renal Corpuscles	Normal	Normal
Glomeruli	Normal	Normal glomeruli was found without any shrinkage.
Blood vessels	Normal in size and appearance	No haemolysis was found and no any edema was present in interatitium.
Necrosis	Not found	Not found
Inflammatory cells	Not present	Not present
Cellularity	Normal	Cellularity was normal.
Basement membrane	Normal	Normal

DISCUSSION

To the best of our acquaintance, the pathological effects of the ethanoic extract of Cleome brachycarpa plant on the liver and kidney tissues of the experimental animals (albino rats, Wister strain) are being testified for the first time in this experimental work.

In this research homework, different effects including histopathological effects, of Cleome brachycarpa at 200 mg/kg dose on the Wister strain albino rats divided in

two groups (control and treated) were evaluated. The effects and changes in the liver and kidney tissues of albino rats in treated (group B) animals were observed after dosing and were compared with the same organs of the normal group A (control) of experimental albino rats.

Oladele and Abatan (2003)¹³ appraised biochemical and histopathological parameters of *Cleome viscosa* leaves extract in albino rats and reported that the plant is nephrotoxic.

The general building and morphology of liver and kidney tissues were found normal through microscopic examination after the administration of ethanolic extract of *Cleome brachycarpa* for 15 days to group B (treated) rats.

Consistent parenchymal cells marked as (B) were seen. Inflammation of portal tract was initiated and labelled as (A) in figure 1(b). Inflammation of lobules were also noticed and mentioned as (A) in figure 1(c). Congestion of portal tract was found significant and mentioned as (A) in figure 1(d).

Levibovitch et al. (1991)¹⁴ evaluated the activity of serum alkaline phosphatase in the renal damage.

Elimination of metabolites is one of the most important function of kidney. So, in this prevailing research work kidney histopathological discrepancies were evaluated after 200 mg/kg dosing of *Cleome brachycarpa* for 15 days to Wistar strain albino rats of group B (treated).

Microscopic inspection disclosed the standard overall architecture of kidney after treatment of 15 days. Glomeruli was found absolutely normal without any contraction mentioned as (A) in figure 2(b) and (c). Patchy tubulitis (B) was also recognized in figure 2(b) and (c). Intratubular neutrophilic cast (A) was also an important feature mentioned in figure 1(d). Renal parenchyma was found absolutely normal with not any significant changes.

CONCLUSION

According to this present study the extract of *Cleome brachycarpa* is less toxic. In past no any histopathological studies were done on *Cleome brachycarpa*. The plant is used as herbal medicine in many countries as it produced negligible side effects. Further investigations are required for its human consumption.

Author's Contribution:

Concept & Design of Study:	Hira Naeem
Drafting:	Rehana Parveen
Data Analysis:	Ijaz Hussain Zaidi
Revisiting Critically:	Mohammad Mahmood
Final Approval of version:	Hira Naeem

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

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Prevalence and Presentation of Thyrotoxicosis at Sialkot

Saleh Muhammad¹, Asif Javed², Mansoor Hassan¹ and M. Awais³

ABSTRACT

Objective: To assess the Prevalence and Presentation of Thyrotoxicosis at Sialkot.

Study Design: Prospective Study.

Place and Duration of Study: This study was conducted at the Idris Teaching Hospital (SMS) Sialkot and Allama Iqbal Memorial Teaching Hospital (KSMC) Sialkot from January 2014 to April 2017.

Materials and Methods: We included in this prospective study 100 newly diagnosed patients of. Patients were examined for their signs and symptoms as well as their clinical and family history of thyroid disorders. The blood samples of these patients were drawn and preserved at -80C. Patients were clinically diagnosed into hyperthyroidism by thyroid function test utilizing RIA. Patients having clinically visible enlarged swelling in front of neck were subjected to 99Tc Pertechnetate thyroid imaging. Patients in this study were of all ages and both genders. An informed consent was obtained from each individual participant. The data was recorded on designed performa. Initial screening included complete thyroid profile to identify thyrotoxicosis.

Results: In this study the prevalence of the patients of Thyrotoxicosis was higher (31%) n=31 at the age group of 41-50 years as compared to other age groups. Maximum (90%) n=90 patients were females as compared to male (10%) n=10. The patients of Thyrotoxicosis from rural population were (68%) n=68 & (32%) n=32 from urban population. Loose stools were present in (49%) n=49, (7%) in male and (42%) in female, anxiety was present in (85%) n=85 patients (10%) in male & (75%) in female, hair loss was present in (35%) n=35 patients, (05%) male & (30%) in female. Menstrual irregularities was present in (45%) n=45 of the female, heat intolerance was present in (64%) n=64 of the patients (4%) in male & (60%) in female, periorbital edema was present in (24%) n=24 of the patients, (01%) in male and (23%) in female, hoarseness was present in (38%) n=38 of the patients, (03%) in male and (35%) in female, sweating was present in (68%) n=68 of the patients, (05%) male & (63%) in female, exophthalmos was present in (49%) n=49 of the patients, (06%) in male & (43%) in female, tremors were present in (74%) n=74 of the patients, (10%) in male & (64%) in female, shortness of breath was present in (70%) n=70 of the patients, (05%) in male & (65%) in female, increased appetite was present in (53%) of the patients, (06%) in male & (47%) in female, polyuria was present in (40%) n=40 of the patients, (04%) in male & (36%) in female, goiter was present in (75%) n=75 of the patients, (09%) of male & (66%) in female of the Thyrotoxicosis. The mean age was 40±13SD. The mean ±SD of BMI was 23.65±6.70, 19.66±3.78 in male & 25.67±4.70 in female, free T3 was 7.25±1.9nmol/l as total 7.3±1.8 nmol/l in male & 6.85±2.4 nmol/l in female, total TSH(uU/ml) was 0.63±0.17(uU/ml), 0.63±0.15(uU/ml) in male & 0.59±0.29(uU/ml) in female.

Conclusion: People awareness about the dietary iodine intake is necessary in our country to overcome the increased prevalence of the thyroidal dysfunction in our population. It is observed that hyperthyroid state is more common in our population.

Key Words: Thyrotoxicosis, RIA, Goiter, Prevalence.

Citation of articles: Muhammad S, Javed A, Hassan M, Awais M. Prevalence and Presentation of Thyrotoxicosis at Sialkot. Med Forum 2017;28(7):115-118.

INTRODUCTION

Changes in the hypothalamus-pituitary-thyroid axis (HPT) usually affects the whole body mechanisms by disturbing thyroid function¹.

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Thyroidal disease and diabetes mellitus are most common glandular disorders all around the world, irrespective of the gender and age². Most thyroid hormone derangements may vary from subclinical which is asymptomatic with abnormal TSH level and normal free T3 and T4 levels to clinically symptomatic with abnormal T3 and T4 levels³. Besides this, common thyroid dysfunctions include subclinical phases, goiter, iodine deficiency disorders, Hashimoto's thyroiditis, Graves disease and thyroid cancer. The thyroid disorders have been reported in over 110 countries of the world with 1.6 billion people at risk⁴. Iodine is essential for producing T3 and T4^{6,7}. Iodine deficiency usually prevails over one third part of the world. The prevalence of goiter in areas of severe iodine deficiency can be up to 80%⁸. Iodine deficiency

is the basis of high prevalence of thyroid disorders in South Asian population as well⁹. In many cases mainly goiter is the sole reason for patient to screen for thyroid disorder by their physician. Prevalence as high as 12% and 23% of goiter has been reported in India in adults and children¹⁰ respectively. In Pakistan, the prevalence of hyperthyroidism is reported to be 5.1%. It is also perceived that the prevalence of both hyperthyroidism and hypothyroidism (subclinical or overt) is higher in females than males¹¹.

Hence, improved public awareness about thyroidal ailments is one of the important factor to cope with this disorder.

MATERIALS AND METHODS

This prospective study was conducted at the Idris Teaching Hospital Sialkot and Allama Iqbal Memorial Teaching Hospital Sialkot from January 2014 to April 2017. We included in this prospective study 100 newly

diagnosed patients of. Patients were examined for their signs and symptoms as well as their clinical and family history of thyroid disorders. The blood samples of these patients were drawn and preserved at -80C. Patients were clinically diagnosed into hyperthyroidism by thyroid function test utilizing RIA. Patients having clinically visible enlarged swelling in front of neck were subjected to ⁹⁹Tc Pertechnetate thyroid imaging. Patients in this study were of all ages and both genders. An informed consent was obtained from each individual participant. The data was recorded on designed performa. Initial screening included complete thyroid profile to identify thyrotoxicosis.

RESULTS

In our study the prevalence of the patients of Thyrotoxicosis was higher (31 %) n=31 at the age of 41-50 years as compared to other age groups as shown in table no. 01 .

Table No.1: Age & Sex Distribution in Patients of Thyrotoxicosis

Sr No	Age (Years)	No of Patients (%)	Male (%)	Female (%)
1	10-20	10	1 (1%)	9 (9%)
2	21-30	14	3 (3%)	11 (11%)
3	31-40	23	1 (1%)	22 (22%)
4	41-50	31	2 (2%)	29 (29%)
5	51-60	10	1 (1%)	9 (9%)
6	61-70	12	2 (2%)	10 (10%)
	Total	100 (100 %)	10 (10 %)	90 (90%)

Table No. 2: Area Distributions in Patients of Thyrotoxicosis

Sr No	Area	No of Patients	Male %	Female %
1	Urban	32 (32%)	3 (3%)	29 (29%)
2	Rural	68 (68%)	7 (7%)	61 (61%)
	Total	100 (100%)	10 (10%)	90 (90%)

Table No. 3: Distributions of Clinical Signs and Symptoms in Patients of Thyrotoxicosis

Sr No	Signs and Symptoms	Male %	Female %	Total %
1	Loose stools	7 (7%)	42 (42%)	49 (49%)
2	Anxiety	10 (10%)	75 (75%)	85 (85%)
3	Hair loss	5 (5%)	30 (30%)	35 (35%)
4	Menstrual irregularities	-	45 (45%)	45 (45%)
5	Heat intolerance	4 (4%)	60 (60%)	64 (64%)
6	Hoarseness	3 (3%)	35 (35%)	38 (38%)
7	Sweating	5 (5%)	63 (63%)	68 (68%)
8	Exophthalmos	6 (6%)	43 (43%)	49 (49%)
9	Tremors	10 (10%)	64 (64%)	74 (74%)
10	Increased Appetite	6 (6%)	47 (47%)	53 (53%)
11	Polyuria	4 (4%)	36 (36%)	40 (40%)
12	Goiter	9 (9%)	66 (66%)	75 (75%)

Table No. 4: Biochemical Parameters in patients of Thyrotoxicosis

Sr No	Biochemical Parameters	Male Mean±SD	Female Mean±SD	Total Mean±SD
1	BMI (kg/m ²)	19.66±3.78	25.67±4.70	23.65±3.70
2	FreeT3 (nmol/l)	7.3±1.8	6.85±2.4	7.25±1.9
3	FreeT4 (nmol/l)	202.0±19.2	199.1±23.6	201.7±19.5
4	TSH (uU/ml)	0.63±0.15	0.59±0.29	0.63±0.17

Prevalence was maximum (90%) n=90 females patients as compared to male (10%) n=10 as shown in table no. 01. The patients of Thyrotoxicosis from rural area were (68%) n=68 & (32%) n=32 from urban population as shown in table no. 02. Loose stools were present in (49%) n=49, (7%) in male and (42%) in female, anxiety was present in (85%) n=85 patients (10%) in male & (75%) in female, hair loss was present in (35%) n=35 patients, (05%) male & (30%) in female. Menstrual irregularities was present in (45%) n=45 of the female, heat intolerance was present in (64%) n=64 of the patients (4%) in male & (60%) in female, periorbital edema was present in (24%) n=24 of the patients, (01%) in male and (23%) in female, hoarseness was present in (38%) n=38 of the patients, (03%) in male and (35%) in female, sweating was present in (68%) n=68 of the patients, (05%) male & (63%) in female, exophthalmos was present in (49%) n=49 of the patients, (06%) in male & (43%) in female, tremors were present in (74%) n=74 of the patients, (10%) in male & (64%) in female, shortness of breath was present in (70%) n=70 of the patients, (05%) in male & (65%) in female, increased appetite was present in (53%) of the patients, (06%) in male & (47%) in female, polyuria was present in (40%) n=40 of the patients, (04%) in male & (36%) in female, goiter was present in (75%) n=75 of the patients, (09%) of male & (66%) in female of the Thyrotoxicosis as shown in table no. 03. The mean age was 40 ± 13 SD. The mean $\pm$ SD of BMI was 23.65 ± 3.70 , 19.66 ± 3.78 in male & 25.67 ± 4.70 in female, free T3 was 7.25 ± 1.9 nmol/l in male & 7.3 ± 1.8 nmol/l in male & 6.85 ± 2.4 nmol/l in female, total TSH(uU/ml) was 0.63 ± 0.17 (uU/ml), 0.63 ± 0.15 (uU/ml) in male & 0.59 ± 0.29 (uU/ml) in female as shown in table no. 04.

DISCUSSION

Thyroid hormone is necessary for normal growth, development, metabolic regulation neuronal differentiation, in mammals and are required for metamorphosis in amphibians¹². These actions are most apparent in conditions of thyroid hormone deficiency leading to hypothyroidism, or hyperthyroidism a condition arise due to excess of thyroid hormone production¹³. Thyroidal events are usually the result of different contributing factors like geographical distribution, food habits, dietary iodine consumption and genetic predisposition¹⁴.

The present study was aimed to determine the pathophysiological manifestations and prevalence Thyrotoxicosis in Sialkot. In our study, among 100 Thyrotoxicosis patients, 90% were females and 10% were males, which showed that females are more prone to have Thyrotoxicosis. Thyrotoxicosis is reported to be more common in women (2% to 5%) with female to male ratio up to 5:1 between the ages of 20-40¹⁵. However, in our study this investigation female to male

ratio is 9:1, there is increased prevalence of Thyrotoxicosis state especially in females. In our study peak age for Thyrotoxicosis is 31-40 years. Many studies have also reported the increase in the prevalence of thyroid disorders in middle age. High prevalence of hyperthyroidism in Pakistani population is reported by several studies. Being an iodine deficient region the increased prevalence of hyperthyroidism might be due to autoimmune disorder or due to inconsiderate use of iodized salt in the diet due to which thyroid gland becomes hyper functional leading to the state of hyperthyroidism¹⁶.

Most thyroid dysfunctions are autoimmune in nature; Graves's diseases accounts for the thyrotoxicosis and Hashimoto's thyroiditis for hypothyroidism. Goiter is one of the leading outcomes of the altered thyroid biology. In our data Thyrotoxicosis, 90% female and 10% male. The occurrence of goiter and thyroid disease is determined by complex interplay among gender, environmental and genetic factors, and the major environmental factor that determines the goiter dominance is iodine intake status. In addition to this, higher prevalence of goiter among female is attributed to proliferative effect of estrogen on thyrocytes in the thyroid gland¹⁷.

In our investigation, common symptoms observed in thyrotoxicosis state were heat intolerance (64%), anxiety (85%), menstrual irregularities (45%), and hoarseness (38%).

Clinically profound symptoms of the hyperthyroidism were weight loss, increased hunger, weakness, and tremors of hands, elevated heartbeat, goiter, loose stools, anxiety, exophthalmos, increased sweating, and heat intolerance¹⁸. In this study, clinical symptoms of thyrotoxicosis were loose stools (49%), and heat intolerance (64%), tremors (74%), sweating (68%), anxiety (85%) and increased appetite (53%).

CONCLUSION

People awareness about the dietary iodine intake is necessary in our country to overcome the increased prevalence of the thyroidal dysfunction in our population. It is observed that hyperthyroid state is more common in our population.

Author's Contribution:

Concept & Design of Study:	Saleh Muhammad
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Data Analysis:	Asif Javed, M. Awais
Revisiting Critically:	Mansoor Hassan
Final Approval of version:	Saleh Muhammad

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

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Frequency and Presentation of Wheel Spoke Injury of Heel at Plastic Surgery Department of Allama Iqbal Memorial Teaching Hospital, Sialkot

Sarfaraz Ahmad¹, Omair Muhammad Siddique², Nimra Ikram³ and Kamran Hamid²

ABSTRACT

Objective: The purpose of this study was to assess demographic distribution and presentation of spoke wheel injury at Sialkot.

Study Design: Retrospective / Cross sectional study

Place and Duration of Study: This study was conducted at the Plastic Surgery Department of Allama Iqbal Memorial Teaching Hospital Sialkot from December 2015 to December 2016.

Materials and Methods: This was a case control study based on retrospective record review of 400 patients presenting in Emergency Department of Allama Iqbal Memorial Teaching Hospital Sialkot. Patients were selected on basis of wheel spoke injury involving foot and ankle while riding bicycle or motorcycle. Management of patients was done according to Oestern and Tscherne classification for soft tissue injury. A proforma was designed to record Demographic data and severity of injuries according to above mentioned classification. Permission of record review was granted by Departmental Review committee of Plastic Surgery Department of Allama Iqbal Memorial Hospital, Khawaja Muhammad Safdar Medical College, Sialkot. Sanctity of data was maintained by all authors and persons concerned. Data was analyzed for results by SPSS 10.

Results: In this study the frequency of motorcycle spoke wheel injury was 67% (n=268) and bicycle spoke wheel injury was 33% (n=132). The frequency of spoke wheel injury was maximum (61.5%) n=246 at the age of 15-25 years. The patients of spoke wheel injury were (72.5%) n=289 in male and (27.75%) n= 111 in female as the ratio of female riders was less. The frequency of spoke wheel injury was maximum (42.25%) n=69 of grade 1 injury and minimum (04%) n=16 in case of grade 0 injury. The frequency of spoke wheel injury was maximum (62.25%) n=249 in case of Postero lateral side of foot involvement and minimum (5.75%) n= 23 in case of Toe Amputation. The spoke wheel injury of right foot was higher (72.25%) n= 289 as compared to left foot (17.25%) n= 69 and both feet (10.5%) n= 42.

Conclusion: Wheel spoke injuries may result in severe soft tissue damage and bony trauma. Poor prognostic factors included high-energy injury, contamination and infection, and delayed treatment.

Key Words: Motorcycle/ Bicycle wheel spoke injury, Oestern and Tscherne classification.

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INTRODUCTION

Bicycle and motorcycle is a cheap source of transport in developing countries like Pakistan¹. Due to abundant use and lack of proper safety measures, Cyclists and Bikers comprise a majority of cases

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presenting in Emergency Department (ED) of our healthcare setups, and to make matters worse when sometimes more than 2 passengers are riding simultaneously. Frequently a child or female is pillion riding and carrying a child².

In such conditions one of the frequent injuries in ED is spoke wheel injury involving heel & ankles³. Injury pattern varies widely with minor abrasion, bruises, laceration to amputations and injury of tendoachilles. Bicycle and motor bike spoke wheel injury occur when the foot or heel is caught between the spokes and frame of a bicycle, that is, if a child sits on the backseat of a bicycle⁴.

Bicycle spoke wheel injury rarely occurs in adults due to length of lower limb but children are commonly involved⁵.

There are typically three aspects to the trauma of Bicycle and motor bike spoke wheel injury:

1) Laceration of the tissue from the knife-like action of the spokes, 2) crushing from the impingement of the wheel and frame of the bicycle, and 3) shearing injury from the coefficient of these two forces⁶.

Soft tissue injuries are classified on Oestern and Tschern classification for closed fractures⁷.

Grade 0	Minimal soft tissue damage
Grade 1	Superficial abrasion or contusion
Grade 2	Deep abrasion skin or muscle contusion
Grade 3	Extensive skin contusion or crush injury severe damage to underlying muscle

MATERIALS AND METHODS

This was a retrospective observational study including 400 patients presenting in Emergency Department of Allama Iqbal Memorial Teaching Hospital Sialkot. Patients were selected on basis of wheel spoke injury involving foot and ankle while riding bicycle or motorcycle. Management of patients was done according to Oestern and Tschern classification for soft tissue injury.

Grade 0 injuries were cleaned with Normal Saline and in case of inability to weight bear on affected limb below knee POP slab was applied; patients were discharged with oral analgesic and follow up was done in Out Patient Department.

Grade 1 injuries were treated with Normal Saline wound lavage and dressing with Povidine Iodine solution and limb immobilized in back slab; patient discharged on Oral Antibiotics and Oral analgesic. Wound reassessed in Out Patient Department.

Grade 2 injuries were washed with Normal Saline cleaned with Povidine Iodine solution, dressing was done, POP back slab applied and discharged on follow up next day with oral antibiotics and oral analgesics.

Grade 3 injuries were managed with wound toilet under general anesthesia, patient was assessed next day and further debridement done. Parenteral Antibiotics for gram positive and negative cover was done. All patients were given immunization for tetanus.

Performa was designed to record Demographic data and severity of injuries according to above mentioned classification. Permission of Departmental review committee of Allama Iqbal Memorial Teaching Hospital was obtained. Data was analyzed for results by SPSS 10.

Inclusion criteria

Selection criteria was developed to include all patients visiting emergency department between December 2015-December 2016 with injuries to heel ankle and fore foot resulting in contusion, abrasion, distortion, laceration while riding a bicycle or motorbike behind the rider.

Exclusion Criteria: All patients with open fractures during spoke wheel injury were excluded from the study.

RESULTS

In this study the frequency of motorcycle spoke wheel injury was 67% (n=268) and bicycle spoke wheel injury was 33% (n=132) as shown in table no1. The frequency of spoke wheel injury was maximum (61.5%) n=246 at the age of 15-25 years as shown in table no 2. The patients of spoke wheel injury was (72.5%) n=289 in male and (27.75%) n= 111 in female as the ratio of female riders was less as shown in table no 2. The frequency of spoke wheel injury was maximum (42.25%) n=69 of grade 1 injury and minimum (04%) n=16 in case of grade 0 injury as shown in table no 4.

Table No. 1: Distribution of Bicycle/ Motorcycle spoke wheel injury

Sr. No	Spoke Wheel Injury	Cases	Percentage (%)
1	Bicycle spoke wheel injury	132	33%
2	Motorcycle Spoke Wheel Injury	268	67%
	Total	400	100%

Table No. 2 Age Distribution in Bicycle/ Motorcycle spoke wheel injury

Sr. No	Age (Years)	Cases	Percentage (%)
1	9 -14	91	22.75%
2	15-25	246	61.50%
3	26-35	31	7.75%
4	36-45	21	5.25%
5	46 & above	11	2.75%
	Total	400	100%

Table No. 3 Gender distribution in Bicycle/ Motorcycle spoke wheel injury

Sr. No	Gender	Cases	Percentage (%)
1	Male	289	72.25%
2	Female	111	27.75%
	Total	400	100%

Table No. 4 Distribution of injured patients according to grading of Injury

Sr. No	Grading	Cases	Percentage (%)
1	Grade 0	16	04%
2	Grade 1	169	42.25%
3	Grade 2	121	30.25%
4	Grade 3	94	23.50%
	Total	400	100%

The frequency of spoke wheel injury was maximum (62.25%) n=249 in case of Postero lateral side of foot

involvement and minimum (5.75%) n= 23 in case of Toe Amputation as shown in table no 5. The spoke wheel injury of right foot was higher (72.25%) n= 289 as compared to left foot (17.25%) n= 69 and both feet (10.5%) n= 42 as shown in table no 6.

Table No. 5 Distribution of patients according to foot region involved

Sr. No	Region of foot	Cases	Percentage (%)
1	Poster lateral Foot	249	62.25%
2	Toe Amputation	23	5.57%
3	Tendoachilles Rupture	57	14.25%
4	Anterolateral Injury of foot	71	17.75%
	Total	400	100%

Table No. 6 Distribution of patients according to injury of foot

Sr. No	Side of foot	Cases	Percentage (%)
1	Right Foot	289	72.25%
2	Left Foot	69	17.25%
3	Both Feet	42	10.50%
4	Total	400	100%

DISCUSSION

Due to prevalent socioeconomic conditions motorcycle spoke wheel injuries are common in Pakistan as compared to bicycle spoke wheel injuries. In our study also motorcycle wheel spoke injury was higher as compared to bicycle wheel spoke injury. In our study mostly adolescent males were involved with majority having Grade 1 & 2 injuries. Posterolateral foot was commonly accompanied with heel pad injury which required flaps for coverage^{8,9}. In a study by Mine et al, has shown that spoke wheel injuries healing time was prolonged and repeat debridement was needed for severe injuries⁷. Insufficient treatment or closure with tight sutures of heel flap and contamination resulted in longer hospital stay and flap necrosis¹⁰. Poor prognostic factors included high-energy injury, contamination, infection, and delayed treatment¹¹. Injuries resulting in heel pad loss at Calcaneum were needed to be covered by Sural artery based flaps¹². Instep flaps was mostly in the zone of trauma. Despite flap coverage the missing glabrous skin and loss of sensation, sensate flaps require highly specialized microscopic surgery and teamwork which is not readily available everywhere in Pakistan. All patients with tendoachilles rupture, required repair followed flap coverage. Injuries in motor bike are of severe in nature compared to bicycle spoke wheel injury due to speed and shearing forces applied⁸. A lot of modification have been recommended to prevent these injuries like mesh or guard to cover wheel spokes and horizontal upright¹³. Public

awareness and education can also lead to reduction in number of accidents.

The majority of spoke-wheel injury occurred in the area of posterior aspect of ankle and posterolateral aspect. Most of them were minor injuries of grade 0 and 1. Severe injury to heel may lead to heel pad avulsion and often transaction of tendoachilles.^{9,14} Results of our study were consistent with them. In literatures, it has been shown that bicycle spoke injuries have resulted in severe heel pad injury, transaction of tendo-achilles and warranted the need for flap surgeries to cover the wounds.³ Such injuries are often found to be deteriorating after 48 hrs or later as the vascularity of soft tissue in this area is poor and internal degloving is common due to shearing force sustained to the skin. Hence it becomes mandatory to see the wound repeatedly for any change in status of the wound. An ankle foot or a back splint is also recommended as it helps in good healing and exercise to be performed.⁴ Various modifications in bicycle has been advised for preventing such injuries, like mesh cover, or plastic shield to bridge the gap between fork and horizontal upright of bicycle or motorcycle etc.¹⁵ Making the people aware of the mode of injury and preventive measures explained at the costumer level of bicycle could decrease the frequency of these injuries.¹⁶

CONCLUSION

Wheel spoke injuries may result in severe soft tissue damage and bony trauma. Poor prognostic factors included high-energy injury, contamination and infection, and delayed treatment.

General people awareness regarding the injury, preventable measures, use of appropriate spoke guards, foot rests, children wearing proper shoes etc are the simplest measure to avoid the spoke wheel injury.

Author's Contribution:

Concept & Design of Study:	Sarfraz Ahmad
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Data Analysis:	Nimra Ikram
Revisiting Critically:	Kamran Hamid
Final Approval of version:	Sarfraz Ahmad

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

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Pattern of Fatal Injury and Weapon Used in Homicidal Deaths on Autopsy In Peshawar

Abid Karim¹, Hakim Khan Afridee² and Muhammad Hasan Abid²

ABSTRACT

Objective: To study Pattern of Fatal injury and weapon used in homicidal deaths on autopsy at Peshawar.

Study Design: Retrospective Study.

Place and Duration of Study: This study was conducted at the Forensic Medicine Department, Jinnah Medical College, Peshawar and Khyber Medical College Peshawar from January 2014 to August 2016.

Materials and Methods: Three thousand four hundred ninety one autopsies were included in this retrospective study. The victims of homicidal death between age (10 years and above) and both gender were included in the study. A performa was designed to record Age, sex, area, type of fatal injury and weapon used. Permission of Ethical Committee permission was obtained from the institute to collect and publish the data. Research material was analyzed for results on SSPS version 10.

Results: In this retrospective study maximum 1011 cases (28.9%) and 1303 cases (37.2%) of homicidal death fall in age groups 21-30 years and 31-40 years respectively as compared to other age groups as shown in table no. 01. Male victims are more prone to homicidal deaths as compared to female victims 2634 male (82.6%) and 607 female (17.4%) as shown in table no .02. Victims of homicidal deaths were 2557 cases (75.2%) from urban area and from rural area 934 cases (26.8%) as shown in table no .03. In this study the incidence of fatal injury was maximum 2829 cases (81%) of firearm injury as compared to other fatal injuries as shown in table no. 04. It was also observed that firearm weapon was used in homicidal deaths maximally 2829 cases (81%) and the second most weapon used was sharp edge weapon 394 cases (11.28%) as shown in table no. 05.

Conclusion: Trend of homicidal deaths, due to firearms have increased day by day. Therefore strict measures should be taken for the possession of illegal fire arm weapons. To control and decrease crime in the country the law and order situation should be improved in the country.

Key Words: Pattern of fatal injury, Weapon, Homicidal deaths and Autopsy

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INTRODUCTION

Homicide is defined as “the killing of one human being by another”. Section 300 of Pakistan Penal Code (PPC) states that unlawful killing of human being is murder¹. The assault by sharp weapon, blunt weapon, fire-arm, strangulation, homicidal hanging, smothering, drowning, burns, poisoning, etc are the various patterns of homicidal deaths.² In all the cultures “killing of an individual is the highest level of aggression”.³ The increasing population, urbanization, poverty, unemployment, frustration, illiteracy, prevalent economic, social and political environment, insurgency,

terrorism, drug addiction, easy availability of weapon, and the widening gap between the rich and the poor are the causes of homicidal death. In our society, it is also clear that most of the crimes are the result of economic crisis.⁴⁻⁵ In the future generation, young offenders are becoming increasingly violent.⁶

In the society, deaths by violence cause harassment and depression. The psyche of the nation is constantly deranged by increasing number of un-natural deaths. In homicidal cases autopsy is always required.⁷ Deaths are of two types natural and un-natural. Natural deaths are due to any pathology (disease) or ageing. Un-natural deaths are due to injury (homicide/murder), suicide or accidents.⁸ Homicidal deaths are becoming a threat to modern society in the world. Young and adult generation is mostly involved in the homicidal deaths⁹. All the civilized societies in the world try to control such terrifying incidences leading to un-natural deaths¹⁰. The goal of a peaceful society cannot be materialized without analyzing the data regarding cause, age, sex involved, weapon used and other demographic studies.

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MATERIALS AND METHODS

Three thousand four hundred ninety one autopsies were included in this retrospective study. The study was conducted in Forensic Medicine Department at Khyber Medical College Peshawar between January 2014 – August 2016.

Inclusion Criteria: All the autopsies of homicidal death, between the age (10 years and above) and both gender were included in the study.

Exclusion Criteria: The autopsies of suicidal and accidental death were excluded from the study.

The victims of homicidal death between age (10 years and above) and both gender were included in the study. A performa was designed to record Age, sex, area, type of fatal injury and weapon used. Permission of Ethical Committee permission was obtained from the institute to collect and publish the data. Research material was analyzed for results on SPSS version 10.

RESULTS

In this retrospective study maximum 1011 cases (28.9%) and 1303 cases (37.3%) of homicidal death fall in age groups 21-30 years and 31-40 years respectively as compared to other age groups as shown in table no. 01. Male victims are more prone to homicidal deaths as compared to female victims 2884 male (82.6%) and 607 female (17.4%) as shown in table no .02. Victims of homicidal deaths were 2557 cases (73.2%) and from rural area 934 cases (26.8%) as shown in table no .03.

Table No. 1: Age distribution in Pattern of Fatal injury and weapon used in homicidal deaths on autopsy

Sr No	Age (Years)	Cases	Percentage %
1	10-20	361	8.6%
2	21-30	1011	28.9%
3	31-40	1303	37.3%
4	41-50	502	14.4%
5	51-60	211	5.8%
6	61-70	100	2.9%
7	70 and above	73	2.1%
	Total	3491	100%

Table No. 2: Sex distributions in Pattern of Fatal injury and weapon used in homicidal deaths on autopsy

Sr No	Sex	Cases	Percentage %
1	Male	2884	82.6%
2	Female	607	17.4%
	Total	3491	100%

In this study the incidence of fatal injury was maximum 2829 cases (81%) of firearm injury as compared to

other fatal injuries as shown in table no. 04. It was also observed that firearm weapon was used in homicidal deaths maximally 2829 cases (81%) and the second most weapon used was sharp edge weapon (11.28%) 394 250 cases as shown in table no. 05.

Table No.3: Area distributions in Pattern of Fatal injury and weapon used in homicidal deaths on autopsy

Sr No	Area	Cases	Percentage %
1	Urban	2557	73.2%
2	Rural	934	26.8%
	Total	3491	100%

Table No. 4: Fatal Injury/Mean in homicidal deaths on autopsy

Sr No	Fatal Injury/Mean	Cases	Percentage %
01	Firearm	2829	81%
02	Incise Wound(cut)	125	3.6%
03	Stab	125	3.6%
04	Punctured	102	2.9%
05	Blunt	11	0.3%
06	Chemical Burn	20	0.7%
07	Dry Flame Burn	15	0.4%
08	Poising	38	1.1%
09	Cut Throat	144	4.1%
10	Drowning	15	0.4%
11	Asphyxia	67	1.9%
	Total	3491	100%

Table No.5: Weapon/Mean used in homicidal deaths on autopsy

Sr No	Weapon/Mean	Cases	Percentage %
01	Firearm	2829	81%
02	Sharp Edge	394	11.28%
03	Pointed End	102	2.9%
04	Blunt	11	0.3%
05	Acid /Alkali	20	0.7%
06	Dry Flame	15	0.4%
07	Poison	38	1.1%
08	Drowning	15	0.4%
09	Asphyxia	67	1.9%
	Total	3491	100%

DISCUSSION

It was observed in this study that the maximum victims of homicide 28.9% cases and 37.3% cases at 21-30 and 31-40 years respectively. The tendency of homicide in males was higher 82.6% as compared to female victims 17.4% which was 5:1. This tendency of homicide was less in female due to cultural and religious reasons.

The incidence of homicide due to fire-arm was maximum 81% which correlates with the study by Khalil et al⁷ conducted at Peshawar in 2012. Similarly high rates of homicide by firearm were found in Faisalabad and Lahore.^{8,9} In New Mexico USA, a study suggested that homicide by non firearm was at the top therefore prevention efforts should be directed against non-firearm methods as the firearm use was very low.¹⁰ In a study conducted in Georgia USA¹¹, the homicide rate was 48% and fire arm was used in 88% which correlate with our study^{12,13}.

It was seen that the victims of blunt trauma were 0.3% (11 cases). The incidence of death by blunt trauma and asphyxia was very low in our study and this trend was also seen in many other studies in Pakistan.¹⁵ However the incidence of homicidal death by blunt trauma injuries and sharp weapons is higher in UK^{16,17} which does not correlate with our study. There were 1.9% cases of asphyxia, 11.28% by sharp weapon, and 0.4% cases of drowning.

Homicidal poisoning tendency was also seen which 1.1% cases in this study. The incidence of weapon used in homicidal deaths was firearm 81% which correlates with other studies in Pakistan and other western countries.^{11,18,19,20}

CONCLUSION

Trend of homicidal deaths, due to firearms have increased day by day. Therefore strict measures should be taken for the possession of illegal fire arm weapons. To control and decrease crime in the country the law and order situation should be improved in the country.

Author's Contribution:

Concept & Design of Study: Abid Karim
Drafting: Hakim Khan Afridee
Data Analysis: Hakim Khan Afridee
Revisiting Critically: Muhammad Hasan Abid
Final Approval of version: Abid Karim

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

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Impact of Psychosocial Well Being of Final Year MBBS Students of King Edward Medical University Lahore on Their Academic Performance-A Cross Sectional Survey

Hamna Khan¹, Qamar Ashfaq Ahmad² and Mah Jabeen Muneera³

Impact of
Psychosocial Well
Being on
Students on their
performance

ABSTRACT

Objective: To evaluate level of stress, anxiety and depression among Final year MBBS students of King Edward Medical University, Lahore and its impact on their academic performance.

Study Design: Cross Sectional study.

Place and Duration of Study: This study was conducted at the Department of Anatomy, King Edward Medical University, Lahore from 11th January, 2017 to 12th March, 2017.

Materials and Methods: A total of 100 questionnaire were distributed randomly among final year MBBS students of King Edward Medical University, Lahore who were enrolled in MBBS program during that time of study. Consent forms were filled by all students. Questionnaire comprised of demographic variables, DASS (Depression, Anxiety and Stress Score) 21 Score and last professional examination marks in percentages. Mean scores were calculated. Relationship of DASS 21 scores with different categories of students and gender were also calculated.

Results: A total of 81 final year MBBS students filled the form. Among those, 72.4% were females and 29.6% were males. The DASS Stress score calculated to be 9.2 ± 4.7 . DASS Anxiety Score calculated to be 7.19 ± 4.54 . DASS Depressions score calculated to be 8.96 ± 4.1 . Majority of the high achievers were having high anxiety and stress score. As compared to males, females were having high stress and depression scores.

Conclusion: High achievers and females are experiencing more depression and anxiety as compared to low achievers and males, respectively.

Key Words: Psychosocial well being, MBBS students, King Edward Medical University, DASS 21

Citation of articles: Khan H, Ahmad QA, Muneera MJ. Impact of Psychosocial Well Being of Final Year MBBS Students of King Edward Medical University Lahore on Their Academic Performance-A Cross Sectional Survey. Med Forum 2017;28(7):126-129.

INTRODUCTION

Mental health disturbances like stress, anxiety and depression among medical university students is a growing concern worldwide. Prevalence of depression and anxiety among medical students has been estimated to be 43-60% in Pakistan, which is quite alarming.¹ These psychological problems are not properly addressed at all, though medical students show poor psychological health than their peers in general population.²

Sources of these mental health problems can be may fold. Substantially increased scholastic load with high

expectations from academic performance is major source of distress.³ While unstructured learning environment, lack of time for recreation, long on-duty assignments and exposure to human sufferings also play their role in mental health disturbances among medical university students.⁴

Impaired psychological health ultimately affects medical graduates in a number of ways. Several factors play their own role as well. Gender, year of study and stage of training independently affects psychological health.[1] Some studies exhibit more depression among females while others showed more depression among males. Preclinical era is associated with more depression than clinical area.

Most important effect of impaired psychological health is on academic performance.³ Good academic performance in preclinical area is directly related to uplift of professional competence in the clinical years. This leads to production of good quality, competent healthcare professionals. This gives psychological health of the medical graduates the utmost importance. Teachers and medical educators need to be aware of causes, symptoms and consequences of student distress and medical school must develop and evaluate programs to support these students and promote student

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well being.³ As very scarce data available on this important topic, this prompted us to carry out this study in this well reputed and top public sector institution of country.

The aim of our study is to evaluate psychological well being of Final year MBBS students of KEMU by assessing level of Depression, Anxiety and stress using a well established DASS (Depression, Anxiety and Depression scale)²¹ and its possible relationship with their academic performance.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at King Edward Medical University, Lahore from 11th January, 2017 to 12th March, 2017. The Students of, both genders, enrolled in final professional MBBS class who consented to participate in study were included. A total of 100 questionnaires were distributed randomly among participants. A total of 81 filled questionnaires were received.

Questionnaire had three components; First component comprised of demographic variables, Second component included last professional examination scores in percentages and the third component contained DASS 21 (Depression, Anxiety, Stress Score) scale.

The DASS-21 is a short-form of the DASS-42. The DASS-21 has high reliability as well as convergent validity consistent with other measures of anxiety and depression.^[5]

DASS-21 has three self-report scales designed to evaluate depression, anxiety and stress levels. DASS-21 has 21 questions in total. Questions of depression, anxiety and stress are randomly distributed within DASS-21. Question numbers 3, 5, 10, 12, 16, 17 and 21 are for depression. Question numbers 2, 4, 7, 9, 15, 19, 20 are for anxiety. Question numbers 1, 6, 8, 11, 12, 14 and 18 are for stress. (Fig: 1) Each question is answered

on 4 point likert scale as score 0 is given to 'did not apply to me at all', score 1 is given to 'applied to me to some degree, or some of the time', score 2 is given to 'applied to me to a considerable degree or a good part of time', score 3 is given to 'applied to me very much or most of the time'. Total score is calculated separately for each category and is further categorized as 'normal, mild, moderate, severe, extremely severe' as shown in table 1.

All data was entered in SPSS 22. Students were categorized into three group. Student who secured $\geq 70\%$ in last professional exam were labelled as 'high achievers'. Students who scored 50-70% were labelled as 'medium achievers' while students securing $< 50\%$ marks were labelled as 'low achievers'.

Mean scores of depression, anxiety and stress were calculated. Difference of these score among each category of students and among gender were also calculated. Chi square test was applied to determine its significance. p value $\leq .05$ was considered significant.

RESULTS

A total of 81 final year MBBS students filled the form. Out of 81 students 24 (29.6%) were males and 57 (70.4%) were females. Depressions score was 8.96 ± 4.1 , (Fig:2) Anxiety Score 7.19 ± 4.54 (Fig:3) and Stress score 9.2 ± 4.7 .

Table No.1: Categorization of DASS-21 from scores

Subscale	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Extremely severe	14+	10+	17+

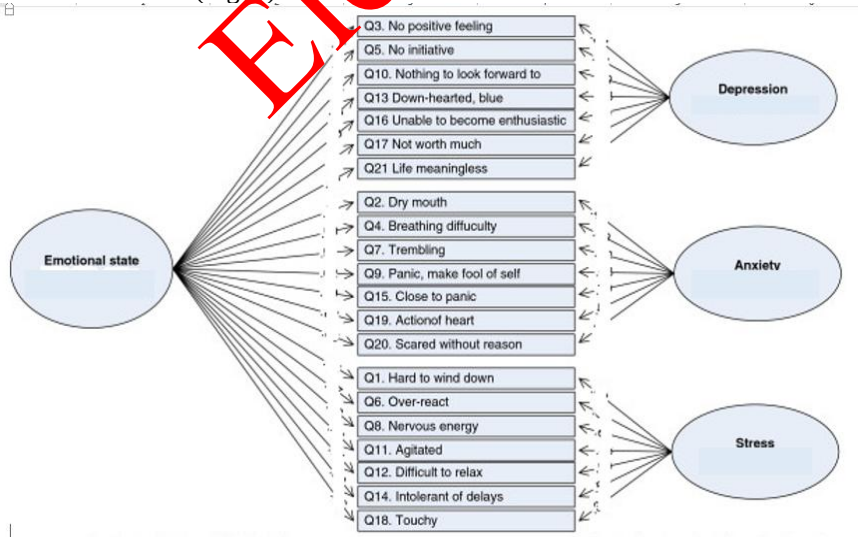


Figure No.1: DASS 21 Score and its division among Depression, Anxiety and Stress questions

DASS-21 among different categories of last professional examination scores were also calculated. Normal stress score were found among majority of the high achievers (14 (35%)) while 14 (36.8%) medium achievers and 2 (66.7%) low achievers had normal stress scores. (p value 0.89). A total of 13 (32.5%) high achievers experienced extremely severe stress, which is quite alarming. Though, to our surprise, 12 (31.6%) medium achievers and 2 (66.7%) low achievers also experienced severe stress. (p value 0.07). Depression scale score showed 10 (25%) high achievers facing extremely severe depression. While 10 (26.3%) medium achievers and 1(33.3%) low achiever were facing no depression at all.

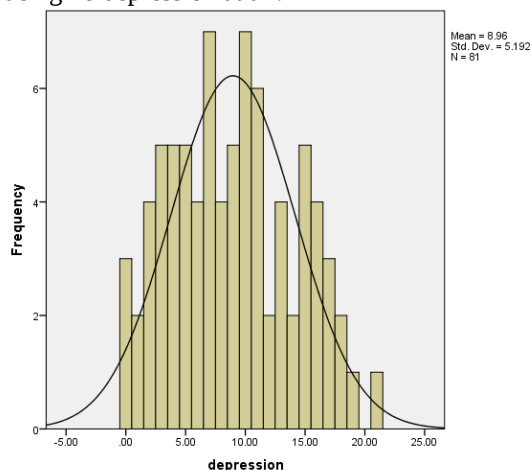


Figure No.2: Histogram showing mean depression Score among final year students

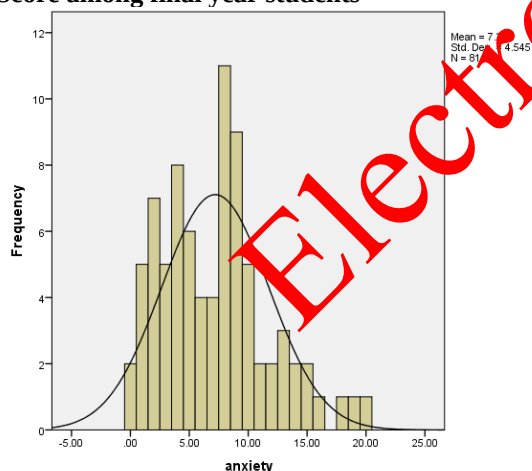


Figure No.3: Histogram showing mean anxiety Score among final year students

DASS-21 was compared between males and females as well. Majority of the males (13 (54.2%)) & females (20 (35.1%)) experienced no stress at all. (p value 0.18). Many of the males (8 (33.3%)) also facing no anxiety at all but 16 (28.1%) females were experiencing extremely severe anxiety levels. (p value 0.66). Similarly, majority of the males (9 (37.5%)) were having normal

depression score while 15(26.3%) females had extremely severe depression scores. (p value 0.19).

DISCUSSION

Depression among medical university students is a global phenomenon and it remains an important concern despite significant changes. In our study, mild and moderate depression was found among 40% students while severe and extremely severe depression was seen in 30% of the population. A total of 27% student experienced mild and moderate anxiety while 49% facing severe to extremely severe anxiety. Our figures are higher from western data but are comparable with Eastern data. A 2000 population data from USA showed major depression among 12% and mild/moderate depression among 9.2% of the participants.⁶ A total of 13% students found to have depression in Sweden.⁷ In Europe, near 30% of medical students experiencing depression or anxiety, while Brazilian studies show mood disorders at rate of 20 to 50% among medical students.⁸⁻¹⁰ Western countries depression rates are higher than Eastern countries. As studies from India, Iran and Pakistan showed depression rate among medical students ranging to 29.1%, 52.6% and 55.1% respectively.¹¹⁻¹³

Although some degree of stress is a normal part of medical training and can be a motivator for some persons, not all students find stress constructive.¹⁴ For many individuals, stress arouses feelings of fear, incompetence, uselessness, anger, and guilt and can be associated with both psychological and physical morbidity.^{7,15,16}

Student psychological well-being may affect professional growth and causes a negative impression on academic performance leading to poor academic performance.¹⁷ Literature also shows that this psychological stress may adversely affect quality of patient care and professionalism.^{18,19}

Studies showed relationship of gender with both depression and stress. Among general population, prevalence of depression and anxiety is high among females but results among medical students are not consistent.²⁰ Still, a systemic review showed that majority of the studies are showing the difference in depression and stress between genders as shown in our study.²¹

This study has got quite few limitations. This was a small cross sectional study with a small sample size. Further research is required to identify factors leading to development of negative emotion states in medical students, and the factors that may prevent or ameliorate these.

CONCLUSION

Medical students are facing high level of stress, depression and anxiety. High achievers and female gender is associated with more higher levels of depression and anxiety.

Author's Contribution:

Concept & Design of Study: Hamna Khan
 Drafting: Qamar Ashfaq Ahmad
 Data Analysis: Qamar Ashfaq Ahmad
 Revisiting Critically: Mah Jabeen Muneera
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Causes of Conductive Hearing Loss in School Going Children

Aqeel-ur-Rehman Hameed¹, Asif Abbasi¹ and Faheem Ahmed Khan²

ABSTRACT

Objective: Timely identification of conductive hearing loss in school going children to prevent unnecessary morbidity.

Study Design: Prospective study

Place and Duration of study: This study was conducted at the ENT Department of Abbasi Shaheed Hospital, Karachi from January 2014 to June 2016.

Materials and Methods: In this study those cases were selected that came with conductive hearing loss. Both sexes were included in this study and age ranges were from 4 years to 15 years of age. After informed consent, detailed history and examination was done and relevant investigations were also conducted.

Results: In this study female were affected more i.e. 101 (57.38%). The highest incidence of age was between 10-12 years 75 (42.61%) followed by 7-9 years of age 45 (25.56%). Poor socio-economical status was more affected 128 children (72.72). The most common cause of conductive hearing was wax 85 (46.59%) followed by middle ear effusion 43 (24.43%).

Conclusion: Most of the causes of conductive hearing loss are treatable. Early identification of conductive hearing loss may prevent the un-necessary morbidity.

Key Words: hearing loss, decrease hearing, deafness

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INTRODUCTION

Childhood hearing loss is a serious consequence for families and children. About 11.3% people have hearing impairment and deafness¹. According to the WHO report that 250 million people with hearing disability in this world². In under developed countries about 10 infants born with hearing problem in every 1000 birth. Hearing problem among young children in third world countries have been accepted as a major problem^{3,4}. Hearing is the important sense of organ and plays a important role in the development of speech and language. 3 to 5 years is the important period for speech and language development. Early detection of hearing problem and early intervention help in language development and cost effectiveness⁵.

Hearing loss can be divided into conductive, sensorineural or mixed types. In conductive type of hearing loss, interference of mechanical transmission of sound from external ear to inner ear and this is the most common type of hearing loss in children⁶.

Sensori-neural hearing loss is due to failure to transducer vibration to nerve impulses in cochlea. In mixed type both type of hearing loss shows combination of sensory and conductive loss. Conductive type of hearing loss is due to problem in external ear or middle ear. Common causes of conductive hearing loss due to external ear problems are Ear wax, Otitis externa, exostosis, congenital stenosis or atresia, perforated tympanic membrane⁷ or barotrauma⁸ while in middle ear causes include acute or serous otitis media, cholesteatoma, temporal bone trauma or congenital malformation of ossicles. Otitis media with effusion is the commonest cause of conductive hearing loss in children⁹. It is due to blockage of Eustachian tube which leads to reduce pressure in the middle ear and accumulation of fluid in the middle ear which decreased the movement of ossicles and tympanic membrane. The main reason of Eustachian tube dysfunction is repeated upper respiratory tract infection, improper treatment of acute otitis media, allergic rhinitis, adenoids and infected tonsils. Eustachian tube dysfunction can be treated by medically and treat the cause like adenoidectomy or tonsillectomy. Ear wax is another common cause of conductive hearing loss. It is a yellowish waxy substance which is secreted in external auditory canal. It protects the ear from foreign particles, microorganism and dust. Normally, it washes away but sometime it accumulated in external auditory canal and becomes hard and causes conductive hearing loss. Before removal of hard wax, it should softened and then suction and clearance done. Otomycosis is a fungal ear

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infection. It causes inflammation, masses of debris, suppurative and conductive hearing loss if occluded external auditory canal¹⁰. It is caused by *Aspergillus niger*, *Aspergillus fumigatus* and *Candida albicans*^{11,12}. Treatment is simple topical antifungal¹¹ and suction and clearance.

Most of the conductive type of hearing loss is treatable. Conductive hearing loss child is more disruptive in the class as compare to other student. Most of the conductive type of hearing loss is the treatable. Early diagnosis and intervention may be beneficial for improving hearing in children.

MATERIALS AND METHODS

This study was conducted in Otorhinolaryngology department of Abbasi Shaheed Hospital. This hospital is the tertiary care hospital and cover large low socio-economical population. This study was conducted from January 2014 to June 2016. After taking detail history and complete examination 176 patients were selected for this study. Necessary investigation like Pure tone audiogram and impedance were advice. X/ray and C-T scan were done where needed.

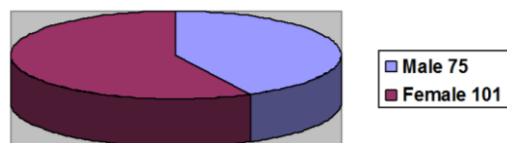
Inclusion criteria: Patients came with conductive hearing loss between 4 to 15 years of age included in this study.

Exclusion criteria:

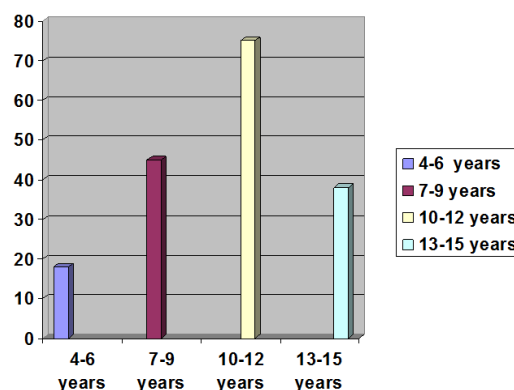
- I) Previous ear surgery
- II) Sensorineural hearing loss
- III) Above 15 years of age
- IV) Below 4 years of age
- V) Not come for follow up.

RESULTS

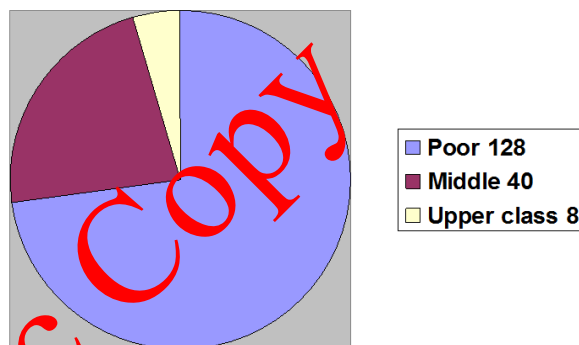
176 Patients were selected in this study in which female were more as compared to male which was 101 (57.38%) children were female while male were 75 (42.61%) shown in pie chart 01. The highest incidence were noted between the age of 10-12 years of age which was 75 patients (42.61%) followed by 7-9 years of age 45 (25.56%). 128 (72.72%) patients were belonged from poor socio-economical status while only 8 patients (4.54 %) were belonged to good socio-economical status shown in pie chart 2. The most common cause was wax 85 (46.59%) shown in table. Second most common cause was middle ear effusion 43 (24.43%) followed by tympanic membrane perforation 32 (18.18%).



Pie Chart No.1:



Bar Chart No.1:



Pie Chart No.2:

Table No.1: Causes

Causes	No. of patients
Wax	84 (47.72%)
Middle ear effusion	42 (23.86%)
Tympanic membrane perforation	31 (17.61%)
Otomycosis	18 (10.22%)
Canal atresia	1 (0.56%)

DISCUSSION

In school going children conducting hearing loss is one of the common presentations brought to clinics. It varies from wax impaction, otomycosis, tympanic membrane perforation or middle ear effusion. Conductive hearing loss limit the ability of child to develop hearing and speech capabilities. Most of the causes are treatable. But this common problem usually ignores by general practitioner which effects in educational performance of the child.

In this study try to find out the common causes of conductive hearing loss in children. The highest incidence was noted between the age of 10-12 years of age 75 children followed by 7-9 years. The prevalence of conductive hearing loss is high in poor socio-

economical status as compare to middle or upper class. Chadha S.K et al. performed comparative study between slum and non-slum areas and he noted that ear infection is much common in slum area¹³. Another study which also showed in rural areas the prevalence of conductive hearing loss is 9.44% as compared to urban area which was 1.3%¹⁴. 72.72% children were belonged to poor socio-economical status area. Wax is the most common cause of conductive hearing loss in children which is 46.59%. Hearing impairment due to cerumen impaction is the significantly cause of hearing loss in all age groups^{15,16}. According to Sugiura S. et al that routine ear examination and removal of wax if present significantly improved hearing and memory disorder¹⁷. The second common cause of conductive hearing loss in children is middle ear effusion i.e. 24.43%. According to Terray Oliver Penn that most of the children have experienced of otitis media with effusion in early childhood¹⁸. The prevalence in younger was high i.e. 31.4% which decreased in older children¹⁹. Arif Sanli et al. study showed that prevalence of otitis media with effusion is 12.2% in primary school children¹. The reason is that eustachian tube changes from horizontal to vertical direction and al immunity is also increased. This diagnosis is made on clinical examination and audiometry and

Tympanometry assessment. By using simple measure like oral or local steroids, antibiotics, decongestant, auto inflation and surgical procedure like adenoidectomy^{20,21}.

Tympanic membrane perforation is also a major factors which causes conductive hearing loss. It may be due to acute otitis media, traumatic perforation, chronic suppurative otitis media. One in four children suffer at least single episode of acute otitis media²². The prevalence of acute otitis media in younger age group is high as compare to older children.

In tropical countries otomycosis in external ear is one of the common presentations. It causes itching, ear blockage and ear ache. 10% Patient presents with fungal infection. One review study shows incidence of otomycosis is 51.3%, this incidence is increased in summer season²³. In current study, incidence of Otomycosis was noted in 10.22%. Symptoms of Otomycosis itching, discharge from ear, pain and decreased hearing. Treatment is usually topical antifungal and suction and clearance. Hearing loss is the common problem in children which is either unnoticeable or not treated probably. Most of the causes of conductive hearing loss are treatable. Early identification the cause of conductive hearing loss and early treatment will be beneficial for the children and family.

CONCLUSION

Author concluded that most of the causes of conductive hearing loss are treatable. Early detection of hearing loss will decrease the morbidity and parents depression.

Author's Contribution:

Concept & Design of Study: Aqeel-ur-Rehman Hameed
Drafting: Asif Abbasi
Data Analysis: Asif Abbasi
Revisiting Critically: Faheem Ahmed Khan
Final Approval of version: Aqeel-ur-Rehman Hameed

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

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ACKNOWLEDGMENTS

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