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Editorial Special Manufactured Cooking Olive Oil – Better for Health

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&
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Cooking Olive Oil is a new concept for cooking oils that has been introduced for the first time in Pakistan by a company in technical collaboration with a firm of Spain. The cooking Olive Oil is the only available oil that combines some of the benefits of Olive Oil with the health related properties of Canola and Sunflower Oils which is affordable. Olive Oil is world famous over for its many wonderful and unique health properties. Studies have suggested that Olive Oil not only promotes a healthy heart but also given protection against developing Diabetes, Blood Pressure and some forms of Cancer. Unfortunately Olive Oil is a very expensive Oil, and also has a strong flavour which is not suited to Pakistani cooking.

The new cooking Olive Oil is the only cooking oil that combines the key health benefits of Olive Oil into an affordable and great tasting formulation of premium quality Canola and Sunflower Oils. That Oil does this by incorporating Hydroxytyrosol into its formulation. Scientific research has discovered that Hydroxytyrosol is the main antioxidant compound of Olive Oil and the key constituent that gives Olive Oil many of its health properties. Hydroxytyrosol has been shown by biomedical researchers to promote Heart and Cardiovascular Health, lower Cholesterol, reduce the risk of developing Diabetes, reduce inflammation and protect cells, especially brain cells – against oxidative stress. The formulation of that cooking oil is designed to keep the amount of saturated fats to less than 10%, an advantage over pure Olive Oil that has higher saturated fat. In addition to this, that cooking oil contains Omega 3 from Canola and Omega 6 and alpha tocopherols (Natural Vitamin E) from Sunflower.

Health Benefits of Olive extract and Hydroxytyrosol or HT are mentioned below:

Heart Health: Research has shown that HT plays an important role in the Cardio-protective properties of Olive Oil, as it is believed to improve the blood lipid profile, reduce risk of Thromboses, reduce harmful effects of lipid oxidation and reduce the atherosclerosis development and is anti-inflammatory.

Cancer: Research suggests that the anticancer effects of Olive Oil are due to HT. It has been shown that HT imparts the same anti-cancer benefit by arresting the cell cycle and inducing apoptosis in tumour cells. Moreover, Hydroxytyrosol is a powerful anti-oxidant and has anti-inflammation properties. These characteristic also contribute to its anti-cancer characteristics.

Diabetes: Research suggests that HT may help in preventing type-2 Diabetes due to its mitochondrial targeting property. Moreover HT is shown to be beneficial for Diabetic individuals as it inhibits hyperglycemia and oxidative stress. It also help to prevent related Diabetic complications. HT also reduces the risk of thromboses in Diabetic patients due to its anti-aggregating platelet action.

Brain Health: HT has also been shown by researchers to promote brain health and have Neuro-protective properties. HT does this by protecting Brain cells against oxidative stress and in combination with Vitamin C and E may afford protection against degenerative diseases such as Alzheimer.

Anti-oxidant and anti-inflammatory: HT is shown to be a powerful antioxidant, and protects the body cells against oxidative stress. Apart from having Cardio-protective and Neuro-protective effects, the anti-oxidant property of HT protects body cells and specific organs such as RBCs, Liver, and Eyes from the harmful effects of lipid oxidation. HT is also known to improve the condition of patients suffering from Osteoarthritis and Rheumatoid Arthritis by reducing inflammation.

Cholesterol Free, Transfat Free, and low in saturated fats: The new cooking oil is naturally free of cholesterol and trans fats and is formulated to contain less than 10% saturated fats. This is within the range advised by health experts that saturated fats should not be more than 10% of daily calorific needs.

Omega 3 & 6: Omega 3 & 6 are polyunsaturated fatty acids (also called Essential Fatty Acids or EFA) that are not made by the human body and hence must be consumed to fulfill the need. Numerous studies have shown that Omega 3 reduces the risk of heart attacks and strokes. As Canola Oil is a good vegetable source of Omega 3. Sunflower Oil is rich in Omega 6 and because Omega 6 is an EFA. Omega 3 and 6 both are the major part of the manufactured cooking Olive Oil in Pakistan.

Vitamins A, D & E: Locally manufactured cooking Olive Oil is fortified with Vitamins A, D and E. Vitamin E is itself a powerful anti-oxidant and acts in synergy with Hydroxytyrosol to protect the human body from oxidative stress. Apart from added Vitamin E, the inclusion of Sunflower Oil also enhances the Vitamin E content of that cooking Olive Oil as Sunflower Oil is naturally rich in this Vitamin (alpha-tocopherol). Vitamin E is believed to protect against heart disease and cancers and enhance the immune function.

Anaphylactic Reactions of Ionic and Nonionic Contrasts during Coronary Angiogram

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ABSTRACT

Objective: To compare the acute anaphylactic reactions of ionic and nonionic contrasts in patients undergoing coronary angiogram.

Study Design: Experimental Study.

Place and Duration of Study: This study was conducted in Catheterization Laboratory of Punjab Institute of Cardiology, Lahore from 28th September 2007 to 27th March 2008.

Materials and methods: 200 patients undergoing coronary angiogram, admitted in Punjab Institute of Cardiology Lahore through outpatient department (OPD) and emergency ward were included. The socio demographic information like name, age sex and address were recorded. After taking informed consent, the patients were divided into two groups by using random numbers table before the procedure. First group received ionic and the second group received nonionic dye. All patients will undergo coronary angiogram & anaphylactic reactions were recorded.

Results: Out of 200 patients 153(76.5%) were male and 47(23.5%) were female. Age range was 32-75 yrs with mean age of 53.94 ± 10.07 of study population. The study population was divided into two equal groups. First group 100 patients received Ionic dye while second group 100 patients received Non ionic dye. Anaphylactic complications during coronary angiogram were more common in patients who received ionic contrast as compared to non ionic contrast group.

Conclusion: Anaphylactic complications during coronary angiogram were more common with ionic dye as compared to non ionic contrast.

Key words: Coronary angiogram, coronary artery disease, Ionic contrast agents, Nonionic contrast agents, anaphylactic reaction.

INTRODUCTION

Coronary angiogram is a crucial diagnostic tool with categorized indications laid down by American College of Cardiology along with American Heart Association¹. It remains the clinical gold standard for determining the presence of significant coronary artery disease². It is an invasive procedure and contrast agents used have serious risks.

Radiographic contrast agents currently used for coronary angiography produce a number of adverse effects³. These agents differ in their ionic content, osmolality, viscosity, side-effect profile,⁴ and cost.

Ionic contrast agents used historically for coronary angiography are the high-osmolar meglumine and sodium salts of diatrizoic acid. These substances dissociate into cations and iodine containing anions, resulting in high serum osmolality (>1500 mOsm) than human plasma (300 mOsm).⁵

Nonionic contrast agents do not ionize in solution and provide more iodine-containing particles than ionic agents per milliliter of contrast. Their osmolality is substantially reduced (<850 mOsm) and do not chelate calcium, potentially leading to fewer side effects⁵. It is estimated that nonionic agents are used in 60 to 70 percent of current coronary angiographic procedures.

Anaphylactoid reactions include like hot flushing, rash, nausea, vomiting, hypotension, coronary spasm⁶. It can

cause nephropathy in high risk patients and sometime acute renal failure⁷.

Coronary artery disease (CAD) is the most common cause of cardiovascular death all over the world. It is most commonly due to atherosclerosis.⁸ The prevalence of CAD & its associated morbidity and mortality increase as age advances.⁹ CAD has been shown to be more prevalent in males than females.¹⁰

Ischemic heart disease is at highest prevalence in Pakistani population¹¹. Widely it is associated with other risk factors and our patients are at high risk during coronary angiogram.¹² Usually it takes more aggressive course in our people.¹³ In our study we compared the complications of ionic and nonionic dye during coronary angiogram in our population.

MATERIALS AND METHODS

This study was conducted in Catheterization Laboratory of Punjab Institute of Cardiology, Lahore. It was randomized controlled trial, non probability purposive sampling. The study was conducted from 28th September, 2007 to 27th March, 2008. 200 patients were studied. The study population was divided into two groups.

Group I: 100 patients receiving Ionic dye.

Group II: 100 patients receiving Non ionic dye.

All patients undergoing coronary angiogram without previous history of allergies to dye and drugs were included. Patients with history of, nephrotoxicity allergies to dyes/ drugs, bronchial asthma, hyperthyroidism, pre-procedure hypotension, bradycardia and tachycardia were excluded.

Contrast induced anaphylactoid reaction occurring during or just after the procedure in catheterization laboratory. These are, hotflushing, rash, nausea, rigors, bronchospasm, bradycardia.

Patients were taken to Catheterization Laboratory after passing intravenous lines and applying chest electrodes for ECG monitoring during procedure. Blood pressure monitoring was done by connecting to pressure line and tip pressure displayed on the physiologic monitor at all times (except during actual contrast injections). Recording this baseline pressure before contrast administration serves as an important baseline reference point. Patients were explained about the expected time duration of procedure and complications. Also told him to tell immediately if feels any problem during procedure and react to doctor's advice and instruction if he says.

Immediate complications were noted for both groups patients and patients were given intravenous hydrocortisone, avil, metoclopramide and zantac accordingly for anaphylactic reactions. Additionally intravenous 0.9% saline and dobutrex given for symptomatic hypotension.

Data were entered in the computer using S.P.S.S (statistical package for social sciences) version 10.0 for windows. Descriptive statistics were used to calculate mean $\pm$ SD for age, heart rate, blood pressure, urea, creatinine of the patient. Frequencies and percentages were calculated for sex and immediate anaphylactic complications. Chi square test was applied to find out the significance of difference in immediate complications of two groups. $P \leq 0.05$ was taken as significant.

RESULTS

Out of 200 patients studied, 153(76.5%) were male and 47(23.5%) were female (Figure 1). First group with 11(11%) Male and 89(89%) Female patients, while second group with 64 (64%) Male and 36(36%)Female. Age range was 32-75 yrs with mean age of 53.94 ± 10.07 yrs. of study population. 14 (7%) patients were below 40 years of age, 49 (24.5%) patients between age 40-49 years, maximum patients 75 (37.5%) were in 50-59 years age, 43 (21.5%) patients between 60-69 years age and 19 (9.5%) patients were between 70-75 years.

In ionic group mean age was 51.05 ± 9.08 , and in non ionic mean age was 56.83 ± 10.23 (p value <0.05), Mean urea was 26.74 ± 6.23 in ionic group and 26.29 ± 5.80 in non ionic group (P value 0.59). In ionic group mean serum creatinine was 0.80 ± 0.1 and in non ionic group mean serum creatinine was 0.79 ± 0.1 (p value

0.45). Mean heart rate was 77.56 ± 3.01 in ionic group and 78.26 ± 4.96 in non ionic group (p value 0.23). 76 ± 9.7 mmHg was mean of mean arterial pressure in ionic group and 102.03 ± 8.43 mmHg in non ionic group (p value 0.01). (Table. 1).

Most common complication occurred during angiogram was sinus bradycardia which was observed in 15 (15%) of ionic group and 2 (2%) of non ionic group (p value 0.002). Nausea and vomiting occurred in 12 (12%) patients of ionic group and 2 (2%) patients of non ionic group (p value 0.01).

Table No. 1: Mean and S.D of variables of both groups.

Characteristics	Ionic dye group N=100		Non Ionic dye group N=100		p – value
	Mean	S.D	Mean	S.D	
Age	51.05	9.08	56.83	10.23	<0.05
Blood urea	26.74	6.23	26.29	5.80	0.59
Serum creatinine	0.80	0.1	0.79	0.1	0.45
Heart rate	77.56	3.01	78.26	4.96	0.23
Mean blood pressure	98.76	9.7	102.03	8.43	0.01

S.D.---Standard Deviation

Table No. 2: Comparison of immediate complications of both groups.

Complications	Ionic dye group		Non-Ionic dye group		P- Value
	N= 100	%	N= 100	%	
Emesis, nausea	12	12%	2	2%	0.01
Rigors & chills	8	8%	1	1%	0.035
Bronchospasm	7	7%	1	1%	0.065
Heat, flushing	8	8%	0		0.007
Sinus bradycardia	15	15%	2	2%	0.002

Rigors and chills occurred in 7 (7%) of patients of ionic group and 1 (1%) patient of non ionic group (p value 0.065). In ionic group 8 (8%) patients developed flushing and 0 (0%) patient developed in non ionic group (p value 0.007). Bronchospasm occurred in 8 (8%) patients of ionic group and 1 (1%) patient of non ionic group (p value 0.035). (Table 2).

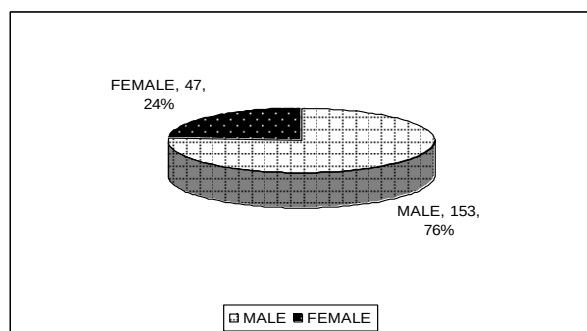


Figure No.1: Frequency & percentage of total population according to sex

DISCUSSION

In this study we compared the anaphylactic complications of ionic dye and non ionic dye used in patients undergoing coronary angiogram. We also measured the variables including age, blood pressure, heart rate, blood urea, serum creatinine in our study.

Michel E. Bertrand et al ¹⁴ in a Multicenter, Randomized, Double-Blind Study studied the potential merits and disadvantages of the use of ionic or nonionic contrast media. Hypersensitivity reactions ($P=0.007$) and adverse drug reactions ($P=0.002$) were significantly less frequent in the iodixanol group as compared to ioxalate group. In our study hypersensitivity reactions like nausea vomiting were observed in 12 patients of ionic and 2 patients of non ionic group (p value 0.07), heat flushing observed in 8 patients of ionic and in no patient of non ionic group (p value 0.007), rigors observed in 8 patients of ionic and 1 patient of non ionic group (p value 0.035) and bronchospasm observed in 8 patients of ionic and in no patient of non ionic group (p value 0.007). Collectively it was proved that hypersensitivity reactions were significantly less common in nonionic group patients than that of ionic group.

Paola Cutroneoa et al ¹⁵ reported suspected adverse reactions attributed to contrast media sent to the Sicilian Regional Centre from 1996 to 2006.

Out of 3471 reports involved CM, majority of reports described hypersensitivity reactions with immediate onset. Iopromide (52.5%), and iomeprol (11.9%) were the drugs with the highest number of reports.

So immediate hypersensitivity reactions are more common and significant with ionic group as compared to non ionic group patients as also proved in our data.

Juergens CP et al ¹⁶ to assess potential adverse effects of non-ionic and ionic contrast media. Allergic reactions occurred in 7 of 165 patients (4.2%) receiving ioxaglate had an allergic reaction as opposed 0.0% (0 of 124 patients) in the iopromide group ($p=0.021$). the ionic contrast agent ioxaglate was associated with the majority of allergic reactions. In our study hypersensitivity reactions like flushing observed in 8 % patients of ionic and in 0% of non ionic group

(p value 0.007), rigors observed in 8% patients of ionic and 1% of non ionic group (p value 0.035) nausea vomiting were observed in 12% patients of ionic and 2% patients of non ionic group (p value 0.07), heat and bronchospasm observed in 8% patients of ionic and in 0% patient of non ionic group (p value 0.007). So overall it was evident that hypersensitivity reactions were significantly more common in ionic group than that of non-ionic group.

Gertz EW et al ¹⁷ in a multicenter randomized double-blind design study comparing ioxaglate (an ionic dimer) and iopamidol (a nonionic compound) and included 500 patients; 250 patients received ioxaglate and 250 iopamidol. There were 58 adverse reactions attributed to the contrast media in the ioxaglate group and 29 in the iopamidol group (p less than 0.001). Nausea or vomiting was present in 20 and 2 patients, respectively (p less than 0.0003). Allergic adverse reactions, such as bronchospasm, urticaria and itching, occurred in 15 of the ioxaglate group and only 1 of the patients receiving iopamidol (p less than 0.0007). Seven of the 52 ioxaglate-treated patients developed an allergic adverse reaction compared with none of the 77 in the iopamidol group ($p = 0.001$). In our study nausea vomiting were observed in 12% patients of ionic and 2% patients of non ionic group (p value 0.07), allergic reactions like bronchospasm observed in 8% patients of ionic and in 0% patient of non ionic group (p value 0.007) and heat flushing observed in 8% patients of ionic and in 0% patient of non ionic group (p value 0.007) proving that non-ionic contrast used during coronary angiography is significantly safer than ionic contrast media.

This study was carried out in a relatively small number of patients and it is possible that just one false positive result might change the level of significance while comparing the two groups. Hence, in order to obtain more accurate results, more number of patients should be studied in any future study.

CONCLUSION

Anaphylactic reactions during coronary angiogram were more common with ionic dye as compared to non ionic dye.

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Mobile Phone Radiations, Possible Disruptor of Early Retinal Development

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ABSTRACT

Objective: This study was conducted with an objective to investigate the effects of mobile phone induced radiations on retinal morphogenesis of chick embryo.

Study Design: Experimental Study.

Place and Duration of Study: This study was conducted at Anatomy department, Regional Centre, College of Physicians and Surgeons Pakistan, Islamabad from Jan. 2006 to Jan. 2007.

Materials and Methods: Chicken embryos were exposed to mobile phone silent mode ringing by placing a GSM operated phone in the centre of the fertilized eggs developing in the incubator. This phone was ringed upon for 15 minutes twice daily for one experimental subgroup and 25 minutes twice for the other subgroup. The control and experimental groups were sacrificed at the end of 10 post incubation days. The retinae of the embryos were dissected out and statistically compared for the heights of different retinal layer after paraffin processing of sections.

For lower dosage (15 minutes of ringing) of mobile phone induced EMFs, thickness of the rods and cones layer and inner plexiform layer of the treated subgroup was significantly less than the control. On increasing the dosage to 25 minutes, thickness of the pigment epithelial layer of the treated group was significantly more than the control group. All the other layers were more in thickness in this subgroup but this difference was not statistically significant.

Results: The results of the study conclude that mobile phone radiations have a dose dependant regulatory effect on the early developmental process of chick embryo retina.

Conclusion: EMFs dose Mobile phone induced EMFs disrupt the developmental process of embryonal retinogenesis. This effect is influenced differently at different levels exposure.

Key words: Retina, mobile phone, electromagnetic fields.

INTRODUCTION

Debate regarding the biological effects of radiofrequency Electromagnetic fields has intensified with the storm of evolving technology and many fold increase in the daily exposure of such radiations.

Of the man made sources of Electromagnetic fields (EMFs), like radars, X rays, television, computers, anti theft devises, and simple electricity devises used at homes, the most common is the mobile telephone. Introduced back in 1940s¹ as a commercial item, mobile phones now out number land-line telephone. Increasingly larger numbers of people rely on mobile telephone technology, and health concerns about the associated EMFs exposure have been raised, particularly because the mobile phone handset operates in close proximity to the human body, and also because large numbers of base station antennas are required to provide widespread availability of service to large populations².

The biological effects of Electromagnetic fields have been reported in the previous researches³. However at present, there is insufficient data to draw firm conclusions about health effects related to EMFs exposure typically occurring in the everyday environment⁴.

Base stations in residential areas⁵, unconstrained usage of cell phone by all age⁶ and health groups, intimate

body carrying of the device⁷ are some of the public concerns today.

Embryo development is characterized by multiple biological processes. Interference with these processes by any factor is the basis of teratogenesis⁸. The present study was designed to investigate the influence of mobile phone radiations on the development of chick embryo retina.

MATERIALS & METHODS

Randomly selected fertilized chicken eggs obtained from Poultry research centre were divided into two groups, treated A, and control B. The treated group A was subdivided into 2 subgroups A1 & A2 depending upon the dose of EMFs exposed to embryos. The sample number in subgroups A1, A2 and B was 30.

The fertilized eggs were placed for incubation on a double storey circular plate system This plate system was devised to accommodate 15 eggs on each plate. A GSM operated mobile phone was placed on a small rack in the centre of the lower plate in the treated subgroups. Rest of the incubation conditions were identical for the control and treated groups.

The mobile phone was rung upon twice daily for 15 minutes in case of A1 subgroup and 25 minutes in case of A2 subgroup. At the 10th post incubation day (D10)

the embryos were sacrificed, dissected out of the membrane and fixed in 10% neutral buffered formalin solution for 48 hours. The retinae were fixed *in situ*. After fixation the eyes were dissected out of the bisected head. A 0.5 cm square piece of retina with optic nerve in the centre was removed for paraffin processing. Sections cut at 5-mm thickness, and stained with hematoxylin and eosin, and showed all the retinal layers along with the pigment epithelium. The thickness and height of the retinal layers were measured, compared and analyzed using students' test considering a p value of less than 0.05 as significant.

RESULTS

The means of the heights/thickness of the individual layers of developing retina of low dose exposed subgroup A1 were compared with the means of the control group B. The thickness of the rods and cones layer and also of the inner plexiform layer of the treated subgroup was significantly less than the control (Table No.1).

The means of the heights/thickness of the developing retinal layers of high dose exposed subgroup A2 when compared with the control B showed significantly increased thickness of pigment epithelium in the treated group. Thicknesses of the outer nuclear layer, inner nuclear layer, the ganglion layer and the nerve fiber layer of the treated embryos were also more in the treated subgroup but this difference was not statistically significant (Table No.2).

Table No.1: Histological comparison of control B with low dose exposed subgroup-A1

PARAMETERS (Thickness of layers in micrometers)	SUB GROUPS				P Value
	Control B		Treated A1		
	N	Mean ± SE	N	Mean ± SE	
Pigment epithelium	29	5.123 ± 0.347	21	7.483 ± 2.393	P = 0.2597
Rods & cones layer	23	2.180 ±0.255	14	.979 ±0.078	P= 0.0010*
Outer nuclear layer	18	11.737±0.488	10	11.726±0.921	P = 0.9908
Outer plexiform layer	18	3.655± 0.298	10	3.281±0.371	P = 0.4490
Inner nuclear layer	18	73.746±4.715	10	68.080±3.365	P = 0.4151
Inner plexiform layer	26	19.396±2.544	20	10.522±1.126	P= 0.0060*
Ganglion cell layer	26	14.385±1.090	20	11.792±0.848	P = 0.0806
Nerve fiber layer	27	22.1104±2.875	21	15.492±1.784	P = 0.0744

Table No.2: Histological comparison of control B with High dose exposed subgroup-A2

PARAMETERS (Thickness of layers in micrometers)	SUB GROUPS				P Value
	CONTROL B		TREATED A2		
	N	Mean ± SE	N	Mean ± SE	
Pigment epithelium	29	5.123 ± 0.347	25	5.975 ± 0.186	P = 0.0437*
Rods & cones layer	23	2.180 ±0.255	24	2.180 ± 0.221	P = 1.0000
Outer nuclear layer	18	11.737±0.488	20	13.760±0.851	P = 0.0528
Outer plexiform layer	18	3.655± 0.298	20	3.510 ± 0.356	P = 0.7595
Inner nuclear layer	18	73.746±4.715	20	84.080 ± 4.796	P = 0.1346
Inner plexiform layer	26	19.396±2.544	25	18.665 ± 0.992	P = 0.7931
Ganglion cell layer	26	14.385±1.090	25	14.574±0.660	P = 0.8838
Nerve fiber layer	27	22.1104±2.875	25	27.176 ±3.145	P = 0.2392

DISCUSSION

This study shows the influence of mobile phone induced EMFs on the developing retina of chick embryo. When the exposure dose of EMFs was less, the radiations suppressed the development process and the retinal mile stones lagged behind the control. However when the exposure dose was increased, the stage of retinal morphogenesis was noticed to be advanced as compared to the control, highlighting a changed

influence of EMFs on the retinal morphogenesis at this enhanced dose level. (Figures 1 & 2)

Mobile phones operate through Microwave electromagnetic fields (MW-EMFs) at a frequency of 900/1800 MHz at GSM system of connections. Non-thermal (low-intensity) biological effects have not been considered for regulation of microwave exposure, although numerous scientific reports indicate such effects⁹. Recently scientists have reported non-thermal effects induced by exposure to microwave

electromagnetic field (MW-EM), at a frequency level used in mobile communication, on the refolding kinetics of the heme binding site in an intracellular

protein¹⁰. Being held near the body, usually within one wave length of the emitting EMFs, the mobile phones cast maximum field and intensity exposure.

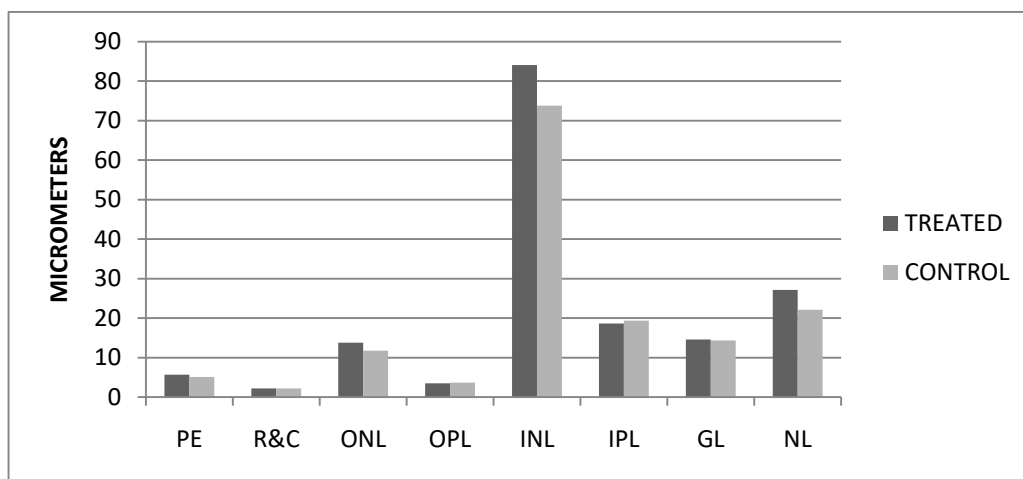


Figure No. 1: Retinal layers thickness of low dose treated subgroup-A1 compared with control B

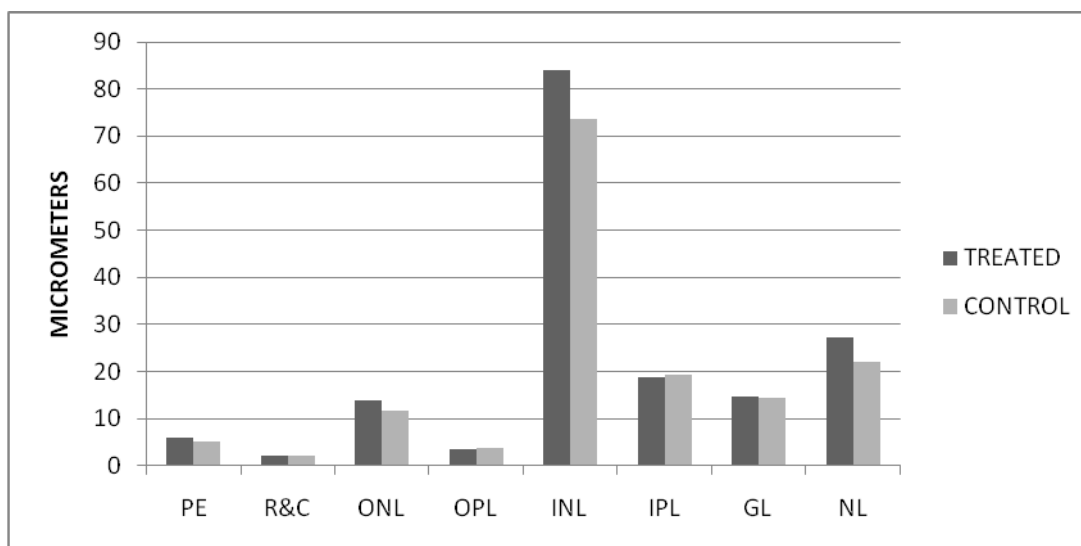


Figure No.2: Retinal layers thickness of high dose treated subgroup-A2 compared with control B2

EMFs at various frequency and intensity levels have been reported to cause different biological and health effects. The morphological differences noticed in this study as a result of different doses of mobile phone exposure can be discussed in the light of radiation induced biological effects.

Possible DNA damage and faulty repair can be a factor responsible the effects noticed in this study. DNA has been reported recently to act as fractal antenna to the EMFs. DNA appears to possess the two structural characteristics of fractal antennas, electronic conduction and self symmetry. These properties contribute to greater reactivity of DNA with EMFs in the environment, and the DNA damage could account for increases in cancer epidemiology¹¹.

The suppressive effects of mobile phone radiations could be due to physical interaction and interference of these currents with biological circuitry of living tissue. Also these currents can induce hormonal or oxidative stress to the developing embryos bringing about the initial growth suppression. Development is a process guided by endogenous ionic currents and electric fields. Interference of these fields through the EMFs exposure can adversely affect these events¹² hindering the normal developmental process. Electromagnetic fields of microwave frequency have been reported to can cause developmental delay of *Drosophila melanogaster*¹³. Electromagnetic fields, in both extremely low frequency and radio frequency ranges can also activate the cellular stress response¹⁴. Stress hormones although protective initially can promote damage when they are

overproduced. As is supported by recent research suggesting that increased adrenocortical and sympathoadrenal responses are associated with small size at birth^{15,16}.

Pulsed microwaves have been proved to bring about oxidative stress, a possible mechanism of DNA and cell damage¹⁷. Studies also relate oxidative stress to delay in the embryonal development¹⁸. Therefore, the delayed retinal morphogenesis noticed in the A1 subgroup could be a stress response of the developing embryo to the EMFs.

The reversal of growth suppression of embryonal retina as noticed in the second half of this experiment can be discussed on the basis of the "Pre conditioning effect" of EMFs. According to this effect any external influence at first manifests its damaging effect through stress proteins. Later, intracellular over production of these same proteins can render cytoprotection¹⁹.

The other mechanisms that might be involved in this reversal of effects on increasing the EMFs may be its direct stimulatory effect, growth factor upregulation, increased cell proliferation, cytoprotection, improved hypoxia and/or increased metabolic process, since all these factors are reported effects of EMFs.

The changed influence of mobile phone EMFs reported presently is in support of our previous study²⁰ in which the different levels of exposure exhibited a diverse effect on retinal pigmentation grades in a dose dependant fashion.

In addition to the radiation emission from the handset itself, researchers have to take into account the EMFs emanating from transmission antennas and mobile base station antennas.

CONCLUSION

EMFs dose Mobile phone induced EMFs disrupt the developmental process of embryonal retinogenesis. This effect is influenced differently at different levels exposure.

Keeping in view the extensive dependency of the global society on this technology, this field requires more elaborate work unraveling facts and defining safety regulations for the consumers. Casual installation of the base stations in the residential and public premises should be checked and parental awareness should be increased regarding child consumption of mobile phones.

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Comparative Study of Dermatoglyphics among the students of Ziauddin University

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ABSTRACT

Objective: To determine the distribution of finger print pattern among students of Ziauddin University belonging to different ethnic origins specifically pertaining to different ABO blood groups and also to correlate any relation between fingerprint pattern with ethnicity and ABO blood groups.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at Ziauddin University Karachi from 1st Jan. 2010 to 30th June, 2010.

Materials and Methods: This comparative study was carried out at Ziauddin University Karachi. 250 students, 50 students each from 1st year to 5th year were included by simple random technique. Students within age range of 19-24 years, belonging to any gender, ethnic group or any ABO blood groups were included in this study. Students suffering from eczema, chronic dermatitis, leprosy were excluded from study. Also students with permanent scars on their fingers and thumbs and deformities on finger either due to acquire or congenital traumas were also excluded. Fingers prints of both hands including thumbs were taken on a plain paper with a stamp pad by plain method. ABO Blood grouping of each student was performed. A Performa was made in which name, age, gender, ethnicity, type of blood group and type of finger print pattern were tabulated.

Results: 138 students were males and 112 were females with ratio of 1:2:1. Age range was between 19-24 years. Loop pattern were predominant (48.8%), followed by whorl pattern (32%) and then arch (19.2%). Blood group B was most frequent (47%), followed by O group (27%), A group (18.8%) and AB Group (6.8%) respectively. Applying chi square test the p value obtained in variables i.e. finger prints with blood groups and fingerprints with ethnicity, no significant correlation was found.

Conclusion: No significant association was found in types of finger prints with ABO blood groups and type of ethnic origin respectively. This study requires to be done at larger scale with larger sample size representing true indicator of population.

Key words: Finger prints, Dermatoglyphics. ABO Blood Groups.

INTRODUCTION

Dermatoglyphic is a term applied to the study of patterns of the surface of hands and feet.¹ This science is very old and has been used by Chinese as a signature few thousand years ago.² A fingerprint is an impression of the friction ridges of all part of finger. A friction ridge is a raised portion of the epidermis on the digits or on the palmer and planter skin, consisting of one or more connected ridge units of fraction ridge skin. Fingerprints may be deposited due to natural secretions from exocrine glands present in friction ridge skin.³ Fingerprint patterns are genetically determined and remain unchanged from birth till death.⁴ Fingerprints develop, between approximately 13th and 18th week of gestation and in the absence of trauma, remain essentially unchanged throughout life.⁵ The types of fingerprint are unique, based on the genital characteristics of each individual. After extensive studies, researchers have recently found that the a palm print is some what related with nationality, geological distribution, character, temperament, health and intelligence.¹ There are three basic finger print patterns;

Arch, Loop and whorl.⁶ Arch can further be classified into tented and loop arches with further subdivisions into Radial and ulnar variety. The plain whorls type is divided into five sub groups – simple, central packed loop, twinned loop, lateral packed loop and accidental.⁷ The pattern area is the part of a loop or whorl which contains the core delta and ridges. Total finger ridges count is the most inheritable feature in dermatoglyphics. It is related to two different timed events, the timing of onset of volar pad regression versus the timing of the onset of primary ridge formation. It is also affected by the external factors like, diet, chemical intake of mother, hormone levels and radiation levels.⁹ The most common pattern, a simple loop (60-70%) is characterized by single triradius, is not advantageous for tactile perception and precession group. Whorl has two triradi yielding two central, while simple arches have no true triradi, resulting in zero count.^{1,10,11} In recent years digital dermatoglyphics has been found useful in Forensic Medicine especially in identification purposes.⁵ It is also useful in medical diagnosis of genetically inherited diseases and in detection of crimes. Finger prints collected at a crime

scene can be used to identify perpetrator of crime, victims and other persons who touched the surface. Fingerprint scans can be used to validate electronic registration, cashless catering, library access especially in schools and colleges and office attendance. The secretions in the fingerprints contain residues of various chemicals and metabolites which can be detected and used for the forensic purposes.³ A considerable improvement has been achieved in the concept of relation between the type of patterns of lines on the fingers and some individual disorders.^{8,9,10,11} Thus this study was aimed at determining and establishing the dermatoglyphic pattern among the students of Ziauddin University belonging to different ethnic groups and determining (association) in pattern of fingerprints with type of blood group and ethnicity.

MATERIALS AND METHODS

This comparative study was conducted on the Medical students of Ziauddin University, Karachi 50 students each were taken from 1st year M.B.B.S to final year M.B.B.S were included in this study. The study design was cross-sectional study students were selected by simple random technique.

Inclusion Criteria

1. Students of either sex from 1st -5th year M.B.B.S enrolled in Ziauddin University, Karachi.
2. Subjects belonging to any ethnic group.
3. Subjects belonging to any ABO blood group.

Exclusion Criteria

1. Students suffering from any chronic skin disease e.g. eczema, leprosy and chronic dermatitis
2. Students having scars, congenital or acquired anomalies due to trauma on fingers were excluded from this study.

A Performa was designed in which data including name, age, gender, ethnicity, and ABO blood groups were entered. Impression of all fingers and thumbs of both hands were taken. The impressions were taken by simple plain and rolling method. Screening of finger prints were done by using magnifying lens and scanner. Students were divided into five groups (1st year M.B.B.S to 5th year M.B.B.S) according to their class. Each group was further divided according to gender, ethnicity, and blood group and type of finger print pattern. Ethical review committee guide lines were followed.

Statistical analysis of the data was done using SPSS version 11. Being and observational study descriptive statistics were used for determining frequency of types of finger prints and proportion of ethnicity and ABO blood group with each type of finger prints. Chi square test was used. P value >0.05 was considered significant.

RESULTS

There were total of 250 students with 138 males (55%) and 112 females (45%) with male to female ratio of

1:2:1. The age range of subjects was from 19-23 yrs. The most prevalent pattern in this study was loop 48.8% followed by whorl 32% and then arch 19.2% as shown in table No.1. In the types of blood groups Antigen B was the most frequent type 47% followed by O antigen 27%, A antigen 18.8% and AB 6.8% respectively as shown in Table No 1. The blood group B was most common 28.4% in people who have loop type of finger print pattern followed by O group and A group respectively. Similarly in whorl type of finger print pattern B group antigen was most common but peoples who have arch type of finger print blood B and O antigen are equally common as shown in Table No 1. When the dactyl glyphic patterns were studied with relation to the ethnicity among people of Karachi no significant association was found as shown in Table No 2. The loop pattern was most common in all the Ethnic groups' i-e. Punjabi, Pathan, Balochi, Sindhi and Urdu speaking followed by whorl and arch type of patterns respectively.

Table No. 1: % age of different blood groups in finger prints.

Finger -prints types	Blood group types							
	A		B		O		AB	
	N	%	N	%	N	%	N	%
Loop	16	31.4	71	61	31	45	4	31
Whorl	20	39.2	30	26	22	32	6	46
Arch	15	29.4	16	13	16	23	3	23
Total	51	100	117	100	67	100	13	100

Using chi square test p value 0.98

Table No. 2: %age of different finger prints in Punjabi, Pathan, Balochi, Sindhi and Urdu speaking

Ethnicity	Type of Finger printing					
	Loop		Whorl		Arch	
	n	%	n	%	n	%
Punjabi	36	28	27	35	14	31.11
Pathan	20	16	7	9	5	11.11
Balochi	8	6	3	4	2	4.44
Sindhi	22	17	17	22	5	11.11
Urdu Speaking	42	33	23	30	19	42.22
Total	128	100	77	100	45	100

Using chi square test p value is 0.95

DISCUSSION

Dermatoglyphics is a scientific method for anthropological, medico legal and genetic studies. The role of fingerprint patterns is of particular importance in forensic sciences. The fingerprint patterns are unique to every individual and have been used in identifying

individuals in air crashes and mass disasters. Also these patterns play an important role in detection of criminals by matching finger prints collected from scene of crime. In this study the most common prevalent pattern is loop followed by whorl and arch respectively. These studies are largely in conformity with studies done previously, one national and some international studies on this subject.^{10,11} Where as in another study done in Karachi, whorl pattern is predominant 48% followed by loops 42.5% and then arches 4.8%¹², which is similar to the study results done in India.³ A change in external environment is not a factor which might be attributed to this difference of pattern as has been suggested by some studies.¹³ The difference in results of these two studies of Karachi suggests that a study should be conducted with larger sample size indicating true representative of population in Karachi. Further there is an imminent need that this study should be conducted at national level which would represent the true incidence of finger print patterns in Pakistan. It is imperative to state a data based bank having full record of fingerprint pattern and foot print pattern along with bio data of all the new born be established which would be of great help in identification purposes and in detection of suspect from scene of crime. The most frequent blood group antigen is B followed by O, A an AB respectively. These results are in conformity with studies in other parts of Pakistan.^{14, 15, 16, 17} where as in study in India O blood group is the most prevalent group.^{3, 18} There is divergence in the results of studies in India when the association in variables i.e. types of finger print patterns and types of ABO blood were studied. In one study whorl were common in AB blood group while in another study whorls are common in subjects having O blood group.^{3,18,19} When the correlation between the two variables i.e. blood group types and types of finger print pattern were tabulated using chi-square test, the P value obtained was 0.9856124 which is insignificant. Studies from other parts of the world also show no such linkage.²⁰ There had been no statistically significant difference of ABO distribution of blood groups among various ethnic groups except that blood group B is most common in Arian group. The reason for such type of results might be due to sampling fluctuation, or the sample size is not adequate, sampling error or these two variables are independent and do not effect each other. Similar studies should be conducted on a larger sample size so as to increase the accuracy of prediction. Another reason put forward is since fingerprint asymmetry has a significant hereditary component, but there is no increased or decreased asymmetry in subgroups of any admixture, this suggests that genetic adaptation in humans involves the species as a whole and not based on racial groupings.²¹ The disparities may be due to environmental factors as has been reported they gets influenced by environmental, physical and topological factor.¹

Fingerprint patterns are related to genetic predisposition to various disorders. In one study it was found that in absence of risk factors for myocardial infarction dermatoglyphic pattern study can help in detection of patients susceptible to infarction.^{7, 22} similarly with the help of dermatoglyphic patterns bronchial asthma and its genetic predisposition can be detected. Similarly digital dermatoglyphic patterns are governed by polygenes with additive effect (without dominance) which may be autosomal.²³ Thus it is proven that fingerprints are closely related in predicting familial disorders. There is a need that dermatoglyphic patterns should be studied with autosomal and hereditary disease and their genetic predisposition may be found.

CONCLUSION

No significant association was found in types of finger prints with ABO blood groups and type of ethnic origin respectively. This study requires to be done at larger scale with larger sample size representing true indicator of population.

Recommendations

Birth records with palmer and foot prints may be maintained in data base bank at national level.

For consistency of results a study at national level be conducted to find exactly which of the patten are prevalent and their incidence.

Dermatoglyphic patterns should study in relation to genetic and hereditary diseases and their genetic predisposition be researched.

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Salivary Gland Diseases: Analysis of Patients Attended at Dow Lab Karachi

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ABSTRACT

Objective: The aim of this study is to describe demographic characteristic of 103 cases of major and minor salivary glands diagnosed at DDRRL (Dow lab Diagnostic reference and research laboratory) OJHA campus, DUHS Karachi.

Study Design: Observational Study.

Place and Duration of Study: This study was conducted at Dow University of Health Sciences Ojha Campus, Karachi from January 2009 to April 2011.

Materials and Methods: Salivary gland diseases are uncommon and include diseases which affect both major and minor salivary gland. They consist of a group of heterogeneous lesions with complex clinicopathological characteristics and distinct biologic behavior. Epidemiological data of these diseases in the various parts of the world can be helpful for a better understanding of its biology and clinical characteristics.

Clinical and histopathological data of all patients with salivary gland diseases are retrospectively analyzed and described.

Results: In this study, 103 cases of salivary gland diseases be analyzed, out of all cases 31 were infections, 50 were benign neoplasms, and 22 were malignant neoplasms. Majority of the cases occurred in parotid gland followed by submandibular and minor salivary glands. Infections are common between the ages between 10-35 years and peak incidence in 30 years. Benign tumors are common between 20-25 years and 40-50 years and with a peak incidence in 40 years. Tumor affected more commonly the adult patients with peak incidence between 35-65 years and peak incidence in 50 years with slight predominance in females. Pleomorphic adenoma is the most frequent finding followed by sialadenitis and squamous cell carcinoma.

Conclusion: Patients with salivary gland diseases are mainly adults with marginally more female patients. Most commonly found infections are sialadenitis involving sub mandibular gland in majority of cases. Benign tumors are more frequent then malignant ones. Pleomorphic adenoma is the commonest benign tumor and squamous cell carcinoma is the commonest malignant neoplasm. Both benign and malignant tumors involve parotid gland commonly.

Key words: Salivary Gland Disease, Sialadenitis, Submandibular Gland, Pleomorphic adenoma, Squamous Cell Carcinoma.

INTRODUCTION

A variety of systemic diseases, as well as a number of pathological conditions affects human salivary glands as their primary target. ⁽¹⁾ The non-neoplastic salivary gland diseases⁽²⁾

represent a diverse group of disorders which affect both the major and minor salivary glands. ⁽²⁾

Salivary gland tumors are relatively uncommon. ⁽³⁾ Their clinical importance, however, far outweighs their relatively low frequency,

The mean age of patients with salivary gland tumors is 45 years, peaking in the sixth and seventh decades of life. ⁽⁴⁾ Benign salivary gland tumors occur more frequently in females, while malignant tumors are slightly more frequent in males. ⁽⁴⁾ The parotid gland is the most frequent site – about 70% of cases ⁽⁴⁾ About 80% of parotid tumors are benign, the most common being the pleomorphic adenoma (60% of parotid tumors), followed by Warthin's tumor (10% of parotid

tumors). ⁽⁴⁾ The most common salivary gland malignancy is the squamous cell carcinoma which involves mostly the parotid gland, followed by the minor, submandibular and sublingual salivary glands. ⁽⁴⁾ The cystic adenoid carcinoma and mucoepidermoid carcinoma are the second most frequent malignancies in this area.

The main symptom in patients with parotid neoplasms is a lump in the parotid area. Other symptoms such as pain, facial palsy and skin ulcers may manifest in malignant cases. ⁽⁴⁾

Worldwide epidemiological series show geographic variation in the relative incidence of salivary gland tumors, with discrepancies among clinicopathological aspects. ⁽⁶⁾ Salivary gland tumors are complex neoplasms, due to their broad histological spectrum resulting from multiple tumor cell differentiation. ⁽⁶⁾

The purpose of this study was to find out all salivary gland diseases including infectious lesions, benign lesions and cancerous proliferation. And to describe the demographic characteristics of 103 cases over a period

of 2 years and compare these data with other epidemiological studies.

MATERIALS AND METHODS

Data is being collected from the Files of the Dow University of Health Sciences Ojha Campus for a 3 year period (January 2009- april2011). All salivary gland disease including infections, benign neoplasms and malignant neoplasms in both sexes, in all age groups are selected in the study.

This is a retrospective study, in which different clinicopathological variables are analyzed including age, gender, location, histological type and lesion type.

All cases are classified according to criteria suggested by 1991 world health organization histological classification. ⁽⁷⁾All salivary gland diseases including infections, benign tumors and malignant neoplasms in both sex and in all age groups are selected.

Cases are excluded when the patients files are not located or when information is lacking in the file. Statistical analysis is carried out using SPSS version 16. Descriptive and cross tabs are used to analyze the variables. And then Meta analysis is done among different studies. For associations chi-square test is used. Level of significance was set at 5 % ($p < 0.05$).

RESULTS

The study sample consists of 103 cases with necessary information for analysis. There are 31 infections (30.1%), 50 benign tumors (48.5%), and 22 were malignant tumors (21.4%). Mean age is 37.99 and there are marginally more females in the sample. Parotid gland is involved in majority of cases.

Infections are common between the ages of 10-35 years and also at the age of 50 years with peak incidence in 30 years. Infections are more common in submandibular glands including 23(74.19%) cases, affecting male patients most commonly. The most frequent infections are sialadenitis, about 18 (58.06%) cases, occurring mostly in submandibular gland 15 cases (83.34%) followed by parotid gland 3 cases (16.64%). Male to female ratio is 1.2:1. Then it is followed by tuberculosis 6 (19.35%) cases, occurring in sub mandibular gland only and affect female patients in majority of cases. We also find single case each of ranula at age 35 years in a female patient, extravasation Mucocoele in a boy of 10 years, reactive lymph adenitis all in minor salivary glands and three cystic lesions in parotid, submandibular and minor salivary glands. Sub lingual gland is not involved in any infection of salivary gland.

In this study we found 50 cases (48.5%) of benign neoplasms. Patient age varies from 20 to 25 years and 40-50 years and peak incidence in 40 years of age for benign neoplasms and it increases significantly in the transition from benign to malignant. Male to female ratio is 0.8:1. Most frequent benign tumors are the pleomorphic adenoma 40 cases (80%), followed by warthin's tumor 4 cases (8%). We also found 2 cases of lipoma and hemangiona and one case each of chondroidsyringoma and lymphangioma. Majority cases are found in the parotid gland 34 cases (68%) followed by submandibular gland 11cases (22%) and minor salivary glands 5 cases (10%). Peak incidence is in the second and fourth decade. Sub lingual gland is not involved in any benign neoplasm.

Table No.1: Distribution of salivary gland diseases according to site, gender and age in 103 cases

	Parotid salivary	Sub-mandibular salivary gland	Minor salivary gland	Gender		Age range	Percent
				Male	Female		
Tumor type							
Infections	4	23	4	17	14	10-52 years.	30.1%
Benign tumors	34	11	5	22	28	15-70 years	48.5%
malignant	17	1	4	9	13	20-70 years	21.4%
Histological type							
sialadenitis	3	15	-	12	6	10-52 years	58.06%
tuberculosis	-	6	-	1	5	10-50 years	19.35%
Pleomorphic adenoma	29	9	2	15	25	15-65 years	80%
Warthin's tumor	3	1	-	3	1	47-70 years	8%
Adenoid cystic carcinoma	4	-	3	4	3	36-70 years	31.8%
Mucoepidermoid carcinoma	7	-	-	1	6	20-56 years	31.8%
Squamous cell carcinoma	6	-	1	3	4	35-65 years	31.8%

We found 22 cases of malignant neoplasms in the salivary gland diseases. Male to female ratio is 0.7:1. They are more common between 35-65 years of age and peak incidence in 50 years. Among them the most common malignant tumors include squamous cell carcinoma, mucoepidermoid carcinoma and adenoid cystic carcinoma all with equal frequency of 7 cases

(31.8%) each. We also found one case of invasive salivary gland carcinoma. Commonly involved gland is parotid having 17 cases (77.27%), followed by minor salivary gland 4 cases (18.18%) and only one case is found in submandibular salivary gland. Sub lingual salivary gland is not involved in any salivary gland malignancy.

Table No.2: Comparisons of Representative Percentages of Epithelial Salivary Gland tumors of worldwide series.

Tumor Type	Present Study	Study By Brazil2009	Ito et al.[10] Brazil 2005	Vargas et al. [9] Brazil 2002	Li et al.[14] China 2008	Ansari et al.[3] Iran 2007
benign	48.5	78.3	67.5	80	59.8	68.4
malignant	21.4	21.7	32.5	20	40.2	31.6
Gender.						
Male	46.6	39	41.5	40	47.3	41
Female	53.4	61	58.5	60	52.7	59
Age	4	4	5	4	4	5
location						
Parotid	53.4	68.5	67.7	71	61.4	63
Sub mandibular gland	34	15.5	9.5	24	10.8	23
Minor salivary gland	12.6	14.5	22.8	5	26.4	14
Histological type.						
Pleomorphic adenoma	80	67.8	54.2	67.7	51.3	65.4
Warthin's tumor	8	6.3	8.5	10.5	4.4	0
Adenoid cystic carcinoma	31.8	6.5	7.9	4	7.3	2.3
Mucoepidermoid carcinoma	31.8	4.8	13.5	10.4	7.6	11.5

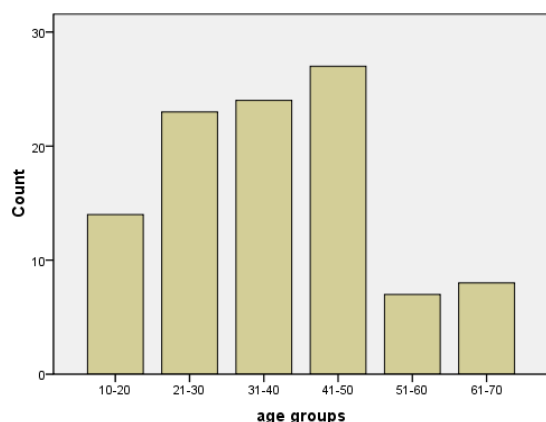


Figure No.1: Distribution of salivary gland diseases into different age groups.

DISCUSSION

Salivary glands tumors are specific in the oral and maxillofacial region, and account for about 5% of all the tumors in this region.(8) In our present review of 103 cases of salivary gland diseases, 31(30.1%) cases

are infections, 50(48.5%) are benign tumors and 22(21.4%)

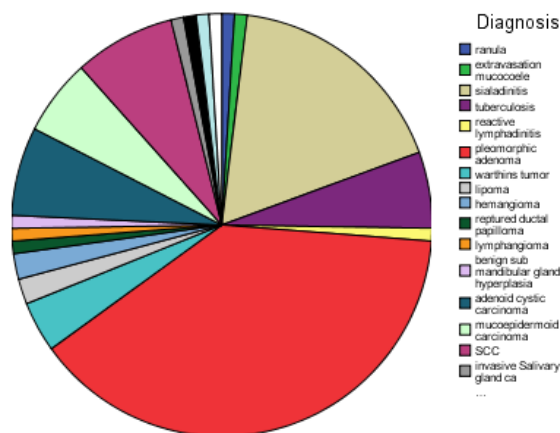


Figure No.2: Different Salivary Gland Diseases.

are malignant tumors. Ratio of benign to malignant is 1.43:1 in this study, similar results also found in another study conducted in china by Li et al to be 1.49:1. The ratios from previous similar studies in other continent ranged from 1.18:1 in Africa to 5.62:1 in

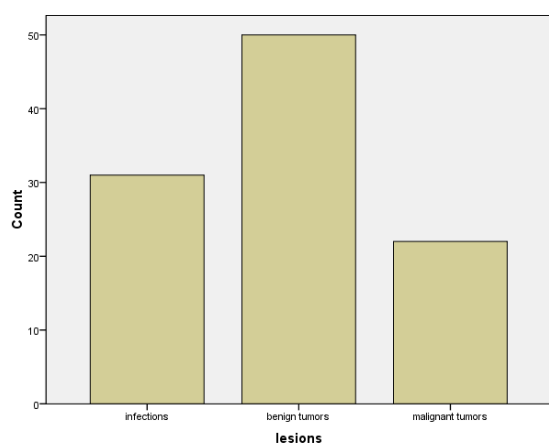


Figure No.3: Distribution of Salivary Gland Diseases into infection, benign and malignant lesions.

Europe. ⁽⁸⁾ In one study conducted by Wang et al, in 2007 there were more malignant tumors compared to benign.

In our study Salivary gland tumors more often affected women, with an overall male: female ratio of 1:1.7, and a male: female ratio of 1:1.6 for benign tumors and 1:1.7 for malignant tumors. Similarly, other previous studies describe a male: female ratio varying from 1:1.2 to 1:3. ^(4, 5, 6, 8 and 13) However, some previous authors reported predominance for men with a male: female ratio of 1.4:1. ⁽⁷⁾ Women were predominantly affected in almost all histologic types except Warthin's tumors in which males are most commonly affected. ⁽⁵⁾ In our study also more males are affected than females by Warthin's tumor three out of four cases occurred in males. Some studies have reported male predominance in benign tumors ⁽⁷⁾ and/or malignant tumors. ⁽⁶⁾

In the present study, age distribution for the benign salivary gland tumors varied from 15-70 years-old, with common age of occurrences between 20-25 years and 40-50 years and a peak in 40 years of age. The common age of occurrence for malignant tumors in this study is between 35-65 years, with a peak in 50 years, is significantly higher than for benign tumors (40 years). The peak incidence for benign tumors was in the second and fourth decade of life, while for malignant tumors, it was in the fourth and fifth decade, similar distribution for benign tumors is also found in previous studies ^(6, 8). In other previous studies they found peak incidence of benign tumors in the 6th and 7th decade and malignant in the 7th, 8th and 9th decade. ⁽⁵⁾ One another previous study shows a peak incidence of malignant tumors in the seventh decade. ^(6, 8) As in our study also like all the previous studies mean age is higher for malignant than for benign and more females are affected by benign lesion than malignant. ^(4, 5, 6, 8)

Sialadenitis is most common infection and it mostly occurs in submandibular gland followed by parotid

salivary gland. Males are affected more than females with a ratio of 2:1 and it has an age distribution from 10-50 years with peak incidence in the third decade and a mean age of 30 years. Most commonly submandibular gland is involved in all infections of salivary glands in our study.

The majority of salivary gland lesions in our study are located in the parotid gland (53.4%) followed by submandibular gland (34%) and minor salivary glands (12.6%). All previous large series of salivary gland tumors showed similar results though few other epidemiological studies showed a predominance of more than 60% for benign tumors ^(4-6, 8, 13). Also in the previous studies parotid gland is followed by minor salivary gland and then submandibular salivary glands. ^(5, 8)

Worldwide studies show geographic variation in the relative incidence of salivary gland tumors with differences in histological type. ⁽⁶⁾

No case was identified in the sublingual gland in our study also, as mentioned in other studies. ^(3, 4, 5, 6, 12, and 13) This confirms the rarity of salivary gland diseases at this site.

The second most common lesion site was the submandibular gland in our study, although some authors reported the minor salivary glands in second place after the parotid gland ^(5, 8)

Discrepancies in the frequency of salivary gland tumors in the submandibular gland and minor salivary glands is observed among other series varying from 9.5 to 24.3% and 3 to 31.4%, respectively ⁽⁵⁾.

Pleomorphic adenoma is the most common histological type in our study, corresponding to 68.4% of all salivary gland tumors and 86.7% of benign tumors. Predominance of pleomorphic adenoma was reported in other previous series also. ^(3, 4, 5, 6, 8, 12, 13)

Warthin's tumor is the second most common of benign salivary gland tumors involving 8% of cases with majority in parotid gland in our study as has also been observed in some Brazilian studies ⁽⁶⁾ while in another previous study they found it the third most common ⁽⁵⁾ tumor involving 6.4% of cases, with most of them located in the parotid gland (94.7%).

Malignant tumors represented 21.4% of all salivary gland tumors in our study. The most frequent in our study was squamous cell carcinoma, mucoepidermoid carcinoma and adenoid cystic carcinoma. Findings reported by some investigators shows adenoid cystic carcinoma to be the most common type ⁽⁶⁾, other studies reported mucoepidermoid carcinoma to be the most common malignant tumor ^(8, 5, 4).

Squamous cell carcinoma, Adenoid cystic carcinoma and Mucoepidermoid also show same distribution about 31% in our study. All of these malignant tumors are located in parotid and minor salivary glands. Adenoid cystic carcinoma and squamous cell carcinoma are

found more in males while mucoepidermoid carcinoma is found more in females.

In our study, epidemiological data is compared with other worldwide series regarding the distribution of salivary gland tumors.

CONCLUSION

Women and the parotid gland are most affected in salivary gland diseases. Sialadenitis and pleomorphic adenoma are frequently involved lesion, followed by squamous cell carcinoma, adenoid cystic carcinoma and mucoepidermoid carcinoma. Infections are commonly found in sub mandibular salivary gland. Benign tumors are more common than malignant and they occur in younger age and females while malignant tumors involve elderly age and are more common in males.

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Original Article

Renal Failure in Asphyxiated Term Babies Frequency and Severity Associated with Apgar Scoring and Hie Grading

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ABSTRACT

Objective: To determine the frequency and severity of renal failure in asphyxiated neonates and to correlate it with Apgar score and Hypoxic ischemic encephalopathy (HIE) grading.

Study Design: Analytic Study.

Place and Duration of Study: This study was conducted in Department of Pediatrics, Lahore General Hospital (LGH)/Postgraduate Medical Institute (PGMI) Lahore for a period from Feb 2010 to Jan 2011.

Materials and Methods: All the deliveries taking place in LGH during the working hours of 8 am to 2 pm were attended by senior doctors on call and asphyxiated babies (apgar 7 or less at 5 mins) were enrolled for the study. After every one week one non asphyxiated baby with no known confounding factor believed to alter renal function was randomly picked up to serve as a control. Gestational age, birth weight, relevant perinatal history, findings on physical evaluation and systemic sings were entered in a predesigned proforma. Investigations like urine complete, renal functions test (RFTs) and serum electrolytes were monitored initially within 24 hours of birth, day 3rd of life and repeated when required. Abdominal ultrasound, arterial blood gases (ABGs) and electrocardiography (ECG) was done when required. Data were analyzed and relation of frequency and severity of renal failure with apgar scoring and HIE was noted.

Results: Of 150 asphyxiated babies, 60 (40%) had renal failure. 29(19.33%) had proteinuria ++ or more and 17(11.33%) developed hematuria. Of 40 non-asphyxiated babies no neonate had abnormal renal function. Sonography was abnormal in 55 cases, all were those having renal failure. Renal parameters normalized in all neonates by two months of age. 11(7.33%) babies expired. All of them were of oliguric renal failure.

Keywords: Birth asphyxia, Renal failure, Hypoxic ischemic encephalopathy.

INTRODUCTION

Perinatal asphyxia is an important cause of morbidity and mortality. Assessment of perinatal asphyxia has relied on a combination of clinical observations, such as Apgar score, and measurement of systemic indices of tissue ischemia, such as serum creatinine.¹

In spite of successful resuscitation of an asphyxiated infant, hypoxic-ischemic encephalopathy (HIE) develops in the setting of perinatal asphyxia, which is a multiorgan system disease. Involvement of one or more organs occur in 82% of the infants; the central nervous system (CNS) is most frequently involved (72%). Severe CNS injury always occurs with involvement of other organs; pulmonary in 26%, cardiac in 29% and gastrointestinal in 29% of the infants.^{2,3} Renal involvement occurs in 42% of the infants and presents as oliguria and azotemia. The cause of acute renal failure in newborn is attributed to asphyxia in 53.4% of the cases. The reason can be either pre-renal due to fluid restriction or inadequate blood volume or renal because of direct effect of asphyxia causing acute tubular necrosis. Elevated urine retinol binding protein and myoglobinuria, decreased urinary output, early rise in creatinine are features of renal failure. Studies have shown that asphyxiated newborns that develop renal failure are at greater risk for long-term neurologic sequelae and a worse overall prognosis.^{4,5,6}

Acute renal failure is common in the neonatal period. It usually manifests by abnormal biochemistry and

decreased urine output (<1 ml/kg/h), but non-oliguric renal failure is also not uncommon.^{7,8} The mean GFR for a full term infant is about 26 mL/min per 1.73 m² and doubles by one to two weeks of age to 54 mL/min per 1.73 m². GFR for preterm infants is challenging because GFR varies with gestational age and increases after birth.^{9,10} ARF is defined as anuria (no urine voided for at least 24h) or documented oliguria less than 1 ml/kg/hr together with either blood urea concentration of more than 40 mg/dl (14.3 mol/L) or serum creatinine concentration of more than 1.5 mg/dl (133 μ mol) with normal maternal renal function. Patients considered to have nonoliguric renal failure if urine output is more than 1 ml/kg/hour.^{11,12} Treatment is supportive. IV fluid and dopaminergic doses of dopamine (2-3 microgram/kg/min) are administered to improve renal blood flow. Dialysis may be required.⁴

Birth asphyxia constituted a large proportion of mortality and morbidity in Pakistan and it makes up large proportion of admission to our neonatal unit. It almost makes the 31-50% of all admissions and 25-31% of case fatality. Previously some study has been conducted on this topic. We did this study to show the status of such relationship between the Apgar scoring and ARF as well as HIE grading and ARF in our set up.

MATERIALS AND METHODS

This study was undertaken in NICU of Lahore General Hospital Lahore. It was a prospective case control study

in which all the deliveries taking place in the hospital during the morning hours from 8 am to 2 pm were attended by the senior doctor on call. Severely asphyxiated babies (apgar 7 or less at 5 mins at birth) were enrolled for the study. Every week one non asphyxiated baby with no known confounding factor believed to alter renal function such as necrotizing enterocolitis (NEC), respiratory distress syndrome (RDS), sepsis and major congenital malformations etc was randomly picked up to serve as a control. The enrolled babies were divided into two groups, group A comprised of 150 asphyxiated newborns, while group B had 40 healthy babies. Asphyxiated babies were further divided into three groups mild (score 6 or 7), moderate (score 4-5) and severe (score 3 or less). Sarnat scoring system was used for grading of asphyxia. To rule out any malformation of urinary tract ultrasonography was done within 24 hours of birth. Gestational age, birth weight, relevant perinatal history, physical evaluation and systemic signs were recorded on a predesigned proforma. 24 hours urinary output was strictly measured. Blood urea, serum creatinine, serum electrolyte and urine complete examination was monitored within 24 hours of birth and day three of life. Babies having abnormal renal function had their laboratory parameters monitored every alternative day till recovery. ABG's and ECG were done as and when required. Babies having urine output <0.5 ml/kg/hr, blood urea >40 mg/dl, serum creatinine >1 mg/dl, significant hematuria or proteinuria were labeled as having renal failure. Asphyxiated babies having impaired renal function were grouped as A2 and those having normal function were A1. Statistical analysis was performed using the students't' test and chi-square test. Neonates having renal failure were followed up at one and six months of age to detect any residual abnormality. Ultrasonic imaging of kidney was also carried out on day of discharge and repeated at 1 and 6 months of age.

RESULTS

A total of 190 babies were enrolled, 150 asphyxiated babies and 40 healthy control. 112 (58.95%) were male and 78(41.05%) were females. Mean birth weight in group A was 2.7 ± 0.34 and group B was 2.65 ± 0.42 . of the 150 asphyxiated babies 44 (29.33%) had mild asphyxia, 73 (48.66%) had moderate asphyxia and 33(22%) had severe asphyxia. Compared to control group RFT's were significantly deranged in asphyxiated babies (Table-3). There was no case of HIE in control group. However there were 5 (3.33%) cases of HIE stage I, 13(8.67%) stage II and 22 (14.66%) of stage III. Of the 150 asphyxiated babies 29 (19.33%) had proteinuria +2 or more while 17 (11.33%) had hematuria whereas both proteinuria and hematuria were seen in 18(12%) cases. Out of 50 control babies 3 (6%) showed hematuria and 9 (18%) had proteinuria +1.

RFTs were significantly derange in asphyxiated babies compared to control group ($p<0.02$). It was also observed that RFTs were significantly in babies having HIE staging I-III (Table 2). Out of 150 asphyxiated babies RFT's were deranged in 60 (40%) (group A2) while 90 (60%) showed no abnormality (group A1). out of these 60 babies (group A2) non oliguric renal failure was seen in 53 (88.33%) and oliguric renal failure were seen in 7 (11.67%). Same trend was noted in relation to RFTs and apgar scoring (Table 3).

Table No.1: Urea and Creatinine Levels (mean $\pm$ SD) on Day 3 in Study and Control Group

	Study	Control	P value
Blood urea (mg/dl)	(n=150)38.48 $\pm$ 15.41	(n=40)23 $\pm$ 4.2	<0.001
Serum creatinine (mg/dl)	(n=150)1.10 $\pm$ 0.54	(n=40)0.71 $\pm$ 0.15	<0.004

Of the non asphyxiated babies (group B) non had abnormal renal function. 11(7.33%) babies expired, all belonged to group A2. All of these babies were those of oliguric renal failure. Remaining 49 babies improved within next 10 days and 6 babies within next one month.

Table No.2: Urea and Creatinine Levels Correlated with HIE Staging

HIE Staging of Group A	n	Blood Urea (mg/dl) mean $\pm$ SD	P value (compared to control)	S. creatinine (mg/dl) mean $\pm$ SD	P value (A group vs B group)
0	110	26.7 $\pm$ 12.1	<0.01	0.79 $\pm$ 0.19	>0.12
I	05	40.2 $\pm$ 9.8	<0.04	1.05 $\pm$ 0.4	<0.05
II	13	39.6 $\pm$ 18.4	<0.03	1.2 $\pm$ 0.91	<0.04
III	22	49.2 $\pm$ 25.3	<0.01	1.6 $\pm$ 0.85	<0.04
Total	150	36.3 $\pm$ 16.4	<0.01	1.21 $\pm$ 0.6	<0.02
Control B group	40	22.3 $\pm$ 4.8	---	0.75 $\pm$ 0.17	<0.001

Renal Sonography showed increased size, altered echotexture and loses of corticomedullary differentiation in babies having abnormal renal functions but normal imaging in controls and group A1. Babies expired were those having HIE grade III. Biochemical parameters were repeated at one and six month of life to determine any residual damage. Two babies were found to have deranged RFTs at 2 months of age which became normal afterwards. No abnormal ultrasound finding was observed in any baby on follow up.

Table No.3: Biochemical parameters on Day Three

Group	N	Urea (mg%)	Creatinine (mg%)
A1	90	24.3±9.6	0.87±0.1
A2	60	47.1±21.8	1.5±3.8
B(Control)	40	20.7±0.3	0.7±0.15

A1: Asphyxiated babies with no renal failure. A2: Asphyxiated babies with renal failure.

Comparison of groups

A1 Vs B	Urea: P value >0.5; Creatinine P >0.45
A2 Vs B	All parameters showed significant difference
A1 Vs A2	(P<0.02).

DISCUSSION

Acute renal failure in the newborn is a common problem and occurs in as many as 8% of neonates admitted to neonatal intensive care units.¹³ In the newborn renal failure may have a prenatal onset in congenital diseases such as renal dysplasia and in genetic diseases such as autosomal recessive polycystic kidney disease. Acute renal failure in the newborn is also commonly acquired in the postnatal period because of hypoxic ischemic injury and toxic insults. The diagnosis of renal failure is not usually straight forward because it occurs in the context of complicated clinical conditions.

The low glomerular filtration rate of newborn kidneys limits postnatal renal function adaptation to endogenous and exogenous stresses. Renal insufficiency may occur within 24 hours of a hypoxic ischemic episode. Of 150 asphyxiated babies in our study 60(40%) showed deranged renal function. 53(35.33%) were those of non-oliguric renal failure, comparative to this Gupta at all has reported 47.1% ARF cases and 78% of them were non oliguric type while Fernandez et al reported 46% ARF cases in their study^{14,15}. Same trend was seen with HIE and renal failure and Apgar scoring and renal failure in our study. Other studies also support our results (Gupta at al).^{14,15}

Kaur et al has reported acute renal injury in 9.1% infants with moderate asphyxia and 56.0% infants with severe asphyxia.¹⁶ Gupta et al has reported 17.3% cases of severe asphyxia (Apgar 0-3), 30.6% moderate asphyxia (Apgar 4-5) and 23.4% mild asphyxia (Apgar 6-7). Almost same pattern is seen in our study. While no significant correlation could be seen between Apgar scores at 5 and 10 min and development of ARF, a significant relationship was seen between HIE and ARF patients by Mangi et al¹⁷.

Obstruction of tubular lumen and back leak mechanism contributed to increase in urea and creatinine levels in asphyxiated neonates with renal damage. Impaired tubular function after asphyxia leads to occurrence of significant tubular proteinuria. Proteinuria was seen in 29(19.33%) and haematuria in 17(11.33%) in our study.

While Mangi et al has reported no such finding in their study. 11(7.33%) of the asphyxiated babies expired and all of them had oliguric renal failure.¹⁷ The average mortality as observed by Grylack et al was 70% in asphyxia associated with oliguric ARF, where as Piazza has reported 62% oliguric ARF in asphyxiated babies with 80% mortality.^{18,19}

A reduction in number of functional nephrons caused by asphyxia and leading to ARF evokes compensatory hypertrophy of the residual nephrons thus leading to improved renal functions in early months of life. But whether subtle defects may persist, can be determined only after long term follow-up and one must be cautious in prognosticating these neonates.

CONCLUSION

We concluded that birth asphyxia is a significant cause of acute renal failure in neonates and degree of hypoxic ischemic encephalopathy as well as low Apgar score correlates with the severity of acute renal failure.

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Comparative Study of Non-Contrast-Enhanced Spiral CT Scan to Ultrasonography in the Diagnosis of Acute Renal Colic

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ABSTRACT

Objective: To evaluate the sensitivity and specificity of noncontrast spiral CT scan in ureteric colic with comparative evaluation of ultrasonography.

Study Design: Prospective comparative study.

Place and Duration of Study: This study was conducted at the Dept. of Radiology, Nishtar Medical College and Hospital, Multan from June, 2010 to June, 2011.

Materials and Methods: 62 patients with flank pain were examined with both ultrasonography and non contrast enhanced 16 slice spiral CT scan over a period of one year. Both techniques were used to determine the presence, size, and location of ureteric stone, and the presence or absence of secondary signs like ureteral and calyceal dilatation, stranding of perinephric, periureteric fat and soft tissue rim sign

Results: 43 of the 62 patients were confirmed as having ureteric calculi based on stone recovery or urological intervention. Ultrasound showed 93% sensitivity and 95% specificity in the diagnosis of ureterolithiasis. CT scan showed 91% sensitivity and 95% specificity respectively. Hydronephrosis was seen in all patients that were positive for ureteric calculi. Most common site of calculus was distal ureter. Perinephric fluid was demonstrated in three patients. Perinephric stranding was seen in 26 cases, and periureteric stranding in three patients on CT scan. Pathology unrelated to urinary stone disease was demonstrated in six patients

Conclusion: Although both modalities were excellent for detecting ureteric stones, consideration of cost and radiation lead us to suggest that ultrasound be employed first and CT scan be reserved for when ultrasound is unavailable or non-diagnostic

Key Words: Renal colic, Ultrasonography, Multidetector CT scan

INTRODUCTION

In the fields of emergency medicine and urology, acute flank pain is a common clinical problem. Urolithiasis is reported to affect up to 12% of the population during their life time¹. Traditionally, excretory urography has been the gold standard method of diagnosing this condition, but it takes long time. In addition, the intravenous injection of contrast material is required and this carries the risk of life threatening side effect² For patients with suspected acute ureteric colic, ultrasonography and unenhanced spiral CT are attractive alternatives

The advantages of spiral CT over IVU are well documented and include shorter examination time, avoidance of intravenous contrast, greater sensitivity for stone detection and increased detection of abnormalities unrelated to ureteric stones. However radiation dose is high^{3,4}

Trans abdominal ultrasound has the advantage of being universally available, does not expose the patient to radiation, requires no intravenous contrast material and is independent of kidney function. Ultrasound is therefore attractive modality for the initial evaluation of urinary symptoms⁵

This prospective study compared the accuracy of spiral CT with ultrasonography in the evaluation of patients with acute flank pain

MATERIALS AND METHODS

Study was conducted between June, 2010 to June, 2011 to compare the accuracy of ultrasonography and multislice spiral CT scan in the diagnosis of ureteric calculi.

Total of 62 patients presenting in emergency department with clinical suspicion of renal colic were included. Initially transabdominal ultrasound was performed by emergency Radiologist for detection, location and size of ureteric calculi along with associated findings like hydronephrosis, hydroureter and perinephric collection

Multislice spiral CT without oral and intravenous contrast was performed on Toshiba Aquilion 16 slice MDCT machine. Source images were transferred to work station for reformation. The presence of ureteric calculus, its location, size and density were noted by consultant radiologist. Associated findings i.e. hydronephrosis, hydroureter, stranding of perinephric and periureteric fat and soft tissue rim sign were also noted.

RESULTS

43 of the 62 patients were confirmed to have ureteric calculi based on stone recovery and urological interventions. The US and CT findings are summarized in Table I.

Table No. I: Results of imaging with ultrasound and CT for detection of ureteric calculi

	Ureteric calculi Present	Ureteric calculi absent	Total No. of cases
Ultrasound			
Positive for calculi	40	1	41
Negative for calculi	3	18	21
Total	43	19	62
CT Scan			
Positive for calculi	39	1	40
Negative for calculi	4	18	22
Total	43	19	62

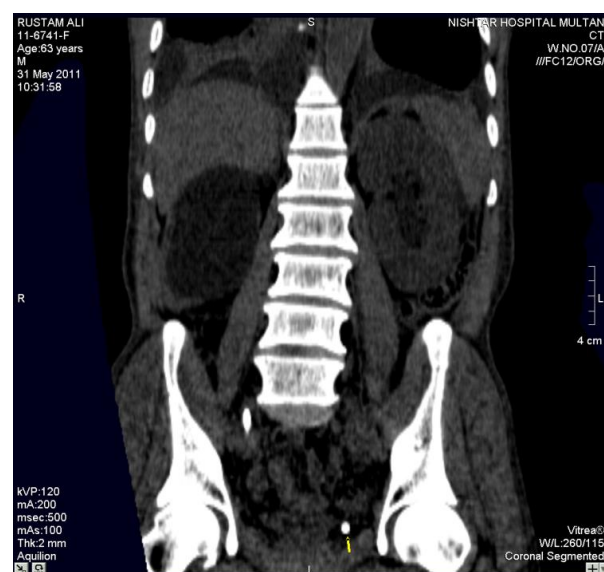


Figure No.1: CT scan –Bilateral ureteric calculi with hydronephrosis

US demonstrated ureterolithiasis in 40 of the 43 patients confirmed to have ureteral calculi (Sensitivity 93%, specificity 95%, positive predictive value 98%,negative predictive value 86%).Four calculi were located in the upper third of the ureter, four in the middle third and 32 in distal ureter

Hydronephrosis was noted in 43 cases. The degree of hydronephrosis demonstrated by US examination was graded as minimal in 22 patients, mild in 11 patients and moderate in 11 patients. Perinephric fluid was demonstrated in three patients

Of the 43 patients with calculi, CT detected 39(sensitivity 91%, specificity 95%, positive predictive

value 98%,negative predictive value 82%).5 calculi were demonstrated in the proximal ureter,4 in the mid ureter and 30 in the distal ureter.

Perinephric stranding was seen in 26 cases, and periureteric stranding in 5 cases

Pathology unrelated to urinary stones was demonstrated in six patients and included appendicitis, cholelithiasis, cholecystitis and adnexal lesions in three patients

DISCUSSION

Recent studies have shown that non-contrast spiral CT is an excellent method for demonstrating ureteral calculi in patients with suspected renal colic⁷.Smith et al⁸ showed to be more effective than IVU in identifying ureteric stones. In another comparative study, Sommer et al³ noted that reformatted, non contrast spiral CT images were superior to a combination of US and plain abdominal radiography for imaging ureteric calculi. In the current study, a comparison was made between US and spiral CT in 62 patients with comparable results for the two modalities in the demonstration of ureteric calculi. In some cases, it was difficult to ascertain on CT scan whether calcification was within the urinary tract or elsewhere, e.g. calcified phleboliths or a calcified seminal vesicle.

In one case, CT interpretation was false positive for a ureteric calculus, and retrospectively the calcification was shown to be a pelvic phleboliths. Four patients passed stones (2-5mm in size), none of which had been seen on CT scan. Non visualization of stones may be explained by volume averaging, small stone size and or low attenuation value of the stones US, which is universally available, non-invasive, inexpensive and radiation free, is preferred by some radiologist as the initial method for evaluation of the kidneys and bladder. However, US is considered to be of limited value in demonstrating pathological conditions of the ureter.

All patients with ureterolithiasis described herein had some degree of ureterohydronephrosis, hence US was able to follow the ureter to the level of stone demonstrate the exact nature of the obstructing lesion. An intraluminal echogenic focus with acoustic shadowing was clearly seen in all cases. Technical problems might occur in assessing the ureter when the stone is in the middle third, an area often obscured by bowel gas; we overcome this problem by compressing the area to be examined and changing the patient's position

Dalla Palma(6) evaluated 120 patients with renal colic using US and plain radiographs, and achieved 95% sensitivity but only 67% specificity.US was classified as positive for ureteric colic in the study when calculi or hydronephrosis were present. In the current study, only cases with definite demonstration of ureteric calculi were classified as positive and our results show a high specificity of 95%

In our study, CT and US were equally sensitive in detecting ureteric calculi; 91% and 93% respectively. In the study by Sommer et al, there were false negative US examination owing to a lack of significant hydronephrosis detectable on the examination (3). In our patients, US was also accurate in depicting stones in cases of minimal hydronephrosis.

Extraurinary causes mimicking renal colic were demonstrated by both modalities except in one case of appendicitis that was diagnosed by CT only. However, the small number of cases with extra-urinary causes precluded statistical analysis.

CONCLUSION

In summary, both spiral CT and US were found to be excellent modalities for depicting ureteric stones, but because of high cost, radiation dose and high workload of CT, we suggest that US should be performed first in all cases and CT Scan should be reserved for cases where US is unavailable or fail to provide diagnostic information.

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Vitamin E Ameliorates Renal Damage in Streptozotocin induced Diabetes in Albino Rats

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ABSTRACT

Aims and Objectives: This study was designed to find out the role of Vitamin E on serum glucose and Creatinine concentrations of male albino rats made diabetic by streptozotocin.

Study Design: Prospective study.

Place and Duration of Study: This study was conducted at the Department of Physiology; Basic Medical Sciences Institute (BMSI), Jinnah Post Graduate Medical Center (JPMC), Karachi from Feb. 2010 to March 2010.

Materials and methods: In a 4 weeks study, 45 male albino rats were divided into 3 groups containing 15 animals each. Group A was treated as control, Group B and Group C received 45 mg/kg STZ once at the start of the experiment whereas Group C additionally received 600 mg/kg Vitamin E Intramuscularly 3 times weekly. Serum glucose and Creatinine concentrations were measured at the beginning of the experiment and once weekly.

Results: Serum glucose and Creatinine levels were significantly elevated in Group B as compared to control. In Group C, blood glucose was elevated but the levels of serum Creatinine were significantly reduced, when compared to group B.

Conclusions: Our findings conclude that Vitamin E supplementation may have protective effects against deterioration of renal function brought about by free radical toxicity in diabetes mellitus.

Key Words: Streptozotocin, Oxidative stress, Oxygen Free Radicals, Vitamin E, Creatinine, Diabetes Mellitus, Diabetic Nephropathy, Antioxidant.

INTRODUCTION

Diabetes Mellitus is a disease in which the hallmark feature is elevated blood glucose concentrations due to loss of insulin-producing pancreatic β -cells (type 1 diabetes) or through loss of insulin responsiveness of its targets issues like adipose and muscle (type 2 diabetes). Diabetic Nephropathy is one of the major long term complications of diabetes mellitus and has emerged as a leading cause of end-stage renal disease. According to World Health Organization, diabetes affects more than 170 million people worldwide and this number will rise to 370 million by 2030¹.

Several lines of evidence suggest the central role of oxidative stress in the development of diabetic nephropathy and the beneficial effects of antioxidants in renal injury owing to diabetes². The production of Reactive Oxygen Species (ROS) is central to the pathogenesis of diabetes and its complications³. It is suggested that there is a high correlation between oxidative stress in diabetes and the development of complications including diabetic nephropathy. As the disease progresses, anti-oxidant potential decreases and the plasma lipid per-oxidation products increase, depending upon the level of glycemic control⁴.

Streptozotocin (STZ) as an anti-biotic and anti-cancer agent has been widely used for inducing type 1 diabetes in a variety of animals by producing degeneration and necrosis of pancreatic beta cells⁵.

Vitamin E is an important lipid soluble, chain-breaking anti oxidant in tissues, red cells and plasma⁶. It is a

powerful anti oxidant that has been shown to decrease several outcomes of oxidative stress and oxidative damage in cell culture, in animal models of diabetes and in diabetic humans⁷.

This study was designed to observe the protective effect of Vitamin E on the renal functions in albino rats rendered diabetic by administration of STZ.

MATERIALS AND METHODS

This study was conducted at the Department of Physiology; Basic Medical Sciences Institute (BMSI), Jinnah Post Graduate Medical Center (JPMC), Karachi for a period of four weeks. In this study, 45 healthy male albino rats, 90-120 days old, weighing around 250-300 grams were obtained from the animal house of BMSI and divided into three groups, each group containing 15 animals. Group A was taken as control; Group B and C animals were fasted overnight and made diabetic by administering STZ intraperitoneally in a dose of 45 mg/kg dissolved in 1 ml of citrate buffer at 4 PH, only on the first day of the experimental study⁸. Group C additionally received 600 mg/kg of Vitamin E intramuscularly three times a week⁹.

All the animals were kept in propylene cages equipped with drinking water bottle and wood chip floor bedding under natural environments (12 hours light and 12 hours dark). Food and water were supplied *ad libitum*. Blood samples were collected from the tail vein.

Serum glucose was determined by glucose oxidase method using, Glucometer. 3 days after STZ

administration, rats having a serum glucose of >300 mg/dl were rendered diabetic.

Serum Creatinine was determined by colorimetric method using Elisa kit. It was measured as the parameter of renal function at the start of the experiment and once weekly for four weeks and the results correlated in all the three groups.

RESULTS

At the end of the 4th week, the fasting blood glucose levels were significantly higher in Group B and C as compared to control, indicating that Vit E did not significantly change the blood sugar levels in Group C. Serum creatinine levels were significantly increased in Group B as compared to control, whereas in Group C, there was a significant reduction in the levels of serum creatinine as compared to Group B (Table 1).

Table No.1 Mean serum glucose and serum creatinine values in different groups of albino rats:

Groups	Treatment Received	Serum Glucose (mg / dl)	Serum Creatinine (mg / dl)
A (n=15)	Control	125 ± 15	0.95 ± 0.07
B (n=15)	STZ	528 ± 43 **	2.16±0.24**
C (n=15)	STZ+ Vit E	519± 40 **	1.20±0.07 *

Values are mean ± SEM of 15 animals in each group.

*P < 0.05

** P < 0.01

DISCUSSION

Tight control of blood glucose can reduce clinical complications in diabetic patients. However, alternative treatment strategies are needed to prevent oxidative stress complications and to optimize recovery¹⁰. Oxidative stress in diabetic kidney is usually associated with tissue damage that interferes with proper organ function, causing an increase in urinary protein excretion and blood urea nitrogen¹¹.

At the end of experimental period, STZ diabetic rats showed elevated levels of serum creatinine, as reported in previous experimental studies^{12, 13}. Vitamin E failed to lower blood sugar levels in group C animals¹⁴, but the serum creatinine levels were almost reduced to control levels by the use of Vit E, which were significantly higher in group B.

In one study, Vit E Supplementation (1000 IU / kg diet) for 4 weeks after STZ induction of diabetes resulted in significant reductions of urinary protein excretion and Blood Urea Nitrogen (BUN) compared to diabetic rats on a control diet¹¹. Animal studies have shown Vit E supplementation to reduce oxidative stress in glomeruli of diabetic rats¹⁵. Other data has confirmed an effect of Vit E in reducing BUN and serum creatinine in diabetic rats, demonstrating a positive effect in kidney function⁹. Vitamin E, a membrane – bound, lipid-soluble antioxidant has been shown to protect biological

membranes against injury induced by reactive oxygen species¹⁶. At the cellular level, one mechanism of action proposed is the inhibition of oxidative stress induced NF – KB activation and apoptosis in rat kidney¹⁷. The levels of Vit E in plasma are significantly reduced in diabetic patients¹⁸. Vit E given to diabetic animals has been shown to exhibit effects in several tissues including kidney¹⁹, lens, peripheral nerve, brain and liver.

Data from clinical studies demonstrates a role for Vit E to decrease lipid peroxidation in diabetic humans. Subjects with metabolic syndrome who were supplemented for 6 weeks with 800 mg/day α -tocopherol, γ -tocopherol or both had lower blood malondialdehyde (MDA) and lipid peroxides than subjects supplemented with placebo²⁰.

CONCLUSION

Our findings conclude that dietary Vitamin E helps to preserve renal functions in STZ induced diabetic rats. So the supplementation of Vit E to Diabetic patients may help in preventing diabetic nephropathy brought about by free radical toxicity.

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Frequency of Normal Appendicectomy in a Tertiary Care Hospital

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ABSTRACT

Objective: To determine the frequency of normal appendicectomy in a tertiary care hospital.

Study Design: Prospective observational study.

Place and Duration of Study: This study was carried out in Surgical Unit-I, Liaquat University Hospital Hyderabad, from Oct 2010 to Oct 2011.

Materials and Methods: This study consisted of hundred patients admitted through the outpatient department, as well as from casualty department of Liaquat University Hospital Jamshoro/Hyderabad. Detailed History was taken from all the patients with special regard to the Pain in RIF, Pain starting around umbilicus, nausea, vomiting, fever and Altered bowel habits. Detailed Clinical examination of the patient was done. Site of right iliac fossa was especially examined for assessment of tenderness and recorded in proforma. Systemic review was also done to see any co-morbidity. All patients underwent base line and specific investigations especially ultrasound of abdomen as diagnostic modality for assessment of acute appendicitis. Inclusion criteria were all these patients who after counseling for this study and gave written consent. Irrespective of their age and sex admitted in Surgical Unit-I through outpatient department/ casualty and diagnosed as case of acute appendicitis. Exclusion criteria included all patients with features of generalized peritonitis, patients with palpable mass in right iliac fossa and patients with history of previous operation on lower abdomen. Follow up of all these patients was done. Results were prepared with help of tables and graphs. Data was analyzed through SPSS software.

Results: Out of 100 patients included in this study 64 were male (64%) and 36 patients were female (36%); with male to female ratio of 1.7:1. There was wide variation of age ranging from a minimum of 10 year to 70 year. The mean age was 26.78 year. Symptoms of patients were pain in RIF in 99 (99%), pain starting around umbilicus in 42 (42%), nausea in 65 (65%), vomiting 52 (52%), fever in 35 (35%) and altered bowel habits in 18 (18%). Clinical examination of patients revealed tenderness at Mc Burney's point in 99 (99%) patients, while guarding was present in 80(80%) patients, rebound tenderness was present in 84(84%) patients and 33 (33%) patients had fever. Ultrasonographic findings revealed Wall thickness of appendix in 58(58%) patients where as normal appendix in 42(42%) patients, Free fluid in the R.I.F and pelvis was found in 36(36%) patients, Thickening of the surround intestinal lobes was seen in 40(40%) patients and Mass of abscess formation in 8(8%) patients. Operative and histopathological findings were acute appendicitis in 59(59%) patients where as normal appendix in 21(21%) patients, adherent to bowel or omentum was found in 7(7%) patients, pus was seen in 5(5%) patients and perforated 3(3%) patients.

Conclusion:- In conclusion, we found 21 % of appendices to be histopathologically normal after emergency appendicectomies performed in this hospital. There was no mortality.

Key Words: Normal appendicectomy, Histopathologically, Emergency appendicectomies.

INTRODUCTION

Appendicitis is a major surgical emergency¹. There is no age limit, though the highest incidence is seen in the 2nd and 3rd decades² with a slight male predominance³. The diagnosis is based on well-established symptoms, signs and physician's experience¹. The signs and symptoms that are most predictive of acute appendicitis are pain in the right lower quadrant, abdominal rigidity, and migration of pain from the periumbilical region to the right lower quadrant, presenting along with fever, nausea and vomiting, although this occurs in 70% of cases^{4,5}. It is easy to diagnose clinically typical cases of this disease, but diagnosing atypical cases can be quite

difficult at times. The preoperative clinical diagnosis is straight forward in 70-80%⁶ cases with an overall negative appendectomy rate of 15-25%⁷. A high negative appendectomy rate is considered acceptable in order to minimize the incidence of perforation⁸. The common conditions that mimic acute appendicitis include pelvic inflammatory disease, gastroenteritis, abdominal pain of unknown origin, urinary tract infection, ruptured ovarian follicle, and ectopic pregnancy⁵. Accurate preoperative diagnosis has long been a great challenge even to experienced surgeons. Various imaging modalities, biochemical markers and scoring systems followed by an early surgery help to lower the negative appendectomy rate^{9,10}. These have

helped to minimize morbidity and drop in perforation rate from 27% to 12.5%¹¹. Females of child bearing age have the highest negative appendectomy rate of 35-45%¹¹ because of gynaecological conditions simulating appendicitis. Despite availability of modern diagnostic investigations, the rate of negative appendectomies remain quite high even in well equipped western hospitals.

MATERIALS AND METHODS

This study was carried out in the General Surgical Unit-I at Liaquat University Hospital Hyderabad, Sindh, Pakistan from Oct 2010 to Oct 2011. This study consisted of hundred patients admitted through the outpatient department, as well as from casualty department of Liaquat University Hospital Jamshoro/Hyderabad. It is a prospective observational study of normal appendectomy of patients admitted in Surgical Unit-I, who came for acute appendicitis as assessed by pre-operative workup. All data was entered in a specified proforma designed for this purpose. Detailed History was taken from all the patients with special regard to the Pain in RIF, Pain starting around umbilicus, nausea, vomiting, fever and Altered bowel habits. Detailed Clinical examination of the patient was done. Site of right iliac fossa was especially examined for assessment of tenderness and recorded in proforma. Systemic review was also done to see any co-morbidity. All patients underwent base line and specific investigations especially ultrasound of abdomen as diagnostic modality for assessment of acute appendicitis. Inclusion criteria were all these patients who after counseling for this study and gave written consent. Irrespective of their age and sex admitted in Surgical Unit-I through outpatient department/ casualty and diagnosed as case of acute appendicitis. Exclusion criteria included all patients with features of generalized peritonitis, patients with palpable mass in right iliac fossa and patients with history of previous operation on lower abdomen. Follow up of all these patients was done. Results were prepared with help of tables and graphs. Data was analyzed through SPSS software version 16.0.

RESULTS

The 100 cases of consecutive acute appendicitis were operated. Out of 100 patients included in this study 64 were male (64%) and 36 patients were female (36%); with male to female ratio of 1.7:1. There was wide variation of age ranging from a minimum of 10 year to 70 year. The mean age was 26.78 year.

Symptoms of patients were pain in RIF in 99 (99%), pain starting around umbilicus in 42 (42%), nausea in 65 (65%), vomiting 52 (52%), fever in 35 (35%) and altered bowel habits in 18 (18%). Clinical examination of patients revealed tenderness at Mc Burney's point in 99 (99%) patients, while guarding was present in 80(80%) patients, rebound tenderness was present in

84(84%) patients and 33 (33%) patients had fever (Figure 1). Alvarado score were ≥ 7 in 82(82%) patients and ≤ 7 in 18(18%) patients. Leucocyte count found more than $>11000/\text{cu mm}$ were in 95(95%) patients and $<11000/\text{cu mm}$ was only in 5 (5%) patient (Table 1). Ultrasonographic findings revealed Wall thickness of appendix in 58(58%) patients where as normal appendix in 42(42%) patients, Free fluid in the R.I.F and pelvis was found in 36(36%) patients, Thickening of the surround intestinal lobes was seen in 40(40%) patients and Mass of abscess formation in 8(8%) patients (Table 2). Operative and histopathological findings revealed acute appendicitis in 59(59%) patients where as normal appendix in 21(21%) patients, adherent to bowel or omentum was found in 7(7%) patients, pus was seen in 5(5%) patients and perforated 3(3%) patients (Figure.2).

Table No.1: Different characteristics in patients with percentage.

Characteristics	No. of Patients (n-100)	Percentage (%)
Alvarado Score		
• Alvarado score were ≥ 7	92	82%
• Alvarado score were ≤ 7	18	18%
Leucocyte count		
• Leucocyte count found more than $> 11000 \text{ cu mm}$	95	95%
• Leucocyte count found less than $< 11000 \text{ cu mm}$	5	5%

Table No.2: Different Ultrasonographic findings in patients with percentage.

Ultrasonographic Findings	No. of Patients (n-100)	Percentage (%)
Wall thickness of appendix	58	58%
Free fluid in the R.I.F. and pelvis	36	36%
Thickening of the surround intestinal lobes.	40	40%
Mass of abscess formation	8	8%
Normal Appendix	42	42%

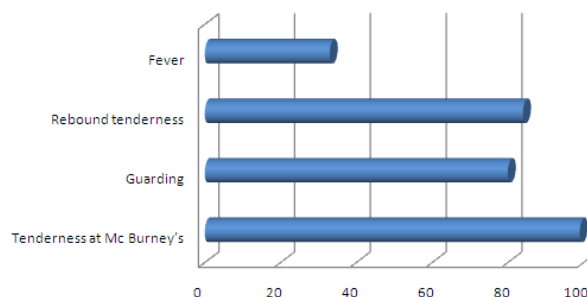


Figure No.1: Clinical examination of patients

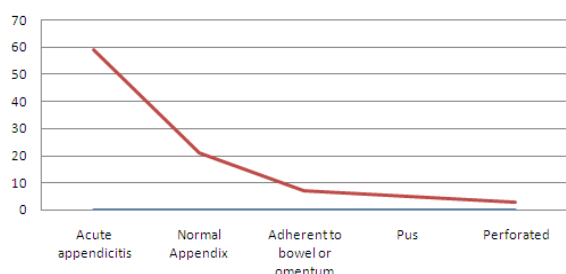


Figure No.2: Operative and histopathological findings

DISCUSSION

Acute appendicitis is the most common surgical condition encountered in emergency room. The first description of the appendix date to the sixteenth century. Although first sketched in the anatomic notebooks of Leonardo da Vinci around 1500, the appendix was not formally described until 1524 by da Capri and 1543 by Vesalius. Perhaps the first description of a case of appendicitis was by Fernel in 1554. First recorded appendectomy was performed by Amyand in 1736, when he operated on a boy with an enterocutaneous fistula within an inguinal hernia. On exploration of the hernia sac, he discovered the appendix, which had been perforated by a pin resulting in a fecal fistula ¹².

In our study sex ratio showed predominance of males. Out of 100 patients 64% were males and only 36% were females. Male to female ratio was 1:7.1. However the male to female ratio given by Muhammad A ¹³ was 1.3:1.

The age ranged from 10 to 70 years with mean age of 26.78 years. The peak age group in our study were 2nd and 3rd decade of life which is comparable to other study where peak incidence was given in the 3rd decade of Life ¹⁴. However in another study age ranged from 15 to 65 years with a median age of 28 years ¹⁵.

In our study the pain in right iliac fossa was the main presentation in 99% of patients followed by pain starting around umbilicus in 42 (42%), nausea in 65 (65%), vomiting 52 (52%), fever in 35 (35%) and altered bowel habits in 18 (18%). However in study of Soomro BA ¹⁶ pain in right iliac fossa was presentation in 98.27% of patients, anorexia was seen in 86.20% patients, vomiting occurred in 68.96% and fever in 43.10% patients.

The clinical parameters were further supported by clinical examination which revealed that tenderness at Mc Burney's was present in 99 (99%) patients, while guarding was present in 80 (80%) patients, rebound tenderness was present in 84 (84%) patients and 33 (33%) patients had fever. Clinical examination findings described by Paulson EK ¹⁷ et al in their study show Rebound tenderness in 63%, guarding in 39 to 74% and Fever in 67%.

There is some improvement in the diagnosis of acute appendicitis due to modern imaging techniques and the development of different scoring system, based on the clinical symptoms and signs and laboratory investigations ¹⁸. Amongst them the Alvarado score is simple, cheap and easily applicable ¹⁹. In our study Alvarado score was > 7 in 82 (82%) patients and < 7 in 18 (18%) patients. However Alvarado score reported by Jan H ¹⁴ in a series of 100 patients was > 7 in 61% patients.

The characteristic abdominal pain in acute appendicitis correlated with histologically infiltration of neutrophils within the appendiceal wall. White blood cell count has been considered to be a useful finding in the diagnosis of acute appendicitis. The increase in leucocyte count was an early marker of acute appendiceal inflammation. In this study, leucocyte count was raised >11000/ cu mm in 95% of patients while in study of Ata Ul Lateef showed leucocyte count was raised in 79.6% of patients with acute appendicitis ²⁰.

In our study approximately 21% of histopathological normal appendices were removed from patients with preoperative diagnosis of acute appendicitis. Local studies have reported a negative appendectomy rate ranging from 10% to 15% ²¹⁻²². A 12.3% rate of negative exploration represents good clinical performance, because a rate of 15% is still considered acceptable in literature ¹⁵. Despite many trials to improve these results it has become apparent that, in most surgical units the rate of normal appendix removal remains around 15% ^{23,24}.

CONCLUSION

We conclude that 21 % of appendices were histopathologically normal after emergency appendectomies performed in this hospital. There was no mortality.

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Frequency of Early Post Operative Complications of Thyroidectomy

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ABSTRACT

Objective: To determine the frequency of early post operative complications after thyroid gland.

Study Design: Descriptive case series study.

Place and Duration of Study: This study was carried out in all four surgical units, Liaquat University Hospital Jamshoro, from September 2009 to July 2010.

Materials and Methods: This study consisted of 100. Detailed History was taken from all the patients with special regard to the swelling in front of neck, moving up with deglutition and pressure symptoms like dyspnea, dysphagia, engorged neck veins. Detailed Clinical examination of the patient was done and recorded in proforma. Systemic review was also done to see any co-morbidity. All patients underwent for base line and specific investigations especially TSH, T3 and T4 as diagnostic modality and for assessment of thyroid disease. Inclusion criteria were that all patients after counseling for study and taking voluntary consent were included in this study above 15 year of age and irrespective of their sex admitted in surgical units through outpatient department and diagnosed as case of thyroid disease on the basis of history, clinical examination and investigations. Exclusion criteria included unfit patients for general anesthesia, previous thyroid surgery, pre-operative recurrent laryngeal or superior laryngeal nerve involvement and traumatic thyroid injury. Follow up of all these patients was done for period of 6 months. Results were prepared with help of tables and graphs. Data was analyzed through SPSS software version 16.0.

Results: 100 cases of thyroid were operated. Out of 100 patients included in this study 84 were women (84%) and 16 were male (16%); with male to female ratio of 1:5.2. There was wide variation of age ranging from a minimum of 10 years to 70 years with the mean age was 31.78 years. Symptoms of patients were an enlarged painless lump in front of neck in 99 (99%), Discomfort during swallowing in 42 (42%), Dyspnea in 38 (38%), Weight loss 52 (52%), Weight gain in 35 (35%), Bradycardia in 45 (45%), Tachycardia in 55 (55%), Tremors in 41 (41%), heat Intolerance 43 (43%) and cold Intolerance in 20 (20%) (Table 1). Clinical examination of patients revealed that thyroid gland was enlarged in 99 (99%) patients, out of whom 59 (59%) patients had Multinodular goiter, while 30 (30%) patients had Solitary Nodule (Solid /Cystic), 7 (7%) patients had thyroid cancer and 4 (4%) patients had a thyrotoxicosis. The commonest surgical procedure done was subtotal thyroidectomy in 62 patients (62%), near total thyroidectomy in 28 patients (28%) and lobectomy with isthmusectomy in 10 patients (10%). The common early postoperative complications seen in this study were haematoma formation 9% patients, hypoparathyroidism 3% patients, wound infection 6% patients, laryngeal nerve injury 5% patients and thyrotoxicosis storm in 2% patients (Chart No.2).

Conclusion: We conclude that patients who undergo thyroidectomy an increased risk of developing postoperative hypoparathyroidism. Despite the fact that total thyroidectomy is a more involved procedure that exposes more parathyroid glands and recurrent laryngeal nerves to surgical risk than unilateral thyroid lobectomy, it is an inherently safe procedure.

Key Words: Thyroidectomy, Early Complication.

INTRODUCTION

Goiter means enlarged thyroid. It is most common endocrine disorder requiring surgical intervention. According to WHO (World Health Organization) Report 5% of the world population is suffering from goiter and 75% of this lives in iodine deficient area¹. Surgery on the thyroid gland was first attempted in around 500 A.D. Albucosis (Al-Zahrawi) Famous Muslim Surgeon was credited with earliest pioneer thyroid surgeon in 1000 A.D². In the 1880, Theodor Billroth the leading thyroid surgeon performed

numerous thyroid surgeries with high mortality rate of about 50%, common cause of this high mortality was post operative tetany (secondary to removal of parathyroid gland, whose function was not well understood at that time), hemorrhage, infection and poor surgical technique³. The greatest contribution to understanding of the thyroid surgery was made by Theodor Kocher (1841-1917), also known as the father of the thyroid surgery had performed over 5000 thyroidectomies⁴, improve the surgical and sterilization techniques results in fall of high mortality rate to around 1%⁴.

The complications following thyroid surgery are rare but their consequences may often be life threatening. These complications often result from either poor surgical technique or from metabolic disturbance that occur after thyroid surgery. Some complications are more frequent than others.

Early complications associated with thyroidectomy include following; Postoperative bleeding or Haematoma⁵, Laryngeal nerve injury⁶, Hypocalcemia or Hypoparathyroidism (parathyroid deficit) is also one of common complication after thyroid surgery and wound infection is also common but depends upon sterilization technique. Thyrotoxic storm, sympathetic nerve injury, chylous fistula and seroma formation are also early postoperative complications but are rare⁷.

MATERIALS AND METHODS

This study was carried out in the all general surgical units at Liaquat University Hospital Hyderabad, Sindh, Pakistan from 13th September 2009 to 15 July 2010. This study consisted of 100 patients of diagnosed case of thyroid disease were admitted.

Detailed History was taken from all the patients with special regard to the swelling in front of neck, moving up with deglutition and pressure symptoms like dyspnea, dysphagia, engorged neck veins. Detailed Clinical examination of the patient was done and recorded in proforma. Systemic review was also done to see any co-morbidity.

All patients underwent for base line and specific investigations especially TSH, T3 and T4 as diagnostic modality and for assessment of thyroid disease (eg: Hyperthyroidism, Hypothyroidism). Inclusion criteria were that all patients after counseling for study and taking voluntary consent were included in this study above 15 year of age and irrespective of their sex admitted in surgical units through outpatient department and diagnosed as case of thyroid disease on the basis of history, clinical examination and investigations. Exclusion criteria included unfit patients for general anesthesia, previous thyroid surgery, pre-operative recurrent laryngeal or superior laryngeal nerve involvement and traumatic thyroid injury. Follow up of all these patients was done for period of 6 months. Results were prepared with help of tables and graphs. Data was analyzed through SPSS software version 16.0.

RESULTS

100 cases of thyroid were operated. Out of 100 patients included in this study 84 were women (84%) and 16 were male (16%); with male to female ratio of 1:5.2 (Figure 1). There was wide variation of age ranging from a minimum of 10 years to 70 years with the mean age was 31.78 years.

Symptoms of patients were an enlarged painless lump in front of neck in 99 (99%), Discomfort during swallowing in 42 (42%), Dyspnea in 38 (38%), Weight loss 52 (52%), Weight gain in 35 (35%), Bradycardia in

45 (45%), Tachycardia in 55 (55%), Tremors in 41 (41%), heat Intolerance 43 (43%) and cold Intolerance in 20 (20%) (Table 1).

Clinical examination of patients revealed that thyroid gland was enlarged in 99 (99%) patients, out of whom 59 (59%) patients had Multinodular goiter, while 30 (30%) patients had Solitary Nodule (Solid /Cystic), 7 (7%) patients had thyroid cancer and 4 (4%) patients had a thyrotoxicosis. The commonest surgical procedure done was subtotal thyroidectomy in 62 patients (62%), near total thyroidectomy in 28 patients (28%) and lobectomy with isthmusectomy in 10 patients (10%).

The common early postoperative complications seen in this study were haematoma formation 9% patients, hypoparathyroidism 3% patients, wound infection 6% patients, laryngeal nerve injury 5% patients and thyrotoxicosis storm in 2% patients (Figure 2).

Table No.1: Different symptoms of patients with percentage.

Symptoms of patients	No. of patients (n=100)	Percentage (%)
Lump in front of neck	99	99%
Discomfort during swallowing	42	42%
Dyspnea	38	38%
Weight loss	52	52%
Weight gain	35	35%
Bradycardia	45	45%
Tachycardia	55	55%
Tremors	41	41%
Heat Intolerance	43	43%
Cold Intolerance	20	20%

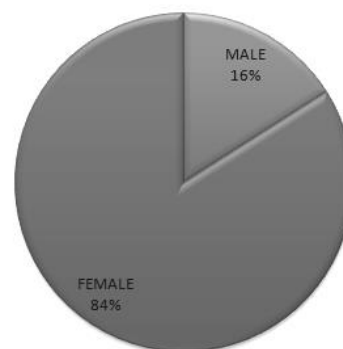


Figure No.1: Gender Distribution

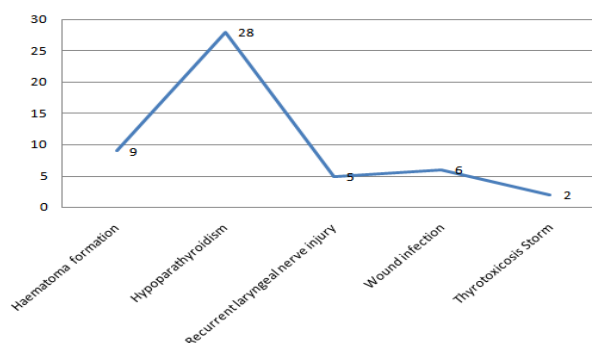


Figure No.2: Early Postoperative Complications**DISCUSSION**

Thyroid diseases are common worldwide and the surgery of thyroid gland is one of the frequent operations. First recorded thyroidectomy was performed by Albucasis in AD 500 in Baghdad⁸.

Goiter is a major problem in Pakistan, especially in the Northern mountainous areas, where it is endemic. In Pakistan goitre belt extends from Hazara upto Gilgit and Skardu⁹. The word goitre is used to describe enlarged thyroid gland¹⁰.

In our study sex ratio showed predominance of women. Out of 100 patients 84% were females and only 16% were males. Male to female ratio was 1:5.2. However the male to female ratio given by Alimoglu O¹¹ was 1:6.7.

The age ranged from 10 to 50 years with mean age of 31.78 years. The peak age group in our study were 2nd and 3rd decade of life which is comparable to other study where peak incidence was in the 3rd decade of Life¹². However Rugiu MG showed age range from 35 to 85 year with a mean age of 64 years¹³.

The clinical parameters were further supported. Goiter was the main presentation in 99% of patients with multinodular goiter in 59%, solitary nodule in 30% and thyroid cancer in 4% that is supported by available literature¹⁴.

Surgery was also performed in those cases of goitre, where goitre was large in size & there was failure of medical treatment. Preoperatively all patients were administered carbimazole, propranolol and Lugol's iodine as is described in the literature¹⁵. In our study the commonest procedure performed was subtotal thyroidectomy (62%). This is also supported by other studies¹⁶. Though the current trend is to perform near-total or total thyroidectomy¹⁷. In our study subtotal thyroidectomy was done in 62% of patients and lobectomy with isthmusectomy in 10 patients (10%). In 4 cases (05.88%) of solitary hyper functioning nodules, lobectomy along with isthmusectomy was done by Sikandar's technique which is most appropriate for these types of cases¹⁸.

In our study postoperative complication was haematoma formation in 9% cases. The incidence of postoperative hematoma reported in the literature ranges from 0% to 30%¹⁹. Hematomas can result from inadequate hemostasis at the time of closure or increased venous pressure at extubation because of coughing or straining. Neither the use of drains nor bulky pressure dressings prevents hematoma formation. Pressure dressings do not halt the development of a hematoma and may actually obscure early identification of hematoma in the postoperative period. We usually do not use pressure dressings after thyroidectomy. Early intervention is key to the management of postoperative hematoma. Most hematomas are clinically apparent

within 2 to 4 hours after surgery²⁰. It must be considered that complications caused by postoperative bleeding after thyroidectomy, which might produce respiratory failure, cannot be prevented by using a drain without meticulous hemostasis. Many authors have demonstrated that drainage after uncomplicated thyroid surgery, including total thyroidectomy, lobectomy, and subtotal thyroidectomy, does not decrease the rate of complications related to postoperative bleeding²¹.

In the present study we had 3% case of hypoparathyroidism. postoperative hypocalcemia and sometimes the most severe complication observed after near total thyroidectomy. The reasons for postoperative hypoparathyroidism are devascularization of parathyroid glands during surgery owing to the close proximity of the thyroid capsule, the accidental removal of one or more parathyroid glands, destruction of the parathyroid glands as a result of lymphadenectomy along the recurrent laryngeal nerve (RLN), or hypoparathyroidism due to hematoma formation. However 25% incidence of hypoparathyroidism given by Asari R²² in a series of 170 patients treated with total thyroidectomy.

In our study laryngeal nerve injury was seen in 5% cases. The exact incidence of recurrent laryngeal nerve injury is unknown²³. Different studies have reported incidence of permanent injury to RLN ranges from 0% to 5.2% and for temporary injury from 0.4% to 7.2%^{24,25}.

The wound infection observed in 6% cases. Post thyroidectomy infection may manifest as superficial cellulitis. In our study observed cellulitis typically presented with erythema, warmth and tenderness of neck skin around the incision and Treated cellulitis with antibiotics and good coverage against gram-positive organisms (eg, against staphylococci and streptococci). However frequency of wound infection given by Guraya SY²⁶ was 3.6%.

Thyrotoxic storm is an unusual complication of thyroid surgery. This condition may result from manipulation of the thyroid gland during surgery in the patients with hyperthyroidism. It can develop preoperatively, intraoperatively, or postoperatively. In our study thyrotoxic storm was observed in 2% cases and signs of thyrotoxic storm were observed in the anesthetized patient include evidence of increased sympathetic output, such as tachycardia and hyperthermia. Some signs observed in the awake patient include nausea, tremor and altered mental status. However the frequency thyrotoxic storm given by Clech GL²⁷ is 1%.

CONCLUSION

We conclude that patients who undergo thyroidectomy an increased risk of developing postoperative hypoparathyroidism. Despite the fact that total thyroidectomy is a more involved procedure that exposes more parathyroid glands and recurrent

laryngeal nerves to surgical risk than unilateral thyroid lobectomy, it is an inherently safe procedure.

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To Study the Relationship of Caffeine Elimination and Child's Pugh Classification in Groups of Patients with Liver Cirrhosis

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ABSTRACT

Background: Serum Caffeine clearance determination is a useful method to evaluate the severity of liver disease and predict short-term survival of cirrhotic patients. Caffeine concentrations correlated well with the score indicating the sufficiency of the organ according to Child- Turcotte classification score. It offers another choice for the quantitative measurement of liver functional reservoir.

Objectives: Study is designed to find out the relationship of Caffeine elimination and Child's classification in groups of patients with liver cirrhosis.

Study Design: Cross sectional Study.

Place and Duration of Study: The study was conducted at the Medical Ward of Services Hospital Lahore from July 2004 to December 2004.

Material and Methods: Forty patients with liver cirrhosis with age range 40-55 years and 20 aged matched normal healthy volunteers were enrolled in this study. Patients were taken from the medical ward of Services Hospital Lahore. After an overnight fast, the first blood sample was collected at 8 a.m., immediately followed by an oral administration of 200 mg Caffeine. Subsequent samples of venous blood were obtained at 8.30 a.m., 9 a.m., 11 a.m., 2 p.m. and 5 p.m. The Caffeine clearance was determined by reversed-phase high pressure liquid chromatography using a Phenomenex Gemini C18 column using a wavelength of 273 nm.

Results: (Jaundice presented with highest frequency distribution and percentages. This was followed with ascities, edema, family history of hepatitis/jaundice and anemia. Ultrasonographic findings showed that in 50% of the patients. Other 50% of patients have normal and shrunken liver).

Caffeine concentration in child class A was significantly decreased at base line ($P<0.001$), 3 hours ($P<0.05$), 6 hour ($P<0.001$) and 9 hour ($P<0.001$) as compared to the controls. In child class B the Caffeine concentration was significantly decreased at base line ($P<0.001$), 3 hours ($P>0.05$), 6 hour ($P<0.001$) and 9 hour ($P<0.001$) as compared to the controls. On the other hand in child class C the Caffeine concentration was remaining same as in their controls.

Conclusion: Caffeine clearance could provide a practical assessment of hepatic function in cirrhotic patients.

Our data emphasize the value of the Child-Turcotte or Child-Pugh classification in assessing the severity of liver cirrhosis in a simpler and less time-consuming way than using quantitative liver function tests.

Key Words: Cirrhosis, Caffeine clearance, Child's Pugh classification.

INTRODUCTION

Cirrhosis is a consequence of chronic liver disease characterized by replacement of liver tissue by fibrosis, scar tissue and regenerative nodules, leading to loss of liver function. It is most commonly caused by alcoholism, hepatitis B and C, and fatty liver disease. However some cases are idiopathic¹.

The prevalence of cirrhosis in patients with chronic HCV increases with increasing duration of infection. In Asian patients infected at birth, infection for over 60 years causes cirrhosis in 71% of infected individuals².

Ascites is the most common complication of cirrhosis, and is associated with a poor quality of life, increased risk of infection, and a poor long-term outcome³. Other potentially life-threatening complications are hepatic encephalopathy and bleeding from esophageal varices⁴.

Assessment of live function is an important work-up for patients with liver cirrhosis. The gold standard for diagnosis of cirrhosis is a liver biopsy. A biopsy is not necessary if the clinical, laboratory suggests cirrhosis. Furthermore, cirrhosis itself predisposes for complications due to liver biopsy⁵. Quantitative tests of liver function (QTLF) measure the elimination of substances that have been either metabolized or excreted by the liver. Elimination of QTLF substances correlates with the amount of blood flow to the liver and with hepatic metabolic capacity. Caffeine is now widely used to assess genetic, environmental and race/breed differences for some enzymes and the hepatic metabolic capacity (total activity of enzymes metabolizing CF) because of its pharmacokinetics and almost complete biotransformation by some CYP 450 enzymes in liver. It is used to analyze microsomal metabolic liver function^{6,7}.

Serum Caffeine clearance determined at two points of blood concentration is a useful method to evaluate the severity of liver disease and predict short-term survival of cirrhotic patients. It offers another choice for the quantitative measurement of liver functional reservoir^{8,9}.

Caffeine (CF) concentrations correlated well with the score indicating the sufficiency of the organ according to Child-Turcotte classification score. Caffeine metabolizes solely in the liver. The disappearance of Caffeine was significantly decreased in cirrhotics¹⁰.

The apparent Caffeine clearance in cirrhosis decreased with increasing Child-Turcotte classification score: Child's class A patients differed significantly from Child's class B or Child's class C patients, whereas the difference between Child's class B and C patients did not reach statistical significance (Wilcoxon's rank test). In addition there was a strong correlation between the Child-Pugh classification score and apparent Caffeine clearance¹¹. On the other hand a good correlation between impairment of Caffeine elimination and assessment of severity of liver disease¹⁰.

Fasting plasma Caffeine concentrations, however, were significantly higher in cirrhotics than in controls¹². Recently it is found that there is a significant correlation between CF clearance and the ratio of Caffeine with its metabolites like plasma paraxanthine (PX), theobromine (TB), and theophylline (TP)/CF ratio at 7 hr after creatinine clearance administration¹³. However, a careful dietary history showed no significant difference in Caffeine consumption among cirrhotics vs. control patients¹².

Quantitative assessment of live function is an important work-up for patients with liver cirrhosis. The aim of the present study was to clarify the role of Caffeine clearance test in the quantitative measurement of metabolizing capacity of the liver.

MATERIALS AND METHODS

Forty patients with liver cirrhosis with age range 40-55 years and 20 aged matched normal healthy volunteers were enrolled in this study. Patients were taken from the medical ward of Services Hospital Lahore. Duration of study is 4-5 months. Letter of consent was taken and a certificate from Ethical Committee was also obtained. After an overnight fast, the first blood sample was collected at 8 a.m., immediately followed by an oral administration of 200 mg Caffeine. Subsequent samples of venous blood were obtained at 8.30 a.m., 9 a.m., 11 a.m., 2 p.m. and 5 p.m. Blood level was collected before and after an oral dose of Caffeine. The Caffeine clearance was determined by reversed-phase high pressure liquid chromatography using a Phenomenex Gemini C18 column using a wavelength of 273 nm. The mobile phase consisted of 30% methanol in 25 mM

Sodium acetate buffer, pH 4.0. The flow rate was 1.0 ml/min¹³.

Statistical Analysis: The data was analyzed by using SPSS-16.0. Qualitative variables were presented with frequency distribution and percentages. Quantitative variables were reported by using mean±S.D. Variables were calculated and compared with normal control subjects using student 't' test. P value <0.001 was considered as highly significant.

RESULTS

Physical examination findings in cases and controls were presented with frequency distribution and percentages. Jaundice presented with highest frequency distribution and percentages. This was followed with ascities, edema, family history of hepatitis/jaundice and anemia. In control family history of hepatitis /jaundice was presented with a frequency distribution of 3 and 17 while percentage was 15 and 85%. Edema was observed with a frequency of 2 and a percentage was 10 (Table 1).

Ultrasonographic findings showed that in most of the patients, liver is enlarged with a frequency distribution of 21 and have a percentage of 52.5%. On the other in remaining number of patients the frequency distribution of normal and enlarged is same (9-10 was frequency distribution and 22.5-25% was percentage). In controls all cases having normal liver size (Table 2).

Table No. 1: Physical examination findings in cases and controls

Physical examination	Freq and percent Cases (40)		Freq and percent of Controls (20)	
Edema	21	52.5%	02	10%
Anemia	16	40.0%	01	05%
Jaundice	25	62.5%	00	0.0%
Ascities	23	57.5%	00	0.0%
Family history of hepatitis/jaundice	21	52.5%	03	15%
	19	47.5%	17	85.0%

Table No.2: Ultra sonographic findings in cases and controls

Liver size	Cases with freq and percent (40)		Controls with freq and percent (20)	
Normal	09	22.5%	20	100.0%
Enlarged	21	52.5%	00	0.0%
Shrunk	10	25.0%	00	0.0%

Caffeine concentration in CHILD class A, Class B and Class C was observed at baseline, 3, 6 and 09 hours. It was observed in child class A the Caffeine concentration was significantly decreased at base line (P<0.001), 3 hours (P<0.05), 6 hour (P<0.001) and 9 hour (P<0.001) as compared to the controls. In child class B the Caffeine concentration was significantly

decreased at base line ($P<0.001$), 3 hours ($P>0.05$), 6 hour ($P<0.001$) and 9 hour ($P<0.001$) as compared to the controls. On the other hand in child class C the Caffeine concentration was remaining same as compared to their controls (Table 3).

Table No.3: Caffeine concentration in CHILD class A, Class B and Class C at baseline, 3, 6 and 09 hours.

Caffeine concentration ($\mu\text{g/dl}$)	Child class A (n=13)	Child class B (n=27)	Child class C (n=07)	Control (20)
Baseline	0.2 $\pm$ 0.08**	0.30 $\pm$ 0.09**	0.81 $\pm$ 0.11	0.81 $\pm$ 0.11
3 hours	7.4 $\pm$ 0.20*	7.71 $\pm$ 0.13	7.75 $\pm$ 0.10	7.75 $\pm$ 0.12
6 hours	6.51 $\pm$ 0.23**	6.72 $\pm$ 0.16**	7.32 $\pm$ 0.19	7.32 $\pm$ 0.19
9 hours	3.65 $\pm$ 1.47**	6.32 $\pm$ 0.75**	7.12 $\pm$ 0.05	7.12 $\pm$ 0.05

* $P<0.05$ = Significant difference

** $P<0.001$ = Highly significant difference

DISCUSSION

Physical examination findings in cases and controls were presented with frequency distribution and percentages. Jaundice presented with highest frequency distribution and percentages (62.5%). Our study is in accord with a study who found jaundice in 64% cases¹⁴. It is thought that jaundice may be due to complicated chronic liver disease. Ascities was seen in 57.2% cases. A study stated that 48% patients with cirrhosis develop ascites¹⁵.

Ultrasonographic findings showed that in 50% of the patients, liver is enlarged. Normal liver and shrunken liver is observed in 50%. A study also reported structural changes in liver with cirrhosis¹⁶.

Present study observed an inverse relationship between Caffeine clearance and the degree of fibrosis which had been assessed by comparing the Caffeine clearance in controls, Child class A, Child class B and Child class C patients. Cirrhosis was characterized by a statistically significant reduction in apparent Caffeine clearance. The Caffeine clearance was significantly reduced in Child class B patients when compared to Child class A patients. This may show that the Caffeine clearance in cirrhosis was decreased with increasing Child Pugh classification score and it may be used to measure the metabolizing capacity of the liver quantitatively. A study reported that poor prognosis was associated significantly with increasing Child-Pugh score¹⁷. Present study observed that in Child class C there is no difference in Caffeine clearance in fasting, after 3, 6 and 9 hours as compared to control.

A significantly negative relationship between the serum Caffeine clearance and the Child-Pugh's score was also demonstrated by a group of workers. Their study observed that during the mean six-month period of follow-up, the mortality rate was significantly higher in those patients with Caffeine clearance less than 0.5

ml/min/kg than in those with clearance more than 0.5 ml/min/kg^{8,18}. A study also observed that the Caffeine blood concentrations in patients were significantly higher than those in healthy controls. Caffeine concentrations correlated well with the score indicating the sufficiency of the organ according to Child. Their study reported that differences in comparison with controls were the more evident the greater was the degree of liver damage¹⁹. A group of workers observed that cirrhosis had no effect on the apparent volume of distribution of Caffeine but clearance of Caffeine was substantially reduced in these patients. Production of the three metabolites of CA, but mainly PX, was reduced in patients with cirrhosis²⁰.

Present study observed the base line Caffeine concentration in Class A patients (0.2 $\mu\text{g/ml}$), in class B patients (0.3 $\mu\text{g/ml}$) and in class C patients was 0.81 $\mu\text{g/ml}$. In case of Child class C there is no difference in Caffeine clearance as compared to controls. Our study is in contrast to a study who observed that fasting plasma Caffeine concentrations in cirrhotics varied significantly with Child's criteria, namely Child's A patients (2.06 μg); Child's B patients (6.92 $\mu\text{g/ml}$), and Child's C patients (17.70 $\mu\text{g/ml}$)¹².

Our study is agreed with a study who observed that the semi-quantitative Child-Pugh score is frequently used to assess the severity of liver function impairment especially in Child class C patients, but only offers the clinician rough guidance for dosage adjustment because it lacks the sensitivity to quantitate the specific ability of the liver to metabolize individual compound or drugs²¹.

CONCLUSION

Caffeine clearance could provide a practical assessment of hepatic function in cirrhotic patients. Our data emphasize the value of the Child-Turcotte or Child-Pugh classification in assessing the severity of liver cirrhosis in a simpler and less time-consuming way than using quantitative liver function tests.

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BMI and Lipid Profile: A Serious Health Threat for Middle aged Women

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ABSTRACT

Background: Study tried to find out factors that associated with the weight gain or increased BMI in middle aged women and lipid profile that may become a cause of different disease in women in middle/late ages.

Objective: Study tried to find out factors that associated with the weight gain in middle aged women and lipid profile that may become a cause of different disease in women in middle and also in later ages.

Study Design: Cross sectional Study.

Place and Duration of Study: This study was conducted at the department of Biochemistry, Fatima Jinnah Medical College, Lahore from August 2010 to October 2010.

Materials and Methods: 50 females with age range 40-50 years were included in the study. The proforma of questionnaire recorded the age, socioeconomic status, BMI, blood pressure, dietary pattern, Physical activity and family history of female subjects. Lipid profile included total lipid, serum cholesterol, triglyceride, HDL-cholesterol and LDL-cholesterol were also estimated.

Results: It was observed that mean age at which females gained the weight is 45.23 years. Most females belong to class B and Class C. Females were over weight when compared with the standard criteria of weight to height ratio. No change in blood pressure was seen. A positive family history of obesity was also seen in many females. It was observed that the level of total lipids, cholesterol, triglyceride and LDL-cholesterol was significantly increased in female subjects as compared to these parameters of normal subjects. However, the level of HDL-cholesterol was significantly decreased in female subjects as compared to normal subjects.

Conclusion: In view of this study, it is suggested that a diet is not simply a list of permitted food but it may include the total count of calorie a person consume in the form of food in addition to cut down some percent of sugar, salt and oil. A regular exercise may help to maintain the circulation of blood and maintain the level of lipid profile.

Key Words: Body weight, women, lipid profile.

INTRODUCTION

Obesity, or too much body fat, has become a serious health threat for women at every stage of life. It is linked as a serious factor in more than 30 conditions that affect women. Overweight and obesity can lead to risk factors for heart disease, but the extra pounds also take their toll on the heart directly. When a body becomes larger, the heart has to work much harder to move the blood around the body. Like an overworked pump, the hearts of overweight and obese people can simply wear out more quickly.^{1,2}

Obesity, especially abdominal obesity, is central to the metabolic syndrome and is strongly related to polycystic ovary syndrome in women. Obese women are particularly susceptible to diabetes and cardiovascular disease and have an increased risk of several major cancers in women, especially postmenopausal breast cancer and endometrial cancer.⁴ Pregnancy and menopause are significant factors in the development of obesity in women, suggesting that fluctuations in reproductive hormone concentrations uniquely predispose women to excess weight gain⁵.

Obesity risk is greater among men and women with fewer years of education and poorer economic circumstances and among women, but not men, of

lower occupational status⁶. Women generally have a higher percentage of body fat than men, and there are indications that basal fat oxidation is lower in females as compared to men, thereby contributing to a higher fat storage in women.⁷

Lack of nutritional knowledge i.e. the caloric value of food and role of vitamin, leads to unwise selection of food especially during the middle age when caloric need are less is a major factor in middle age obesity⁸. Modern facilities that pertaining to transport, household goods (washing machine, electronic kitchen etc) result in less physical exertion and therefore has less caloric output⁹.

MATERIALS AND METHODS

50 females with no disease other than obesity were included in the study. Their age range was 40-50 years. These were taken from Out Door Department of Sir Ganga Ram and Services Hospital Lahore. Study duration was 3 months. 20 non obese females with no history of any disease were taken as controls. The proforma of questionnaire recorded the age, socioeconomic status, BMI, blood pressure, dietary pattern, Physical activity and family history of female subjects. Letter of consent was taken from each individual. Lipid profile included total lipid, serum

cholesterol, triglyceride, HDL-chol and LDL-chol were estimated by using the standard kits.

RESULTS

A survey report on female obese subjects showed mean age at which females gained the weight is 45.23 years. According to socioeconomic status, obesity is more common in females belonging to class B and Class C. As far as the BMI is concern, females have higher BMI when compared with the standard criteria of BMI (<25). No change in blood pressure was seen. It was observed that most of the females were house wives and they have sedentary life style. A positive family history of obesity was also seen in many females. It is observed that if both parents are obese then most of the children i.e. 3 out of 4 are obese. On the other, if only one parent is obese than 01 out of 4 is obese (data not shown).

Table No.1: Obesity related parameters in female obese subjects.

Parameters	Female subjects
Age (years)	45.23 $\pm$ 5.48
Socioeconomic status	Class B/ class C
BMI	35.8 $\pm$ 4.5
Blood Pressure (mmHg)	125/80
Dietary Pattern	Fatty diet
Physical activity	Sedentary life
Profession	House wives
Family history	30-40%

Table No.2: Lipid Profile of Female Subjects and their controls.

Values Expressed as mean $\pm$ s.e.m.

Parameters	Female subjects	Female control
Total Cholesterol (mg%)	248.68 $\pm$ 4.34**	186.60 $\pm$ 4.66
HDL Cholesterol (mg%)	29.76 $\pm$ 0.58**	80.28 $\pm$ 5.1
LDL Cholesterol (mg%)	199.60 $\pm$ 5.25**	42.55 $\pm$ 1.8
Triglyceride (mg%)	132.64 $\pm$ 7.5**	109.00 $\pm$ 10.56
Total Lipid (mg%)	663.68 $\pm$ 6.61*	423.50 $\pm$ 14.9

**P<0.001= Highly significant difference

**P<0.001= Highly significant difference

Table 2 showed the parameter of lipid profile like total cholesterol, HDL-cholesterol (HDL-C), LDL-cholesterol (LDL-C), triglyceride and total lipid in female subjects and normal control subjects. It was observed that the level of total lipids, cholesterol, triglyceride and LDL-cholesterol was significantly increased in female subjects as compared to these parameters of their controls. However, the level of

HDL-chol was significantly decreased in female subjects as compared to controls or normal subjects.

DISCUSSION

In recent years considerable epidemiological efforts have been directed to assess risk factors of obesity. Most notable among these are age, BMI and blood pressure⁸. Present study observed that most female subjects were obese between 40-45 years. It was observed by a group of workers⁹ that obesity develops with increasing age and is characterized by increased food intake and declining energy expenditure via activity and metabolism. Another study reported that Serotonin contributes to the regulation of food intake and appetite behavior. As body weight increases, the amount of serotonin synthesis decreases, presumably to indicate satiety at lower levels of food intake. However, women do not experience this drop in serotonin synthesis until reaching a BMI classifying them as "obese."¹⁰

Present studies observed that diet of most of the women was mixed vegetables and meat or vegetable alone in fried style. It is reported that there is a decreased digestion and absorption of fat with increased age. This decreased metabolism of fat is also related with sedentary life¹¹ (Hofstedt). A positive family history was also observed by the present study. A study stated that Tumor necrosis factor alpha (TNF-alpha) is expressed in fat cells and is possibly involved in the development of insulin resistance. One variant of the gene for TNF-alpha is associated with obesity in women, but not in men¹².

Lipid profile of women was also checked. It was observed that the level of total lipids, cholesterol, triglyceride and LDL-cholesterol was significantly increased in female subjects as compared to these parameters of normal subjects. However the level of HDL-chol was significantly decreased in female subjects as compared to normal subjects.

Study is in agreement^{13,14} with conclusions of a group of workers who reported that plasma lipoprotein metabolism, in women, is influenced by the circulating concentration of gonadal steroids. Changes in serum estrogens and androgen concentration, resulting, either from alteration in gonadal status or from administration of estrogens gonadal steroid, have been shown to be associated with changes in serum lipoprotein level. Another study^{15,16} found that the elevated triglyceride level in obese women may be due to their higher visceral fat mass and possibly reduced clearance by adipose tissue. Our findings contrast with study of a group of workers¹⁷ who observed no change in level of HDL cholesterol in women undergoing diet and exercise.

CONCLUSION

In view of this study, it is suggested that a diet is not simply a list of permitted food but it may include the total count of calorie a person consume in the form of food in addition to cut down some percent of sugar, salt and oil. A regular exercise may help to maintain the circulation of blood and maintain the level of lipid profile.

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Study of Different Patterns of Fingerprints Prevalent in Our Population

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ABSTRACT

Objectives: The objectives of the study is to observe and analyze different types of fingerprint patterns in our population and compare it with other studies conducted in Pakistan and abroad, their utility in Forensic investigations, diagnosis and prevention of diseases, criticism on their utility and its defense.

Study Design: Comparative study.

Place and Duration of Study: This study was conducted on the Medico-legal cases received in the casualty department of Lahore General Hospital, Lahore from January 2011 to June 2011.

Materials and Methods: 200 males and 200 females between the ages of 10 years to 65 years were included in the study for analyzing different type of fingerprint patterns. The fingerprints (impressions) were taken on the unglazed white paper by nail to nail rolled method of all fingers and thumbs of both hands with black ink. These cases were separated on the basis of four basic patterns of fingerprints, their subclasses in both sexes. The relevant data was collected on prescribed Proforma and then the results were scrutinized and statistically analyzed.

Results: On analysis of data recorded, average percentage values of males and females, the loop type of the pattern was 54%, whorl 32%, arch 10.05% and composite 3.5% and the ulnar loop type of the pattern was 87.5% whereas radial loop type of the pattern was 12.5% in our population.

Conclusion: Fingerprints patterns (dermatoglyphics) are not only old standing helpful tool for identification of criminals during Forensic investigations, for the identifications of the persons in everyday business on civil side but also an emerging science to aid in the diagnosis and prevention of diseases. More elaborated studies should be conducted with reference to ethnic and geographical variations in Pakistan also. Biometric database housing fingerprints and criminal history of criminals must be developed to help out law enforcement agencies on the pattern of IAFIS.

Key Words: Finger prints, Population, Arch, Ulnar Loop, Whorl, Composite, Tented Arch, Radial Loop, Ridge ending, Bifurcation.

INTRODUCTION

A fingerprint is formed from an impression left by the pattern of friction ridges on a human finger. A ridge is defined as single curved segment, and a valley is the region between two adjacent ridges¹.

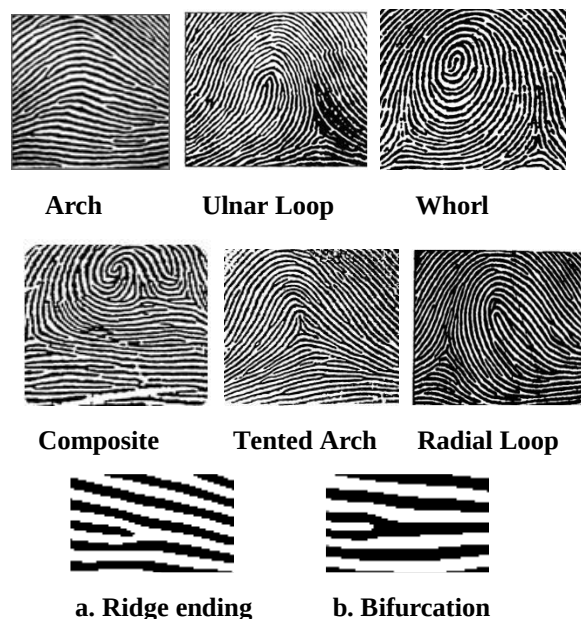
Fingerprints have long been the main stay of Forensic identification even into the DNA age since fingerprints are unique to an individual even in uniovular twins. Ancient culture such as Babylonian and Chinese used them as signatures. In 1823, a Czechoslovakian physiologist J.E. Purkinje described the natural grooves on the human finger tips and gave first classification followed by Henry Fauld, Scottish physician who in 1885, then working in Japan recognized the importance of the skin ridges as an aid to identification. W.J.Herschel in 1958 began first known official use of fingerprints^{2,3,4}. The Francis Galton produced proper scientific work and published his book on fingerprint subject in 1892. The fingerprints are so useful aid to the identification that they can be taken from the fresh dead bodies and also from the putrefied dead bodies even to the extent of removing peeled skin/deglowed skin or finger-tips. Prints may often be obtained from desquamated skin or from underlying epidermis after

shedding off the stratum corneum following prolonged submersion^{3,5}. There are four basic patterns of fingerprints namely loop, arch, whorl and composite. However it is the ridge characteristics, type, number and relative position (major ridge path deviation) that make each fingerprint unique and these features collectively are called the "minutiae". For each instance of combined minutiae, maximum distance is used as a threshold to distinguish between the combined type and to distinct fundamental points⁶. There are three types of fingerprints found at the scene of crime, visible prints, plastic prints and latent prints.

The most popular ten-print classification systems include the Roscher system, the Juan Vucetich system, and the Henry Classification System. In the Henry system of classification, there are three basic fingerprint patterns: Loop, Whorl and Arch, which constitute 60–65%, 30–35% and 5% of all fingerprints respectively⁷. There are also more complex classification systems that break down patterns even further, into plain arches or tented arches, and into loops that may be radial or ulnar, depending on the side of the hand toward which the tail points.

The system used by most experts, although complex, is similar to the Henry System of Classification. Use of

ten digit system reduces the number of prints that the print in question needs to be compared with⁸.



The fingerprint mark left at the scene of crime are developed by using different techniques including optical detection techniques like Luminescence using lasers, on many surfaces including metal like firearm. Diffused reflection technique is used on smooth shiny surfaces such as glass, plastic (e.g. credit cards) and polished metal. Chemical techniques like use of Ninhydrin for developing finger marks is applicable to the porous surfaces such as paper and cardboard. Aluminum powder which is mostly used to develop relatively fresh fingerprints in fingerprint powdering technique in latent fingerprints deposits, on smooth nonporous surfaces. Cyanoacrylate fuming technique is effective on most nonporous substrates such as glass and plastic and has become the most widely used process for the laboratory development of fingerprints on nonporous surfaces.

MATERIALS AND METHODS

This study was conducted on the Medico-legal cases received in the casualty department of Lahore General Hospital Lahore during the period 01/01/2011 to 30/06/2011 (duration six months). 200 males and 200 females between the ages of 10 years to 65 years were included in the study for analyzing different type of fingerprint patterns. The fingerprints (impressions) were taken on the unglazed white paper by nail to nail rolled method of all fingers and thumbs of both hands with black ink. These cases were separated on the basis of four basic patterns of fingerprints, their subclasses in both sexes. The relevant data was collected on the

prescribed Performa and then the results were scrutinized and statistically analyzed.

RESULTS

On analysis of data of fingerprint patterns recorded, our study revealed the results as under:

In males loop type of pattern was found in 57%, whorl 29%, arch 12% and composite 2% only. Similarly in females loop type of pattern was found in 51%, whorls 35%, arch 09% and composite 05%. Loop type of pattern was found to be highest in percentage and arch type of pattern was lowest in percentage in both the males and females of our population. In average percentage values of males and females, the loop type of the pattern was 54%, whorl 32%, arch 10.05% and composite 3.5% only in our population. Table 1.

In another study conducted in Pakistan loop type of pattern was seen in 57.2%, whorl 29.8%, arch 10.2% and composite 2.8% of our population and in a study conducted at Karluk village (Kodiak Island) loop type of pattern was seen in 52%, whorl 41.1% and arch 7% of the population of the Karluk (Europe) whereas in Henry's classification loop type of the pattern was found in 60 to 65%, whorl 30 to 35% and arch 5% only. Table 2

Table No.1: Distribution of different types of fingerprint patterns in Pakistani population

Type of the pattern	Male	%	Female	%	Male+ Female	Total % Male+ Female
Loops	114	57%	102	51%	216	54%
Whorls	58	29%	70	35%	128	32%
Arches	24	12%	18	09%	42	10.5%
Composite	04	2%	10	05%	14	3.5%
Total	200	100%	200	100%	400	100%

Table No.2: Comparison of different studies about distribution of types of fingerprint patterns

Type of Pattern	Study at LGH (Our Study)	Another Study in Pakistan	Study at Karluk Village (Kodiak Island)	Henry Classification
Loops	54%	57.2%	52%	60-65%
Whorls	32%	29.8%	41.1%	30-35%
Arches	10.5%	10.2%	7%	5%
Composite	3.5%	2.8%	-	-

Regarding the distribution of ulnar and radial loops in fingerprint patterns in our population, our study showed that the ulnar loop type of the pattern in males was 89% and in females 86% whereas radial loop type of the pattern in males was 11% and in females 14%. In average percentage values of males and females, the ulnar loop type of the pattern was 87.5% whereas radial loop type of the pattern was 12.5% in our population. It

is important and interesting to note that percentage of loop type of the pattern was highest in percentage in our study as well as other studies whereas percentage of arch type of pattern was found to be the lowest in our study and other studies also.

Table 3: Distribution of ulnar and radial loops of fingerprint patterns in Pakistani population

Type of the pattern	Male	%	Female	%	Male+ Female	Total % Male+ Female
Ulnar Loops	178	89%	172	86%	350	87.5%
Radial Loops	22	11%	28	14%	50	12.5%
Total	200	100%	200	100	400	100%

DISCUSSION

It is important to study the distribution of different patterns of fingerprints in our normal population because fingerprints have been gold standard for personal identification within the forensic community for more than one hundred years. Science of fingerprints identification has evolved over time from early use of fingerprints to mark business transactions in ancient Babylonian to their use today as core technology in biometric security devices and as scientific evidence in courts of law throughout the world. Fingerprint identification is commonly employed in forensic science to support criminal investigations to identify the criminals from chance impression left at the scene of crime because when friction ridges come in to contact with rough surface taking a print material that is transferred on the friction ridges such as perspiration, oil, grease, ink or blood will be transferred to surface and thereby helping in identification of weapon used for homicide, suicide like firearm, prevention of impersonation and as an extra precaution in business transaction, legal documents and national identity cards issued by NADRA bearing fingerprint of thumb in addition to signature. Fingerprints have relationship with certain diseases thereby helping in their early diagnosis and treatment. Regarding relationship of fingerprints with different diseases, it was found in a local study that a pattern of 6 or more whorls was identified more frequently in women with breast cancer (48.7%) as compared in the control group (27.5%), ($P < 0.05$). Conclusion was that digital dermatoglyphics play an important role in identifying women either with or at increased risk for breast cancer so that either risk reducing measures or earlier therapy may be instituted⁹. In another study conducted in U.S.A an increased frequency in number of arches on fingers-10.4% of all schizophrenic fingerprints verses 4.9% of controls; an increased number of individuals with one or more

arches among schizophrenics-32% against 18% among the controls: decreased frequency of radial loops on index finger among the schizophrenics was found. Numerous other differences of lesser frequency also noted¹⁰. Similar study conducted in Thailand concluded that only male patient exhibited average scores for complex patterns (Whorls minus arches less than 2) which might be a biomarker for screening of schizophrenia in males¹¹.

Our study is consistent with another study conducted in Pakistan¹² with only negligible difference of percentage in all types of fingerprint patterns as mentioned in table-2 and also in coincidence with study conducted at Karluk village, Kodiak island (Europe) with only striking difference of whorl type of the pattern which was 41.1 percent as compared to our study where whorl type of pattern was found to be 32 percent¹³. Our study also matches with Henry classification with only minor difference of percentage in all type of the patterns mentioned in table-2. However these minor differences are not of such magnitude to be statistically significant which may be due to the ethnic, geographical and environmental conditions. The existence of ethnic variations have already been proved in a study conducted at Georgia state university USA in which it was found that the loop & arch type of the patterns dominated in blacks whereas loop and arch type of the pattern in Asian were minimum and those in white and Hispanic were in between¹⁴. It was also found in the study conducted in Maharashtra, India in which the results confirmed that dermal traits, in general, and palmer characters in particular, do help in understanding the biologic/ethnic affinities among different groups both at macro and micro levels and different types of traits are likely to be influenced by genetic/environmental factors giving rise to different clustering patterns¹⁵. Our study is also in agreement with another study conducted in India in which it was found that the most frequent fingerprint pattern was ulnar loop in total population as well as in sex wise distribution¹⁶.

After the development of latent fingerprint patterns by different techniques on different types of surfaces, the comparative identification process, methodology or protocol known as "ACE-V" as adopted by Ashbaugh¹⁷ in early 1990's and presented by Tuthill (1994), and more recently discussed during the Duabert hearing as state of art methodology for identification process adopted by Royal Canadian police. The ACE-V (analysis, comparison, evaluation and verification) is discussed as under:

Analysis consists of three levels that are level 1, level 2 and level 3.

Comparison basically is iterative comparison between the unknown mark and a known print, focusing on level 1, 2 and 3 features after their identification in the mark

and taking into account the tolerances dictated by the quality of mark.

Verification starts after the comparison between a mark and print, the examiner faces a set of observations from which an inference about the identity of source must be drawn. The ability to distinguish between distortion and dissimilarity is essential and relies mainly on examiner's experience.

Evaluation stage emphasizes the subjective nature of the fingerprint evaluation. The highly subjective recognition process exploits the extraordinary power of human eye-brain combination, and the ability of the examiner is crucial. There are various ways to achieve this, and each has been explored by the fingerprint profession e.g. initiatives under the SWGFAST (Scientific working group on friction ridge analysis, study and technology) group guidelines¹⁸ and laid down standards in response to issuance of NAS report.

The acceptability of fingerprint evidence as being scientific in nature has been subject to a DAUBERT hearing in the U.S (U.S. v. Mitchell criminal case in eastern district of Pennsylvania) with 20 Daubert hearing in U.S with the outcome that fingerprint evidence passed the Daubert test and the judicial notice was given to the fact that fingerprints are permanent and unique. It was a strong defense against the criticism by Sandy L Zabell and others.

The utility of fingerprints in forensic investigation is advancing day by day. In 2008 British researchers developed methods of identifying users of marijuana, cocaine and methadone from their fingerprints residues of various chemicals and their metabolites present in the body¹⁹.

Finger ridge skin present on the soles of feet and toes (planter surfaces) is also unique like ridge on fingerprints and palm, so when recovered from the crime scene, sole and toe impression can be used in same manner for identification. Footprint evidence has been admitted in courts in the United States since 1934²⁰.

AFIS (Automated fingerprint identification system) is biometric identification methodology that uses digital imaging technology to obtain, store and analyze fingerprint data which was originally used by the U.S Federal Bureau of Investigations and AFIS itself has been in use around in many countries of world. Now the FBI United States has developed more advanced system namely IAFIS (Integrated Automated fingerprint identification system) which was launched on July 28, 1999. It is the largest biometric data base in the world, housing fingerprints and criminal histories for more than 70 million subjects in the criminal master file, along with more than 31 million civil prints²¹.

CONCLUSION

Our study revealed that the prevalence of loop type of pattern was in highest percentage in Pakistani

population (54%) and an arch type of pattern was found to be in lowest percentage (10.5%), as well as in other two studies conducted on dermatoglyphics in Pakistan and the other one abroad. Moreover ulnar loop type of pattern was prevalent in very high percentage amongst Pakistani population (87.5%) whereas radial loop type of pattern was found in lowest percentage (12.5%). Fingerprint patterns are not only old standing helpful tool for identification of criminals during forensic investigation but are also a developing aid in the diagnosis and prevention of different diseases. More elaborated studies should be conducted with reference to ethnic and geographical variations while using more sophisticated latest equipment as our study is third one in Pakistan, only two studies on the subject of dermatoglyphics have been conducted before in Pakistan. Biometric database housing fingerprints and criminal history of criminals should be developed in Pakistan to help out the local law enforcement agencies which can also exchange the prints electronically with international law enforcement agencies on the pattern of IAFIS.

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Comparison of Three Different Ceruminolytic agents (Soda-Bicarbonate, Almond Oil & Normal Saline) with Respect to their Efficacy

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ABSTRACT

Objective: To compare the efficacy of three ceruminolytic agents for cerumen impaction with respect to its ease of complete removal via suctioning or probe.

Study Design: A comparative prospective study.

Place and duration of Study: This study was conducted carried out at the outpatient department of ENT, Abbasi Shaheed hospital, Karachi from November 2010 to March 2011.

Patients and Methods: A comparative prospective study of 75 adult patients with cerumen impaction in either or both of the ears carried out at the outpatient department of ENT, Abbasi Shaheed hospital, Karachi. The study was done after taking the consent of the patients. All the adult patients of age 18 years or greater, of either sex with the symptoms in the ear(s) because of cerumen which was hard/dry and difficult to remove were included in the study. Those of age less than 18 years and not having any symptomatology because of the cerumen or with soft wax which was easy to clean were not included in the study. The study was carried out from November 2010 till March 2011. The patients with problematic, difficult to remove cerumen or cerumen impaction with symptoms were divided in to three groups: Group A, Group B and Group C; all having equal number of cases that is 25 each. In group A they were given soda-bicarbonate in glycerin based ear drops; in group B almond oil and group C the normal saline for instillation in ear. The doses and timings for drops were equal in all the group and it was 3 drops in the affected ear every 6-hourly for 1-week. They were counselled that the dose should not be missed and they have to lay down for 5 minutes so that drops are absorbed and does not come out of the ear. After one week they were called in the OPD, their ear(s) were assessed with respect to the cerumen softening and ease of removal, either via probe or suctioning, was compared with the completeness of removal of impacted cerumen for the three groups.

Result: Ease and completeness of cerumen removal was 80% in group A, followed by 60% for group C and 20% for group B.

Conclusion: We found soda-glycerin to be superior to almond oil and normal saline as ceruminolytic agent.

Key Words: cerumen; ear-wax; cerumen impaction; ceruminolytic agents

INTRODUCTION

Cerumen or ear-wax production is a normal healthy phenomenon of the external auditory canal (EAC) with myriad of functions, which under normal circumstances, is expected to be extruded from the ear canal by the “conveyor-belt phenomenon” of lateral migration. Although there is no study but some people are ‘wax producers’, and others remain wax free without much maintenance. Accumulation of cerumen, caused by failure of self cleaning mechanism is one of the most common reason that a patient seek medical care for ear related problems.^{1, 2} Excessive or impacted cerumen is present in one in 10 children, one in 20 adults and more than one-third in geriatric and developmentally delayed populations.³⁻⁵ In United States about 12 million people seek medical care annually for problematic cerumen, resulting in nearly eight million cerumen removal procedures.^{6, 7} In Netherlands the incidence of complaints owing to ear wax in general practice is 39.3 per 1000 patients.⁸

Unfortunately in our part of the country no such records or data exists to know the current status and magnitude of this problem.

Cerumen impaction is when an accumulation of it is associated with symptoms, prevents assessment of ear(s) or both.⁹ Impacted cerumen can arise from a number of causes for instance anatomical changes of EAC, keratosis obturans and failure in separation of keratinocytes. Possibly people prone to recurrent episodes of cerumen impaction do not express sufficient quantities of an unidentifiable ‘keratinocyte attachment destroying substance’.¹⁰ There is no local study available to judge the magnitude of this problem in our part of the country although international studies are abundant. Impacted cerumen clears completely in 5% of the patients without any treatment, while a further 26% of patients show a moderate improvement after 5 days without treatment.

Cerumen removal may be attempted by irrigation of the EAC, with or without the use of ceruminolytics; by

ceruminolytics alone; by manual removal via probe, curette, forceps or suctioning.

Manual removal via curette is a long recognized method for ear cleaning and is generally considered safe and effective but there are no trials to compare it with other methods for efficacy and safety.¹¹ It requires the presence of a co-operative patient!

Irrigation may be attempted alone or with a ceruminolytic pre-treatment. There are different irrigation systems available for office-use. One study has shown that irrigation alone was effective approximately 70% of the times.⁷

Ceruminolytics are broadly divided in to three categories: (1) water based; (2) oil based and (3) non-water, non-oil based.^{7, 12-14} Table 1 illustrates the different types of ceruminolytic agents and their effects.

PATIENTS AND METHODS

A comparative prospective study of 75 adult patients with cerumen impaction in either or both of the ears

carried out at the outpatient department of ENT, Abbasi Shaheed hospital, Karachi. The study was done after taking the consent of the patients. All the adult patients of age 18 years or greater, of either sex with the symptoms in the ear(s) because of cerumen which was hard/dry and difficult to remove were included in the study. Those of age less than 18 years and not having any symptomatology because of the cerumen or with soft wax which was easy to clean were not included in the study. The study was carried out from November 2010 till March 2011. The patients with problematic, difficult to remove cerumen or cerumen impaction with symptoms were divided in to three groups: Group A, Group B and Group C; all having equal number of cases that is 25 each. In group A they were given soda-bicarbonate in glycerin based ear drops; in group B they were given almond oil as ear drops and the group C they were given normal saline for instillation in ear.

Table No.1: Different Ceruminolytic agents^{7, 12-14}

Category/Agent	Dosing	Use	Comments
1) Water based			
10% Triethanolamine Polypeptide	Fill EAC 15-30 minutes before irrigation	Soften cerumen before irrigation	Irritating; can't be used for prolonged periods
Docusate Sodium	Fill EAC with 1mL of IT for 15-30 seconds	Soften cerumen before irrigation	-----
3% Hydrogen Peroxide	Fill EAC for 15-30 seconds	Soften cerumen before irrigation	If not completely removed bubbling may hamper tympanic membrane visualization
2.5% Acetic Acid	Fill EAC with 2-3cc twice daily for 14 days	Home based treatment	More effective in children
10% Soda Bicarbonate	Fill EAC with 2-3cc prior to irrigation or alternatively for 3-14 days at home without irrigation	Soften cerumen before irrigation or home based treatment	More effective in children
Water or Saline	Instill water or saline & wait for 15minutes then do irrigation	Soften cerumen before irrigation	-----

Table 1 (Continued)

2) Oil Based			
Olive Oil; Almond Oil; Mineral Oil	3-Drops in the EAC at night for 3-days	Soften cerumen before irrigation	-----
Arachis Oil; Rectified Camphor Oil	4-Drops in the EAC, twice daily for upto 3/4-days	Soften cerumen before irrigation	-----
3) Non-Water, Non-Oil Based			
Carbamide Peroxide	5-10 drops, twice daily in the EAC for upto 7-days	Soften cerumen before irrigation or home based treatment	-----
Propylene Glycol; 50% Choline Slaicylate & Glycerol; 0.5% Chlorbutol	Put 3-drops in EAC, twice daily for 4-days	Soften cerumen before irrigation	Branded formulations aren't available in Pakistan

The doses and timings for drops were equal in all the groups and it was 3 drops in the affected ear every 6-hourly for 1-week. It was thoroughly explained to them that the dose should not be missed and they have to lie down for 5 minutes, with the ears with drops in up position, so that the drops are properly absorbed and

RESULT

Total number of cases were 75 (n=75 patients) with males being 40 (53.33%) in number and females 35 (46.66%) in number (table 2). In our study we found that the maximum response in terms of softening of cerumen and completeness of removal with ease (80% of the cases) was observed with the group A with soda-glycerin ear drops. It was followed by the group C with

does not come out. After one week time they were called in the OPD, their ear(s) assessed with respect to the cerumen softening, ease of removal either via probe or suctioning and the completeness of removal of impacted cerumen among the patients in the three groups.

normal saline as ear drops in which the success rate for ease and completeness of removal was 60% and group B with almond oil as ear drops on third number with success rate of only 20% (table 3).

Table No.2: Male & female patients (n=75 patients)

Males	40 (53.33%)
Females	35 (46.66%)

Table No.3: Effects of ceruminolytic agents (soda glycerin, almond oil & saline) in each of the three groups

<i>Effects observed (25 patients in each group)</i>		
Softening of cerumen (In -----No. of patients)	No effect of cerumen softening (In ----- No. patients)	Ease and completeness of removal (In-----No. of patients)
Group A – Soda Bicarbonate-glycerin ear drops		
22 (88%)	03 (12%)	20 (80%)
Group B – Almond oil as ear drops		
15 (60%)	10 (40%)	05 (20%)
Group C – Normal saline as ear drops		
19 (76%)	06 (24%)	15 (60%)

DISCUSSION

In one systemic review of topical ceruminolytics, the investigators concluded that triethanolamine was better than saline and that longer treatment with cerumen softener was better than shorter treatment duration. The review also found that the effect of docusate sodium was not statistically superior or different from saline or triethanolamine. Although longer treatment duration appeared to increase the

effectiveness of the ceruminolytics alone, overall effectiveness is still uncertain because of limitations of the evidence.¹⁵ The same study also suggested that the use of ceruminolytic agents may improve irrigation by as much as 97%. A study by Eekhof JAH and colleagues⁷ concluded that water is more effective than several of the proprietary agents in facilitating the cerumen removal. In one in-vitro study conducted by Andaz and colleagues¹⁶ found water to be the most effective dispersant. In this model, olive oil seemed almost ineffective. In our study the almond oil was almost in-effective. In the same study the agents like urea-hydrogen-peroxide, sodium bicarb, and docusate sodium all showed levels of efficacy between that of water and olive oil. In another study para-dichloro-benzene emerged as the most effective agent, closely followed by soda-bicarb, while 2.5% acetic acid fared moderately and normal saline emerged as the least effective.¹⁷ This is in contrast to our study which showed normal saline is 2nd best after the soda-glycerin ear drops! In a report by Wilson S¹⁸, he states that docusate sodium is the most effective ceruminolytic agent followed by triethanolamine and olive oil. By his report, carbamide

peroxide was labeled as the least effective. Singer and associates¹⁹ also found the docusate sodium to be effective but according to Whatley et al²⁰ amongst docusate sodium and triethanolamine none was superior. In our part of the world many of the agents aren't available as ear drops and from our armamentarium soda-glycerin seems the most effective ceruminolytic and that it comes cheap also makes it a good choice as people easily can afford it while almond oil is not readily available and is not the preferred 'ear-drops' by the patients!

Unfortunately the international trials have used ceruminolytics which are not available here so we limited our study to agents which can readily be obtained by the patients and is affordable!

CONCLUSION

The evidence regarding the pharmacological management of impacted cerumen is sparse and inconsistent and also that there is no consensus concerning the treatment of choice, or whether formulations designed to loosen the cerumen impaction are any better than water. Our study again is but small so can the result be extrapolated to a more wide scale population remains to be seen. It is hoped that this study regarding the cerumen impaction and ceruminolytic agents might open some new debates and perhaps in near future a consensus regarding the optimal management and stratification of ceruminolytics based on their efficacy can be produced.

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Role of Vasoactive Drugs in Surgical Patients with Septic Shock

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ABSTRACT

Objective: To assess the effect of vasoactive drugs in the management of septic shock in surgical patients.

Study Design: An Experimental Study.

Place and Duration of Study: Department of General Surgery, Fauji Foundation Hospital Rawalpindi from 1st August 2006 to July 31st 2007.

Patients and Methods: Ninety patients, both males and females were included in this study. All of these patients presented with acute abdomen and having signs and symptoms of generalized peritonitis. Patients were resuscitated and stabilized. Necessary routine investigations were carried out. Operation was done as early as possible. All patients had perforation of the gut with frank purulent fluid in the abdominal cavity or fecal peritonitis. Post operative management was carried out in intensive care unit. Daily progress with vitals were noted. These patients were visited by team of surgeons regularly till they died or discharged from the hospital.

Results: A total of ninety patients were included in this study who presented to the emergency department of Fauji Foundation Hospital. 55 % of the patients were females. Patients were divided into two groups. Group A patients were prescribed vasoactive drugs immediately post operatively with antibiotics, analgesics & IV fluids. Group B was managed exactly in the same way except no vasoactive drug was given as a routine. It has been observed that the mortality was lower in group A where vasoactive drugs were prescribed as routine in immediate post operative period. Patients respond well to vasoactive drugs when their pathology is dealt within 12 hours of the onset of symptoms and the vitals are stable. Those patients who presented after 12 hours and the vitals are deranged then the vasoactive drugs do not show significant favorable response.

Conclusion: It has been concluded in this study that there is more favorable outcome in septic shock patients with peritonitis if vasoactive drugs prescribed in early post operative period. Patients respond well to the vasoactive drugs in septic shock only when the patients report earlier and the primary pathology is dealt within 12 hours of onset of symptoms.

Key Words: Septic Shock, Peritonitis, Vasoactive Drugs.

INTRODUCTION

With a mortality rate near 20 %, septic shock rank first among the causes of death in intensive care units¹. It accounts for 200,000 deaths each year in United States². Currently septic shock is most frequently triggered by gram positive bacteria followed by gram negative bacteria & fungi². In septic shock, systemic vasodilation & pooling of blood in the periphery leads to tissue hypoperfusion¹. In later stage, there is decrease cardiac output also which further aggravate tissue ischemia. The ability of diverse microorganisms to cause septic shock even when the infection is localized to one area³ is consistent with the idea that several microbial constituents can initiate the process of inflammation which result in systemic response. Once macrophages, neutrophils and other cells activated, there is release of inflammatory mediators as well as variety of immunosuppressive factors that modify host response. These mediators combine with the direct effect of microbial constituents on endothelium in a complex way to produce septic shock^{4,5,6}. Upon activation, inflammatory cells produce TNF, IL-1, IFN-gamma, IL-12 & IL-18 as well as other mediators like

high mobility group box 1 protein⁷ (HMGB1) . The complement cascade is also activated by microbial components through the proteolytic activity of plasmin resulting in the production of anaphylatoxins (C3a, C5a) chemotactic fragments (C5a) & opsonins (C3b) that contribute to the pro-inflammatory state⁸. In addition, microbial components such as endotoxins can cause activation of coagulation directly through factor XII & indirectly by altering endothelial function which leads to micro & macro thrombosis in arterioles & capillaries throughout the circulatory system. On the other hand, production of endothelial anti coagulant factors like thrombomodulin & protein C are diminished^{5,6,9}. Septic patients exhibit hyperglycemia & insulin resistant state. Hyperglycemia decreases neutrophil function & which result in further increase in adhesiveness of endothelium¹⁰.

Typically sepsis is manifested by a hyperdynamic state consisting of tachycardia, vasodilatation, decreased cardiac filling pressure, decreased systemic vascular resistance and increased cardiac output, the extreme end of which is adult respiratory syndrome. In this type of shock, tissue hypoxia is further aggravated because the tissue oxygen demand is extremely high and there is

direct impairment of oxygen uptake by the cells also. In addition the capillary wall of the sites of infection becomes leaky due to the endotoxins which later on become more generalized and allowing sodium and water to move from intravascular space to interstitial space and leading to hypovolemia. Warm septic shock occurs as endotoxins are released from strangulated intestine, ischemic peritonitis, leaking esophageal and intestinal anastomosis. It is worth mentioning here that an additional group of secreted bacterial proteins called superantigens also cause syndrome similar to septic shock known as toxic shock syndrome. There is release of high levels of cytokines result in a variety of clinical manifestations ranging from diffuse rash to vasodilation, hypotension & death¹¹.

The aim of this study was to determine the role of vasoactive drugs like epinephrine, norepinephrine, ADH, and vasopressin in the management of septic shock due to perforation of the gut in surgical patients. Vasoactive therapy aimed at restoring perfusion and normalizing oxygen consumption. Goals of early resuscitation in patients with sepsis include restoration of tissue perfusion, reversal of oxygen supply and normalization of cellular metabolism. When appropriate fluid resuscitation fails to restore adequate perfusion and arterial pressure, vasopressors are usually necessary to increase mean systemic pressure, cardiac contractility and oxygen delivery. Although many of these agents have the ability to reduce organ flow through their vasoconstriction effect, their utility depends upon the balance between increased organ perfusion pressure and their direct effect on microvasculature. Thus the goal of vasopressor agents is to increase perfusion pressure to the point where flow is optimized. Catecholamine also possess positive inotropic effects, which increases cardiac output and may be useful in patients with sepsis associated left ventricular dysfunction. Despite its greater vasoconstricting potential, end organ damage may be less prevalent in septic shocked patients treated with norepinephrine as compared with other vasopressors. In short norepinephrine improves systemic blood pressure and does not substantially worsen end organ ischemia in septic patients. Thus norepinephrine can be preferential to other catecholamine as first line therapy for septic shock.

PATIENTS AND METHODS

Written permission from the ethical committee & consent from the patients or their attendants was obtained. This descriptive study include ninety patients with gut perforation or strangulation presenting to the emergency department of Fauji Foundation Hospital Rawalpindi from 1st August 2006 to 31st July 2007. Thorough general examination & routine laboratory tests were carried out in emergency department.

Inclusion criteria:

Patients of either sex above 12 years and below 70 years with septic shock due to acute abdominal pathology were included in this study. Abdominal pathologies like perforation or strangulation of gut leading to peritonitis & septic shock were included. All other surgical pathologies leading to septic shock were excluded.

RESULTS

A total of ninety patients were included in this experimental study. All these patients presented in the emergency department of Fauji Foundation Hospital Rawalpindi with signs and symptoms of peritonitis. Patients were divided into two groups of forty five each. In group A, 24 patients out of 45 (53.3 %) were females & 21 patients were males (46.6 %). 60% of the total patients were in their 4th and 5th decade of life and mean age of them was 44 years. 25 % of the patients was above 60 years old while 15 % are below the age of 30.

Table No.1: Showing sex distribution & time of presentation.

	Female	Male	Early presentation	Late presentation
Group 1	24	21	29	16
Group 2	27	18	26	19

In group A, 60 % Of the total were those patients who had perforation of the gut including perforated duodenal ulcer, jejunal and ileal perforations secondary to enteric fever, tuberculosis of abdomen & biliary peritonitis. 29 patients who presented in the emergency department of the hospital within 12 hours of the onset of the symptoms and managed accordingly on merit. Surgical intervention carried out within 6 hours and patients put on vasoactive drugs immediately post operatively with antibiotics, analgesics & IV fluids.

Table No.2: Showing cause of acute abdomen.

	Group 1	Group 2
Perforation of gut	27	30
Anaestomotic leak	5	4
Primary peritonitis	1	1
Strangulated hernias	9	7
Biliary peritonitis	3	3

Group B was also managed in a similar way as far as the operative treatment is concerned except no vasoactive drug prescribed in the immediate post op period as routine. The mortality rate was double in group B where 12 patients died, 4 presented early & 8 presented late. Though all these patients were on dopamine & dobutamine before death but these medicines were given in the resuscitation phase with other measures. 6 out of 45 patients died in group A, all 6 presented late.

Table No.3: Showing % of death in different groups.

Group A. Total 45	Group B. Total 45
Early presentation 29	Early presentation 27
Late Presentation 16	Late Presentation 18
Deaths in early presentation= nil (0 %)	Deaths in early presentation=4 (14.8 %)
Deaths in late presentation=6 (37.5 %)	Deaths in late presentation=8 (44.4 %)

So we see from these results that patients with acute abdomen and in state of septicemia respond well to the effects of surgery and the use of vasoactive drugs effective only when the primary pathology is managed within 12 hours of the onset of symptoms of peritonitis. At the same time the role of vasoactive drugs can be seen reversing the effect of septicemia when instituted early and when the vitals are not deteriorated.

DISCUSSION

It is a common belief that vasoactive drugs can cause peripheral vasoconstriction which can theoretically worsen the effects of shock. Still lot of research is going on all over the world on the use of these medicines so as to find a way to bring the mortality rate down in septic shock patients to acceptable level. The reason is vasoactive drugs are the only group of medicine with proven efficacy in all type of shocks. Most of the intensivists agreed that there are significant risk factors for death among patients with acute renal failure in intensive care units. This need to be identified at an early stage in septic shock¹² & to treat it with the use of dopamine. Infections caused by Gram-negative bacteria constitute one of the major causes of septic shock, which results from the inability of the immune system to limit bacterial spread during the ongoing infection. In the last decade, it has been demonstrated that vasoactive intestinal peptide (VIP) and pituitary adenylate cyclase-activating polypeptide (PACAP) are two endogenous immunopeptides, which together with three G protein-coupled receptors (VPAC1, VPAC2, and PAC1) exert a significant, therapeutic effect attenuating the deleterious consequences of septic shock. There is involvement of PAC1 into the complexities of sepsis and represents an advantage for the design of more specific drugs complementing standard intensive care therapy in severe sepsis, confirming VIP and PACAP as candidates for multi target therapy of septic shock¹³.

However different centers got preferences amongst the different medicines. According to Lodha R & his team, fluid refractory shock warrants use of vasoactive drugs. Dopamine is the first choice. Dobutamine and low dose epinephrine are the preferred inotropic drugs while norepinephrine is a vasopressor¹⁴. Another center in Eastern China is more in favor of dopamine and metaraminol. They proved that when dopamine and metaraminol given to the patients with septic shock could effectively maintain the circulatory stability and

promote restoration of renal function¹⁵. Another study done by Nacul FE et. al. confirms the dissociation of the systemic hemodynamic and microvascular alterations in an experimental model of septic shock. Moreover, the results indicate that the use of dopamine, dobutamine, and dobutamine in combination with norepinephrine yields a protective effect on the microcirculation of the intestinal muscular layer in endotoxemic rats¹⁶. According to our study, if vasoactive drugs are used early, they are much more effective. Same is stated in Br J Pharmacol in 1985 that drugs interfering with complement activation and/or prostaglandin biosynthesis, may be beneficial in endotoxin shock, provided that they are administered at an early stage¹⁷. There are centers who got special preference of norepinephrine over other medicines & they proved that norepinephrine may not adversely affect the peripheral circulation. In short-term treatment of volume-resuscitation, severe septic shock complicated by pulmonary hypertension and impaired right ventricular performance, norepinephrine may be at least as effective as dopamine¹⁸.

It is usually believed that there is a state of fluid resistant in septic shock. This is also true for children as well as for adults. However, there are some minor differences but role of vasoactive drugs cannot be denied even in children & neonates. The hemodynamic patterns of fluid-resistant septic shock by the time children present to the PICU are distinct, depending on cause, with little overlap. If these findings are identified, then target it with the choice of first-line vasoactive infusions in fluid-resistant shock¹⁹.

At the moment, there are lot of other medicines also under clinical trial with the aim to correct the pathophysiology of septic shock like PMX-F, Polymyxin B, ethyl pyruvate etc. Based on this critical review of the published literature, direct hemoperfusion with PMX-F appears to have favorable effects on MAP, dopamine use, PaO₂/FiO₂ ratio, and mortality²⁰. Wang Z & his colleagues proved in an experimental model that in septic shock in ewes, continuous Ethyl Pyruvate infusion in anaesthetized sheeps prolonged time to development of organ dysfunction and markedly prolonged survival. These findings suggest a potential use for EP in the treatment of severe sepsis and septic shock due to fecal peritonitis²¹.

Tissue hypoxia, especially in the splanchnic area, is still considered to be an important cofactor in the pathogenesis of multiple organ failure. Therefore, the specific effects of the various therapeutic interventions on splanchnic perfusion and oxygenation are of particular interest. Restoring and maintaining oxygen transport and tissue oxygenation is the most important step in the supportive treatment of patients with sepsis and impaired gut perfusion. Therefore, supportive

treatment should be focused on an adequate volume resuscitation and appropriate use of vasoactive drugs²².

CONCLUSION

We can conclude that in septic shock, administration of norepinephrine at a low dose should increase the chances of survival but until the results of more randomized trials are available, it should not be routinely used in septicemic patients. We also conclude from this study that vasoactive drugs are more effective if used in septicemic surgical patients within 12 hours of onset of signs and symptoms of peritonitis.

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Role of External Fixator in the Management of Trochanteric Fractures of the Femur – Damage Control Orthopaedics

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ABSTRACT

Objectives: To compare the Modified AO fixator (MAO) with sliding hip screw (SHS) in the treatment of trochanteric fractures.

Data Source: 68 patients of both genders presenting with trochanteric fractures at Combined Military Hospital Lahore.

Study Design: This was a Prospective, Randomised Study.

Place and Duration of Study: This study was conducted at the in patient surgical Unit at Combined Military Hospital Lahore from 1st June 2006 till 30 November 2007.

Materials and Methods: 68 high risk patients of ASA-IVa-c with a trochanteric fracture were selected.

Results: The mean age was 73 yrs $\pm$. There were 17(28%) males and 45(72%) females. There was no delay between injury and operation when treated by external fixation (mean 3.13 days, 1 to 7). All fractures in group I united clinically and radiologically at 24 weeks. The surgery required lesser time (mean 29.35 minutes, 20 to 45), the blood loss was minimal (mean= 33.33ml) and required a short hospital stay (mean of 3.96 days, range 2 to 7 days) as compared to the group II. At the final follow-up, 03(8%) patients had shortening or malrotation, 02(03%) patients had varus angulation, implant failure (pin breakage) in one patient (1.4%) and pin cut out was observed in one (1.4%).

Conclusion: Our results confirm that the Modified AO fixator is an effective device for treating pertrochanteric fractures and is a useful alternative to conventional fixation with the sliding hip screw.

Key Words: Trochanteric Fractures, External Fixator.

INTRODUCTION

The hip fractures are on the rise in past few decades. The main cause is huge increase in the geriatric population.

Epidemiologic studies show that trochanteric fractures are an increasing problem since compared with cervical fractures their relative number increases progressively with age in women after the age of 60 years.¹⁶ Fractures of trochanteric region are a major geriatric concern. The patients are usually elderly individuals with poor tolerance for major operative intervention. Therefore, fracture of the hip is a leading cause of death and disability in the elderly.^{1,2} The treatment goal for these patients include early operative management, restoration of anatomical alignment, maintenance of fracture reduction and early rehabilitation.³ Closed reduction with external fixation has been accepted as a cost effective way of managing fractures of the hip in developing countries.⁴ The external fixators and the sliding hip screws were first used in 1950s for management of trochanteric fractures. Various studies have suggested that external fixators have been more effective in management of pertrochanteric fractures.²

As far as we know very scanty work has been done and there are no local studies available on this topic. We therefore, conducted a study at Combined Military

Hospital Lahore from 1st June 2006 till 30 November 2007 to assess the role of external fixation of trochanteric fractures of the femur in high risk patients.

MATERIALS AND METHODS

The study was conducted at the in patient surgical Unit at Combined Military Hospital Lahore.

68 high risk patients of ASA-IVa-c with a trochanteric fracture were selected. Patients referred to the OPD with hip fracture were evaluated in detail by one of the authors and after making a diagnosis of trochanteric fracture were enrolled in the study if they fulfilled the following inclusion criteria. The study was carried out over a period of 1.5 yrs.

Inclusion Criteria

- High risk patients of both genders, of all ages having trochanteric fracture ASA-IVs of less than 02 week of duration were included in the study.

Exclusion Criteria

- Pathological fractures
- Bone and joint diseases
- Coexisting other fractures
- Unfit for anaesthesia

The study was approved by the ethical committee of the hospital. Oral informed consent was obtained from the patients at the start of the study and they were randomly

assigned to either of the two groups I and II. Patients in Group 'I' went under surgery, and fractures were fixed with Modified AO external fixator under spinal analgesia. Patients in group 'II' went through surgical procedure of fixation with sliding hip screw. Patients from both the groups were given Intravenous Cefuroxime 1 gram and Amikacin 50mg were administered on table, followed by three doses in post-operative period. Oral Cefuroxime was continued for one week after discharge from the hospital and Injection Diclofenac Sodium 75 mg twice daily and acetaminophen (500 mg tid/ qid) for additional pain relief. Patients were regularly followed up. Fracture healing and alignment was assessed by plain radiographs in AP and Lateral views. The interval between injury and operation, the duration of surgery, the amount of blood loss, the length of hospital stay and the cost of treatment, the time of union, the range of motion of hip and knee joints were recorded. Complications including pin track infections, shortening or mal rotation and death from associated illnesses were documented.

A guide wire was inserted percutaneously at an angle of approximately 130 degrees through the middle of the femoral neck into the head. Self tapping pins (fine-ortho, Lahore, Pakistan) of 4.5 mm in diameter were inserted manually through a drill sleeve on either side of the guide wire, and within the confines of the femoral neck. The pins were advanced to a point 5 mm short of the subchondral bone of the head. Intra-operative time was measures from the time the incision for the implantation of the first pin was made, to when the fixator was completely mounted. The blood loss was measured as the difference in weight between the dry swabs and those soaked in blood.

After surgery all patients had a gradually progressive programme of weight bearing using a walking frame, from 2 weeks of surgery. Appropriate physiotherapy was advised for hip and knee movements. Pin sites were cleaned daily with saline and the families of the patients were given instructions on continuing care after discharge. All fixators were removed at four months, without anaesthesia, in the outpatient clinic. All pins were reviewed at 6, 12, 18 and 24 weeks. The final follow-up was at 06 months, when function of the hip was assessed using a modified Harris hip score¹⁰ and the function of the knee assessed using a modified Western Ontario and McMaster University Osteoarthritis (WOMAC) index.¹¹

Data Analysis

Data analysis was computer based, SPSS version 10.0 was used for analysis. Mean $\pm$ standard deviation was calculated for age of patients in each group. Frequencies and percentages were calculated for gender and side involved in each group. On each visit, relevant tests of significance were applied; paired samples T test to compare results between the two groups. P value of < 0.005 was taken as statistically significant.

RESULTS

Patients included in this study ranged in the ages 60 to 92, with a mean age of $70 \pm$ years. They belonged to both genders. There were 19(27%) males and 49(72%) females. There was no delay between injury and operation when treated by external fixation (mean 3.13 days, 1 to 7).

Table No.1: Patient Details

Details	No. of patients
Age in Years	
(mean; range)	70(60 to 92)
Gender	
M:F	17:45
Mechanism of Injury	
Fall	52
Road Traffic Accident	12
others	4
Type of Injury	
Direct	32
Indirect	22
Unknow	14
Category of Fracture	
Stable	52
Unstable	16
Asa Grading*	
1	32
2	22
3	14

*ASA, American Society of Anaesthesiologists

All fractures in group I united clinically and radiologically at 24 weeks. The surgery required lesser time (mean 29.35 minutes, 20 to 45), the blood loss was minimal (mean= 33.33ml) and required a short hospital stay (mean of 3.96 days, range 2 to 7 days) as compared to the group II. At the final follow-up, 03(8%) patients had shortening or malrotation, 02(03%) patients had varus angulation, implant failure (pin breakage) in one patient (1.4%) and pin cut out was observed in one (1.4%). We excluded all pathological fractures, and any bone and joint disease interfering with rehabilitation.

The fractures were fixed with modified AO fixator. The number of patients showing shortening or mal rotation was seen in only one patient reporting for follow-up. Pin track infection occurred in 01 (1.4%) patient treated with external fixation, which resolved easily on removal of fixator.

DISCUSSION

Sliding hip screws are widely used to treat osteoporotic pertrochanteric fractures, in spite of substantial rates of fixation failure, poor functional outcome and associated

Table No.2: Showing comparison of outcomes in the two groups

Follow-Up (Weeks)	External Fixation (Mean (SD))
Shortening	
6	0.40(0.64)
12	0.40(0.64)
18	0.45(0.72)
24	0.37(0.61)
Malunion in external rotation at 24 weeks	
0 degrees	27
5 degrees	03
Kruskall-Wallis	0.2361
Range of movement of hip (Degrees)	
6	114 (8.94)
12	123.33 (9.22)
18	136.33 (6.14)
24	138.66 (3.45)
Range of movement of knee(Degrees)	
6	85.66 (15.01)
12	96.33 (4.90)
18	118.66 (7.76)
24	127 (5.95)
Varus angulation at 24 weeks	
0 degrees	21
5 degrees	06
10 degrees	03
p-value	0.0050

morbidity.¹³ In a recent study of pertrochanteric fractures treated with newly-developed external fixators showed better results than those reported previously.⁸ Studies using new fixators have also shown that external fixation can provide results that are similar to, or even better than those obtained with conventional internal fixation techniques.^{2,8}

Vossinakis and Badras^{2,8} reported that patients who had trochanteric fracture fixed with the Orthofix external fixator(Intavent Orthofix Ltd, Maidenhead, United Kingdom.) had a better functional result, a shorter operating time, fewer blood transfusions, less pain and a shorter hospital stay than patients with a sliding hip screw.

Our results show that external fixator can be applied under regional anaesthesia, and is therefore appropriate for patients who are not fit for general anaesthesia. It also shows that external fixator is an excellent device for pertrochanteric fractures of neck of femur in regard to delay to surgery, the duration of surgery, blood loss and hospitals stay. These advantages are of significant importance given the co-morbidity associated with these fractures. The technique is available to the patient at significantly less cost.¹⁴ Malunion in the form of shortening and external malrotation were negligible. The range of movement of the hip was initially limited but at 24 weeks the groups were comparable. The range of movement of the knee was limited in initial 12 weeks

but with physiotherapy, it improved significantly. All fractures united by 12 weeks.

Vossinakis and Badras² reported that pin track infection developed in 15 of their 50 patients (30%) treated with Orthofix external fixator using standard pins. In a similar study, 18 of 41 patients (45%) had pin-track complications.¹ In our study, grade I pin track infection was observed in 35 (70%) cases, resolving with the removal of pins. Devgan and Sangwan¹⁵ reported pin track infection and knee stiffness as a major complication of external fixation. This was not seen in our study, possibly owing to more proximal placement of the femoral shaft schanz pins. Moroni et al⁵ reported less varus angulation using external fixation with hydroxyapatite-coated pins, compared with the sliding hip screw. In our study we found varus angulation in one patient only.

CONCLUSION

This study has shown that external fixation with modified AO fixator is an excellent option for high risk patients as it can be done under regional block, with less operative time, minimal blood loss and hospital stay. Moreover it costs less, gives good union rates and functional outcomes with minimal complications.

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Prevalence of Hydatidosis in Animals in Different Abattoirs of Punjab, Pakistan from 2004-2008

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ABSTRACT

Objective: Hydatidosis is a zoonotic public health problem globally and in Pakistan also causing illness in human and animals. The purpose of this study was to determine the prevalence of disease.

Study Design: None randomized prospective study.

Place and Duration of Study: This study was conducted in different abattoirs of Punjab (Faisalabad and Lahore), Pakistan from 2004-2008.

Materials and Methods: In present study 39738 male and female animals (sheep, goats, buffaloes, cattle and camels) were examined. Liver and Lungs were main visceral organs with bigger size of cyst collected and processed on Real Time PCR.

Results: Highest prevalence (%) was found 7.29 (102/590) in camels and lowest 5.18 (155/2990) in cattle. Prevalence of fertile cysts was also determined and found highest (95%) in camels and lowest (75%) in cattle. Sterile, calcified and under developed cysts were also seen but without any significant number, except in cattle sterile cysts were significantly high ($P < 0.05$). Study showed high prevalence in two (Faisalabad and Lahore) out of six abattoirs visited in different big cites.

Conclusion: It is concluded that in Punjab hydatidosis is significantly prevalence. The major cause of this prevalence is improper disposal of infected organs and unhygienic conditions of abattoirs.

Key words: Hydatidosis, hydatid cyst, fertile and sterile cyst, animal, Pakistan.

INTRODUCTION

Hydatidosis an important zoonotic disease caused by metacestode of the dog tapeworm *Echinococcus granulosus*. It is worldwide in distribution with both sylvatic and pastoral epidemiology¹. Parasite life cycle is completed when the definitive host eats an infected intermediate host organ; human exposure is by faecal-oral way, with water or food contaminated by faeces of infected definitive host².

Prevalence (%) of hydatidosis was reported in different animals, cattle, sheep and camels in Sudan³, goats, sheep, cattle and camels in Kenya⁴, camels, goats, sheep, pigs, cows and buffaloes in Egypt⁵ respectively. Hydatidosis occurrence in India was also recorded in sheep, cattle, buffaloes, goats, and pigs⁶.

Hydatidosis is also well recognized zoonotic disease in Pakistan, affecting human and his livestock, various human cases has been reported⁷. In Punjab, Pakistan the prevalence of this disease in livestock has been studied previously⁸ with reported a prevalence ranging from 5-46% in sheep, cattle, goats, buffaloes and camels reported that only 4% people were aware about hydatidosis, level of connection of dogs with livestock and humans. The present study was intended to find out

the prevalence of hydatid cysts in ruminants slaughtered at six abattoirs (Gujrat, Gujranwala, Sheikhpura, Faisalabad, Lahore and Pakpattan) of Punjab.

MATERIALS AND METHODS

To check the prevalence of hydatidosis in sheep, goat, buffalo, cattle and camel, six different slaughter houses in district Gujrat, Gujranwala, Sheikhpura, Faisalabad, Lahore and Pakpattan in Punjab (Fig 1) were visited to collect infected visceral organs. Organs were inspected visually, by cutting both surfaces, incisions and by palpation. Hepatic and pulmonary hydatid cysts (Fig 2) were selected from 125 sheep, 110 goats, 102 buffaloes, 101 cattle and 100 camels for studies. Hydatid cyst fluid (HCF) was aspirated and centrifuged at 500 rpm for five minutes.

Fertility of cyst was determined by microscopic observation of the germinal layer and viability of protoscoleces was checked by examination at 10X without staining observing flame cell activity and also using a vital dye (eosin 0.1%). In cases of non fertile or sterile cysts, the presence of non viable protoscoleces and degenerative modifications (calcification) were also noted⁹. Statistical analysis was done by Chi square (SPSS version 13.0).

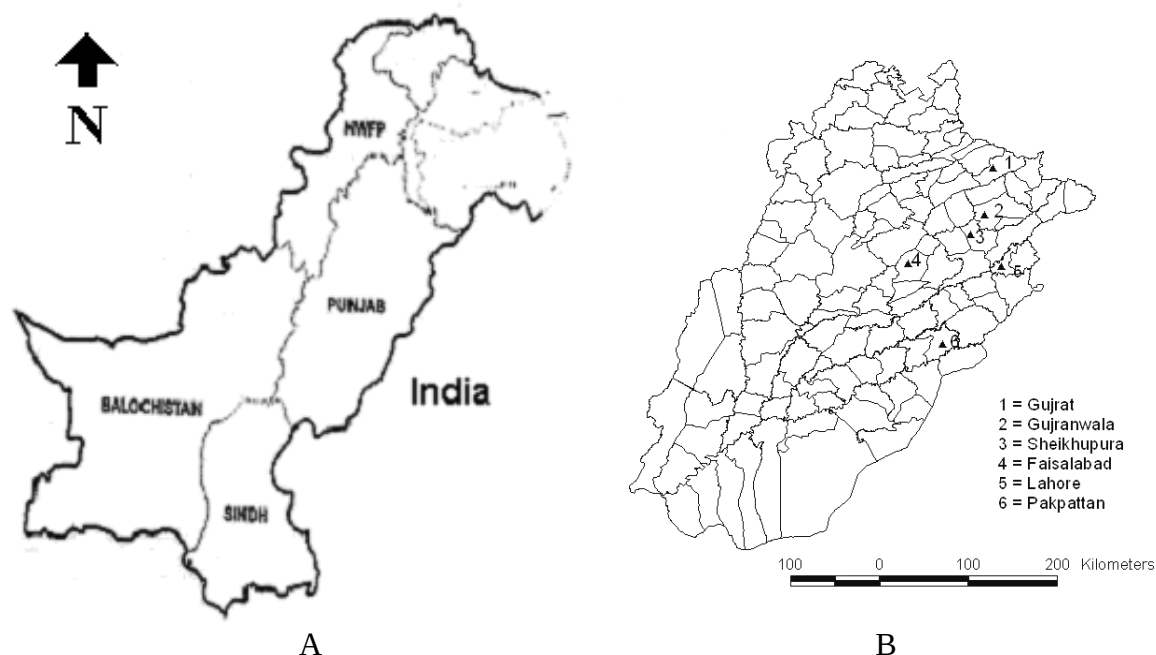


Fig. 1: Different study areas in Punjab A: Map of Pakistan B: Map of Punjab (Gujrat, Gujranwala, Sheikhupura, Faisalabad, Lahore, Pakpattan).

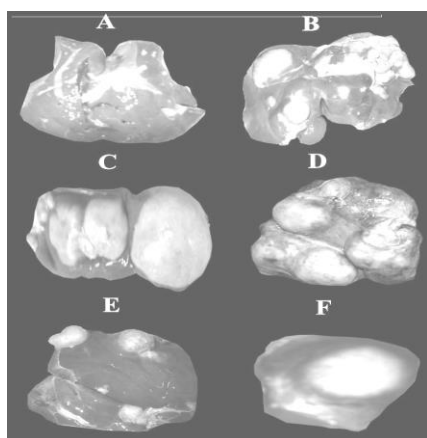


Fig. 2: Hydatid cysts in lungs and livers of various animals A: Normal liver of goat. Cysts in B: Sheep

liver C: Buffalo liver D: Camel lungs E: Goat liver
F: Cattle liver

RESULTS

Prevalence (%):

A total of 39738 animals comprising 15857 sheep, 15001 goats, 5300 buffaloes, 2990 cattle and 590 camels of both genders were examined for hydatid cysts. Prevalence of hydatidosis recorded was 1193(7.52%) in sheep, 822 (5.48%) in goats 155 (5.18%) in cattle 381 (7.19%), in buffaloes and 102 (17.29%) in camels (Fig. 3). Chi-Square analysis revealed that overall prevalence of diseases was significantly high ($P < 0.05$) in camels and lowest in cattle.

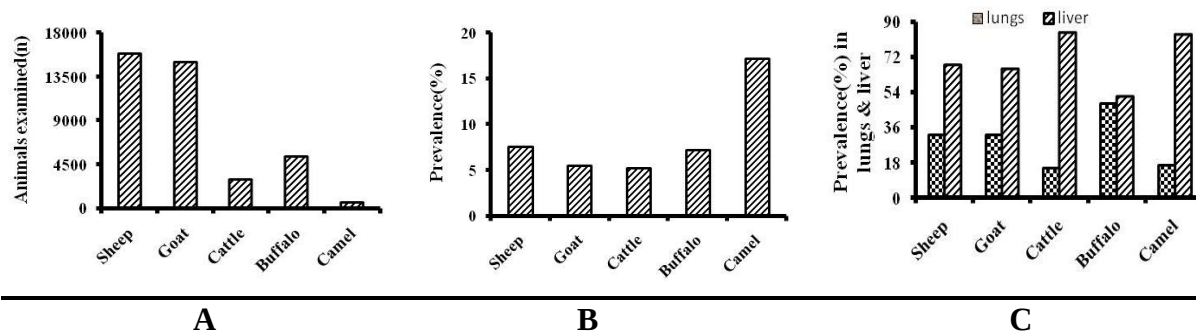


Fig. 3: Bar graph represents prevalence (%) of hydatidosis in various animal species slaughtered in different abattoirs

(A) Total number of animals examined (B) Comparative prevalence (%) of hydatidosis in various animals
(C) Prevalence (%) of hydatidosis in various organs (lungs & liver) of infected animals

Organ specificity (%)

Liver and Lungs were main visceral organs effected by hydatidosis, with bigger size of cyst detected in liver. The prevalence (%) documented during study was 32.19 in lungs and 67.81 in liver for sheep, for goats 32.60 in lungs and 66.18 in liver, for buffaloes 48.29 in lungs and 51.71 in liver, in cattle 15.48 in lungs and 84.51 in liver, for camels 16.66 in lungs and 83.33 in liver (Fig. 2 and Fig. 3). Chi-Square analysis revealed significantly higher distribution of hydatid cysts ($P<0.05$) in lungs and liver of sheep, goats, buffaloes, cattle and camels respectively

Comparison of prevalence (%) of hydatid cysts among different animals (A) Fertile (B) Sterile (C) Calcified (D) Under developed

Types of cysts

Cysts prevalence (%) was noted on the basis of fertile, sterile, calcified and under-developed. In sheep, for total of 125 hydatid cysts examined, 108 (86.40%) fertile, 8 (6.40%) sterile, 6 (4.80%) calcified, 3 (2.40%) under developed were found. In goats total of 110 hydatid cysts found to comprise 87 (79.09%) fertile, 7 (6.36%) sterile, 6 (5.45%) calcified, 10 (9.09%) under developed. In cattle total of 101 hydatid cysts contained 76 (75.24%) fertile, 15 (14.85%) sterile, 4 (3.96%) calcified, 6 (5.94%) under developed. In buffaloes total of 102 hydatid cysts, 86 (84.31%) fertile, 10 (9.80%) sterile, 5 (4.90%) calcified, 1(0.98%) under developed were recorded. In camels total of 100 hydatid cysts, 95 (95.00%) fertile, 2 (2.00%) sterile, 1 (1.00%) calcified, 2 (2.00%) under developed were found (Fig. 4).

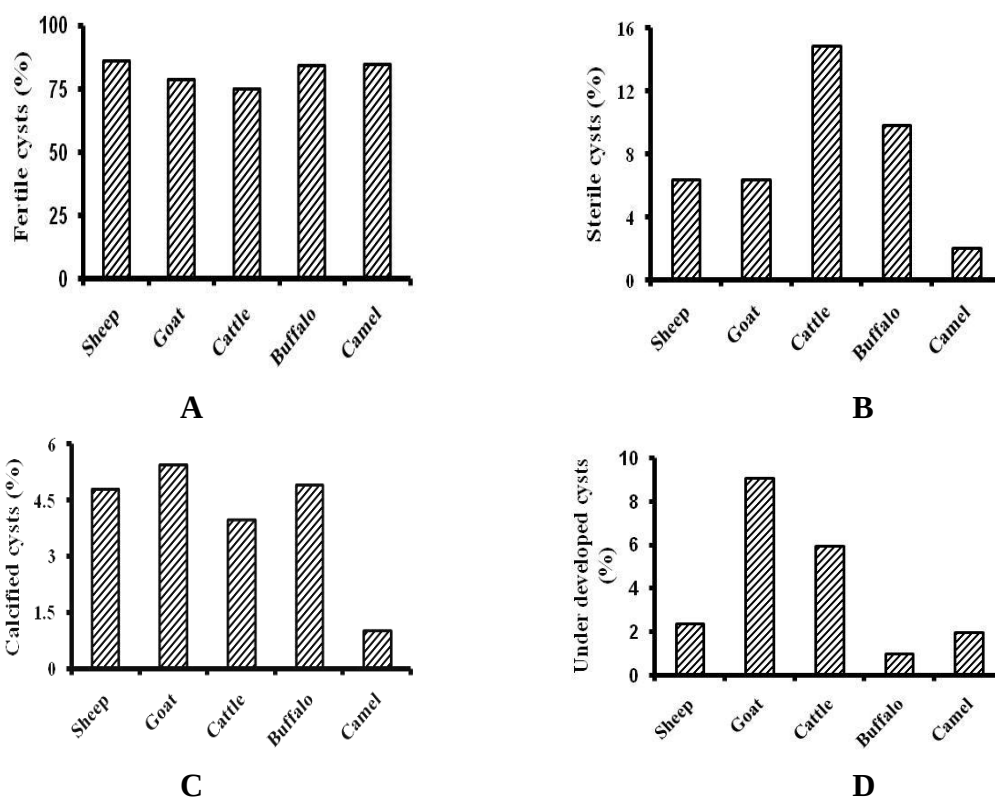


Fig. 4: Bar graphs showing epidemiological investigation of various types of hydatid cysts in animal species infected with hydatidosis in Punjab

DISCUSSION

The prevalence (%) of hydatidosis recorded was 7.52 (1193; sheep), 5.48 (822; goats), 5.18 (155; cattle), 7.19 (381; buffaloes) and 17.29 (102) in camels. The results of present study are different from the various studies carried out globally in recent years due to the variations in geographical conditions. Prevalence (%) of hydatidosis was reported in different animals, cattle (3), sheep (7) and camels (45) in Sudan (10), goats (4.5), sheep (3.6), cattle (19.4) and camels (61.4) in Kenya¹¹.

Hydatidosis occurrence in India was also recorded in sheep (2.30–93.2%), cattle (7.1–68.9%), buffaloes (8.90–69.0%), goats (1.1–72.7%) and pigs (11.5%) respectively¹².

From Pakistan prevalence (%) was reported in ruminants in sheep (8.3), cattle (5.5–9.6), goats (7.5) and buffaloes (12.3–4) respectively¹³. Our investigations are different from previous reported results because they studied before 20 to 25 years and they collected information only from one abattoir from each selected city. From our present results only

prevalence (%) in goats was matched with findings of Iqbal et al¹⁴.

Our present results showed that the location of hydatid cysts in various organs (lungs and liver) differed significantly among sheep, goats, buffaloes cattle and camels as well as between different organs of the same species of animal. Prevalence (%) of hydatidosis in livers of sheep (46.74) and goats (23.28)¹⁵. The liver was the predominant site of infection in both animals¹⁶. In Egypt its prevalence was detected among camels, goats, sheep, pigs, cows and buffaloes, significantly different between animals regarding liver and lungs infection. Rate of infection (%) of hydatidosis in liver and lungs of cows 4.84 and 4.41, for sheep 5.05 and 6.84 respectively¹⁷.

In Pakistan liver infection in sheep has been reported 8%, 2.83 % and 15.9 %¹⁸. In present study liver was more infected organ with hydatidosis instead of lungs among all animals, sheep (67.81%), goats (66.18%), buffaloes (51.71%), cattle (84.51%) and camels (83.33%). In our results more hepatic (51.71) infections were found as compared to pulmonary (48.29) in buffaloes, which were similar¹⁹. The present study revealed significantly higher occurrence of hydatid cysts in lungs and liver of sheep, goats, buffaloes, cattle and camel respectively. These present results were similar to the investigations²⁰.

Different under developed hydatid cysts were investigated might be due to immunological response of the host which prevent extension of cyst²¹. The calcified cysts in liver might be due to the numerous connective tissue reaction of the organ²². Different strains of *E. granulosus* might cause the variation in fertility rate in various environmental regions²³. Various types of hydatid cysts of cattle were examined in Tigray Region of Ethiopia and found 32.11% sterile, 54.39% calcified, 10.66% fertile and viable, while 2.80% were fertile but nonviable (24). Our results revealed that the prevalence of various types of cysts in Punjab, the cysts were either sterile (42.7%) or calcified (57.3%), no fertile cysts were found. Studied hydatidosis in sheep and found that out of 4072 collected cysts, 1023 were sterile, 178 caseous, 2339 calcified and 532 fertile in Sardinia. Result deviations might be associated with many factors of intermediate host like age, seasonal diversity in different regions.

These characteristics findings have never been reported in Pakistan earlier. Our investigations revealed that Prevalence of fertile cysts was significantly high in all animals as compared to sterile and under developed cysts. These findings showed variations from previous researchers work might be due to geographical distributions. However, the prevalence of calcified cyst was insignificantly high in camels as compared to sheep, goats, buffaloes and cattle. Our results revealed that prevalence was significantly higher among all animal species. However, camels showed high

prevalence as compared to sheep, goats, buffaloes and cattle.

CONCLUSION

Keeping in view, it is concluded that in Punjab hydatidosis is prevalent due to stray dogs and their easy approach to the abattoirs, improper disposal of hydatid organs and unhygienic conditions of abattoirs. Unawareness about the parasite life cycle has made the situations more favourable for the perpetuation of the disease. Backyard slaughtering of livestock is common in rural areas, particularly at religious occasions, for example Eid-ul Adha. Therefore it is suggested that more effort should be done for the prevention of hydatidosis and inexpensive protective actions should be in use to eliminate the threat to humans and as well as to animals.

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Comparative Study of Hypochromic Microcytic Anaemia in Primigravida and Multigravida in Interior Sindh

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ABSTRACT

Objective: To evaluate the frequency of hypochromic microcytic anaemia commonly due to iron deficiency in female primigravida and multigravida patients. This also entails comparing both groups in the context of hemoglobin, MCV and RDW as study tools.

Study Design: Cross sectional analytical study.

Place and Duration of Study: This study was conducted at the Obstetrics Department, Peoples Medical College Nawabshah from July 2008 to Oct 2008.

Materials and Methods: This cross sectional study was carried out on 200 women (100 primigravida & 100 multigravida) with anaemia in their third trimester of pregnancy attending the Obstetrics Department, Peoples Medical College Nawabshah from July 2008 to Oct 2008. Hemoglobin, MCV and RDW levels were assessed in all cases. Data was analyzed using SPSS and students t test was used for evaluation of significance

Results: Mean Haemoglobin $\pm$ SD in Primigravida(Group A, n=100) and Multigravida(Group B, n=100) were 7.85 ± 1.33 and 6.26 ± 1.65 with ranges 3.1-10.9 and 3.2-10.4 gm/dl respectively. Mean MCV $\pm$ SD in Group A and B were 63.95 ± 4.71 and 62.08 ± 4.97 with ranges 54.4-73.7 and 48.2 -73.7 fl respectively. Mean Red Cell Distribution Width (RDW, SD) $\pm$ SD in Group A and B of anaemic patient were 19.83 ± 3.05 and 21.31 ± 3.32 with ranges 14.0-27.4 and $14.0-29.2 \times 10^3/\mu\text{l}$ respectively. The results were significant in both groups.

Conclusions: In Interior Sindh both primigravida and multigravida females are at high risk of developing iron deficiency anaemia and more so in multigravida.

Recommendations: Aggressive health measures need to be taken to control this major public health problem in Interior Sindh in particular and in the country as a whole especially in remote areas by promotion of regular consumption of food rich in iron and folates. The identification and treatment of severely anaemic patients with provision of iron supplement, improving personal hygiene, pure water supply and early antenatal diagnosis and follow up can decrease the prevalence of anaemia in pregnant women nationally and internationally. Need of the days remains the preparation and implementation of national nutrition plan with a special emphasis of controlling iron deficiency anemia during pregnancies.

Key Words: Hypochromic Microcytic Anaemia, Primigravida, Multigravida

INTRODUCTION

An estimated 2000 million people suffer from anaemia making it the world's most common nutritional disorder.¹ Iron deficiency anaemia is one of the most common public health problems being faced by the developing world and common cause of anaemia around the globe is iron deficiency. The female population of the world suffers more from iron deficiency during pregnancies. Sound epidemiologic information is mandatory for any public health intervention.

Various epidemiological studies both national and international showed that mortality ratio is high in female during gestational period in Pakistan as compared to India and other countries. Higher mortality in Asian women may be attributed to their lower economic status and consequently inadequate treatment.

It is also observed that there is higher mortality among women especially multigravida as compared to primigravida, due to factors like frequent childbearing, malnutrition, family stress and lack of health education specifically about balanced diet.^{2,3} Anaemia is very common in pregnant ladies and according to WHO, anemia during pregnancy is defined as Haemoglobin less than 10.0 gm/dl.⁴

Anaemia has been classified on clinical terms as acute or chronic. The most practical way to classify anaemia is using the red cell indices and morphology. Hypochromic microcytic anaemia (MCV <70 fl) by far is most common variety encountered during clinical practice.

The most common causes of hypochromic microcytic anemia are iron deficiency and Thalassemia, while other less common causes are chronic disorders like

sideroblastic anaemias, Lead poisoning and aluminum toxicity.⁵

The iron deficiency and iron deficiency anemia during pregnancy is frequently seen in women in developing countries. The reason being that increased requirement of iron in pregnancy is not met by diet. Pregnancy is a period of increased metabolic demands, changes in women physiology and requirement of growing foetus.²⁵

During pregnancy inappropriate diet and some iron metabolic disorder will leave harmful effects on primigravida and multigravida women resulting in hypertension, dyspnoea, anoxia and difficult labor and even may prove fatal for the foetus like preterm delivery, retardation in intrauterine growth, mental retardation and abnormal organ development.⁶

Hypochromic microcytic anaemia is said to occur, when the patient has low hemoglobin level and red cells are smaller than normal. It is detected by measuring mean red cell volume and mean red cell hemoglobin.⁵ The hypochromia of RBCs prompt further studies including TIBC, ferritin level and serum iron capacity level.⁷

The red cell distribution width which provides a quantitative measure of heterogeneity of red cells in the peripheral blood is a part of routine investigation and along with MCV provides the useful guide in the differential diagnosis of anemia.¹¹ Red cell distribution width (RDW) is utilized to know the diversity of red cell size and shape and is more sensitive indicator than MCV to establish possible origin of microcytic hypochromic anemia, both should be used together in early diagnosis.²⁴

A Progressively falling blood haemoglobin level is a common antenatal problem and attributed to early haemodynamic changes during pregnancy, including generalized vasodilatation, increase in plasma volume and increase in red blood cell volume and increase in red blood cell 2-3 diphospho-glycerate (2-3 DPG) concentration.⁸

The mechanism responsible for the characteristic microcytic hypo chromic features of iron deficient erythrocytes is due to deficiency of a haem regulated 2 alpha kinase, HRI which controls the synthesis of alpha and beta globin chain in erythroid cells and inhibit the translation inhibition factor elf 2 alpha when the intracellular concentration of haem is decreased.⁹ Iron deficiency and anemia affect 50% or more of pregnant women.²⁰

Women with iron deficiency anaemia give birth to premature and low birth weight babies with a high mortality rate or still births as compared to non-anaemic women.²³

This study was planned to evaluate the frequency of hypochromic microcytic anaemia in female patients during gestational period comparing primigravida versus multigravida.

MATERIALS AND METHODS

This cross sectional study was carried out on 200 women with anaemia in their third trimester of pregnancy attending the Obstetrics Department, Peoples Medical College, Nawabshah from July 2008 to Oct 2008.

All pregnant women with haemoglobin less than 10 gm/dl, MCV less than 70 fl and RDW greater than 14.5 were included in the study.

The subjects with normal MCV and RDW and hemolytic anemia and on iron supplements were excluded.

The anaemia was diagnosed on the basis of clinical findings coupled with CBC on Sysmax K-1000. The red cell morphology was established on Romonowskys stained blood smears.

Data analysis was done on SPSS and student's t test was applied to find p value.¹⁰

RESULTS

The 200 pregnant women with anemia in their third trimester were selected. They were divided into two groups: 100 primigravida with anemia were placed in Group A and 100 multigravida with anemia in Group B. MCV, Hemoglobin and RDW levels of all 200 cases were done. The mean and standard deviation of all the parameters were calculated and compared for determination of significance.

Mean Haemoglobin gm/dl $\pm$ SD in Group A (Primigravida) and Group B (Multigravida) were 7.85 $\pm$ 1.33 and 6.26 $\pm$ 1.65 with ranges 3.1-10.9 and 3.2-10.4 gm/dl respectively. The comparisons of two groups showed greater fall in hemoglobin in multigravida(Group B) and the difference between two groups was found statistically highly significant. (Table 1 & Fig. 1).

Table No. 1: Comparison of haemoglobin in Group A and Group B

S No.	Study group	Mean $\pm$ SD	Range gm/dl	No. of cases
1	Group A (Primigravida)	7.85 $\pm$ 1.33	3.1-10.9	100
2	Group B (Multigravida)	6.26 $\pm$ 1.65	3.2-10.4	100

Statistical analysis Group A versus Group B: p <0.001 (HS)

Mean MCV $\pm$ SD in Group A and B were 63.95 $\pm$ 4.71 and 62.08 $\pm$ 4.97 with range 54.4-73.7 and 48.2 -73.7 fl respectively. The comparison of Group A and B showed relatively greater decrease MCV in Group B and difference between two groups was found statistically significant. (Table 2 and Fig. 2)

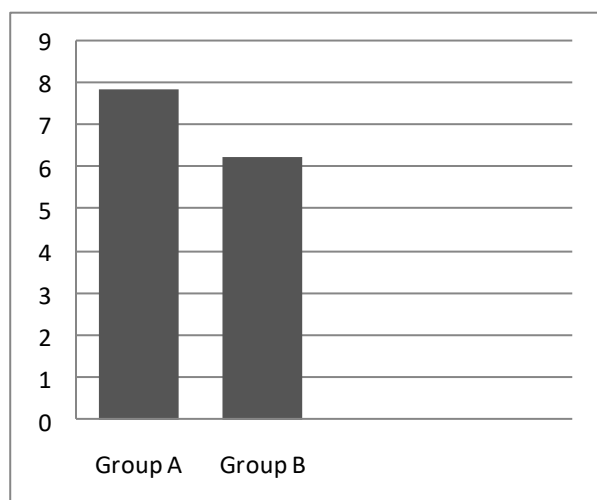


Fig 1: Comparison of mean hemoglobin in Group A and Group B

Table No.2: Comparison of Mean Corpuscular Volume (MCV) in Group A and B

S. No.	Study group	Mean $\pm$ SD	Range fl	No. of cases
1	Group A (Primigravida)	63.95 $\pm$ 4.71	54.4-73.7	100
2	Group B (Multigravida)	62.08 $\pm$ 4.97	48.2-73.7	100

Statistical analysis Group A versus group B: $p < 0.01$ (S)

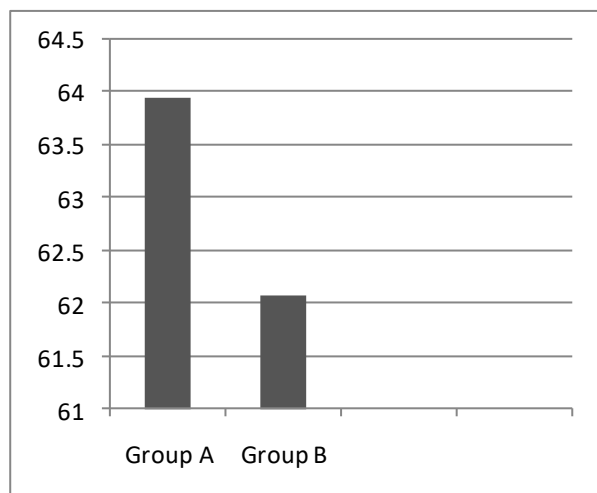


Fig. 2: Comparison of mean MCV in Group A & B

Mean Red Cell Distribution Width (RDW) $\pm$ SD in Group A and B of anaemic patient were 19.83 $\pm$ 3.05 and 21.31 $\pm$ 3.32 with ranges 14.0-27.4 and 14.0-29.2 $\times 10^3$ / μ l respectively.

There was rise in RDW in both groups but Group A showed relatively less rise. The difference between two groups was found highly significant statistically. (Table 3 and Fig. 3)

Table 3: Comparison of Red Cell Distribution Width (RDW) in Group A & B

S.No.	Study group	Mean RDW $\pm$ SD	Range	No. of cases
1	Group A (Primigravida)	19.83 $\pm$ 3.05	14.0-27.4	100
2	Group B (Multigravida)	21.31 $\pm$ 3.32	14.0-29.2	100

Statistical Analysis Group A versus group B: $p < 0.001$ (HS)

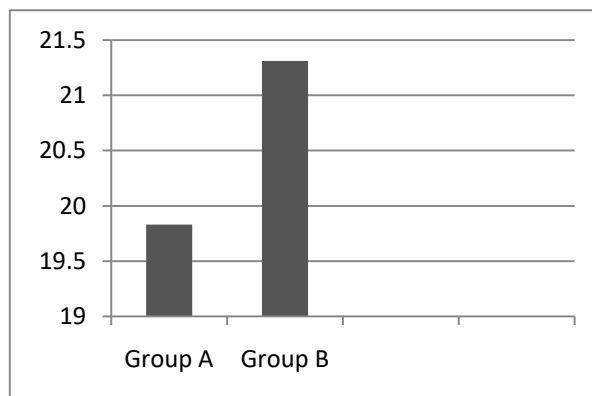


Fig. 3: Comparison of Red Cell Distribution Width (RDW) in Group A & B

DISCUSSION

The prevalence of iron deficiency anemia has been reported nationally and internationally, with little difference between developed and non developed countries. Iron deficiency is considered to be one of the main nutritional deficiency disorders affecting large fraction of population such as pregnant women, children and adults.¹²

In Pakistan especially Interior Sindh and focally in rural areas like Tharparker, Cholistan, the gastro-intestinal diseases are very common due to impure drinking water resulting into deficient storage of nutrients in the subjects.¹³

Due to the lack of awareness about balanced diet and health education, mostly the rural women are affected. Due to the low literacy rate in such remote areas the pregnant women does not understand the importance of iron intake during lactation and pregnancy and thereby suffer from anaemias and at times troublesome features and major public health challenges. The iron deficiency anemia is the most common nutritional deficiency in the world. Estimates suggest that two million people worldwide are iron deficient.¹⁴

Because of increased iron requirements during pregnancy and growth pregnant women and infants are recognized as the group most vulnerable to iron deficiency anemia.¹⁵ In pregnant women with significant anaemia may have an increased risk for poor

pregnancy outcome particularly if they are anaemic in the first trimester of pregnancy.¹⁶

In children severe anaemia can impair growth, motor and mental development, and increased risk for stroke.¹⁷ The elderly subjects also has adverse effect on the heart by heart attack and dementia.¹⁸ The dietary studies in pregnant women out of our study population have showed prevalence of iron deficiency is 93%.¹⁹

The combination of anaemia and heart failure can increase the risk of death in those mothers who are already suffering from heart disease. The mortality rate 30-60% in those patients with heart failure whose haemoglobin levels are low and already suffering from myopathies or other cardio vascular disease.²⁰ It is also observed that renal diseases especially infections and iron deficiency anemia increase the risk and enhance the mortality rate in anaemic subjects.²¹ Infections are more common in anaemic subjects²² and effect of maternal anaemia on foetal parameters.²³

In the present study, we carried out simple haematological test to diagnose anemia like hemoglobin level, MCV & RDW and which showed significant differences. Both groups carry chances of becoming anaemic, primigravida due to early marriage and multigravida due to consecutive pregnancies without gap with severe nutritional deficiency in both groups.

CONCLUSION

Our diet contains less meat as a source of iron purely due to economic reasons while pulses and 'chaptis' provide more phytate and fibre. We presume that higher parity coupled with less intake of oral iron and supplements remain the major cause of anaemia during gestation.

This holds more true in Interior Sindh due to less per capita income and poverty. Female population, both primigravida and multigravida are at high risk of developing iron deficiency anaemia and more so in multigravida.

RECOMMENDATIONS

Enthusiastic health measures need to be taken to control this major health problem in Interior Sindh in particular and in the country as a whole especially in remote areas by promotion of regular consumption of food rich in iron and folic acid. The identification and treatment of severely anaemic patients with provision of iron supplement, improving personal hygiene, pure water supply and early antenatal diagnosis and follow up can decrease the prevalence of anaemia in pregnant women nationally and internationally. Need of the days remains the preparation and implementation of national nutrition plan with a special emphasis of controlling iron deficiency anemia during pregnancies.

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Knowledge, Attitude and Practice - Regarding EPI among Parents attending Paediatric Outdoor, Nishtar Hospital Multan

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ABSTRACT

Objective: To assess the Knowledge, Attitude and Practice regarding Expanded Programme of Immunization (EPI) among parents attending Paediatric Department, Nishtar Hospital, Multan.

Study Design: Cross sectional descriptive study.

Place and Duration of Study: This study was carried out among the parents attending Paediatric Medicine & Paediatric Surgery out patients Departments, Nishtar Hospital, Multan for the treatment of their children during the month of September, 2011.

Materials and Method: Two hundred & sixty parents were selected by convenient sampling and surveyed with a self reported questionnaire comprising of questions regarding knowledge attitude and practice about EPI. Data gathered was analyzed and results were obtained to make table.

Results: Among 260 parents interviewed, 40 (15.4 %) were male & 220 (84.6 %) were female. 258 (99.2 %) had knowledge about EPI and only 2 (0.8 %) had not. According to 242 (93.1 %) EPI was beneficial, while 18 (6.9%) thought it to be non beneficial. Children of 195 (75 %) parents were fully immunized. 40 (15.38 %) were partially immunized and 25 (9.62 %) were not immunized at all. 158 (60.8 %) parents were educated and 102 (39.2 %) were illiterate. Out of 260 parents, 214 (82.3%) reported fever / rash / itching as a result of vaccination, while 46 (17.7%) were not. Majority of the parents belong to middle class i.e. 137(52.7 %) while 46 (17.7 %) rich class and 77 (29.6 %) to the lower class.

Conclusion: We conclude that there is a significant difference in the knowledge of the parents. Majority of the parents had awareness about EPI. Middle class has greater attitude to get immunized their children as compared to poor and rich class. Our study demonstrates the importance of education in the practice of vaccination of the children.

Key Words: KAP Study, EPI, Health Education.

INTRODUCTION

In 1974, WHO officially launched a global immunization programme, known as EPI to protect all children of the world against 6 vaccination preventable diseases namely, Diphtheria, Whooping Cough, Tetanus, Poliomyelitis, Tuberculosis & Measles¹.

24 years later, more than 80% of the world's children had been immunized against T.B., Diphtheria, Whooping Cough, Poliomyelitis and Measles. Polio should shortly be eradicated worldwide which will match the past success of global Small Pox eradication². Initially started with 6 antigens, the programme added 2 new antigens, Hepatitis B and Haemophilus influenzae type b (Hib), during the last decade³. Introduction of conjugate vaccine has proved highly effective in controlling invasive H. influenzae infection, notably Meningitis. Immunization has changed the course and natural history of many infectious diseases. Long lasting immunity is achieved only by active immunization with live attenuated or an inactivated organism, or a sub unit thereof².

Hepatitis B vaccine is also included in EPI, because it is endemic throughout the world, especially in tropical and developing countries and also in some regions of

Europe⁴. The Hepatitis B virus infection is a global problem, with 66% of all the world's population living in areas where there are high levels of infections⁵.

The children under 5 years of age (which constitute 15% of the Pakistani population) contribute 50% of the overall mortality as compared to 8–10% in the developed world. The under-five mortality rate (U5MR) is alarmingly high for Pakistan 136/10002. Majority of under-five mortality is associated with infectious diseases and for its protection the project of Expanded Programme on Immunization (EPI) was launched⁶.

In USA and Canada, routine active immunization of children is recommended against Whooping Cough, Poliomyelitis, Measles, Rubella, Mumps, Tetanus and Diphtheria. Active immunization against Rabies is advocated after exposure and against influenza in major epidemics or routinely when children have special health problems likely to make the impact of this disease more severe⁷.

Immunization is frequently postponed if children are ill or mal nourished. This is not acceptable in the light of present knowledge. In fact, it is particularly important to immunize children with malnutrition. Low grade fever, mild respiratory infections or diarrhoea and other

minor illnesses should not be considered as contra indication to immunization. These are the very children who are most in need of immunization, they are most likely to die should they acquire vaccine preventable disease⁸.

Immunization and vaccination remain among the most important function of the public health services. The major protective action against tuberculosis, measles or pertussis is a rise in standard of living. This implies that immunological protection is most required by the deprived and malnourished as in the developing world, where Measles for instance, is still major cause of death⁹.

Desirable vaccine attributes include minimum vaccine related adverse effects, high level of immunity, long lasting protection, minimal cost and ease of delivery¹⁰.

The main objective of present time is to increase the awareness and importance of EPI programme among the parents. By accomplishing this aim we can reduce the morbidity as well as mortality among the children¹¹.

MATERIALS AND METHODS

This study was carried out in the Department of Community Medicine, Nishtar Medical College Multan. This is important to mention that subjects under study were the parents attending paediatric medicine and paediatric surgery outpatient departments Nishtar Hospital, Multan for the treatment of their children. A total of 260 parents were selected for this study. After taking informed consent, the parents were interview and data was collected on structured self reported questionnaire, regarding information about their personal history, and KAP about EPI and immunization status of their children. Data were analyzed to get frequency and percentage among the population.

RESULTS

Important findings of the study are shown in the given table. In the study population, males were 15.4% and females were 84.6%. 158 (60.8%) were literate and 102 (39.2%) were not. Majority of the parents (99.2%) knew EPI and this fact was appreciated by researcher. Among 260 parents 46 (17.7%) were rich, 137 (52.7%) middle class and 77 (29.6%) were poor. According to the majority of the parents i.e. 242 (93.1%), EPI is beneficial while very small number of parents did not know its benefits. Out of 260 parents, 214 (82.3%) reported fever / rash / itching as a result of vaccination, while 46 (17.7%) were free from these reactions. Children of 195 parents (75%) were fully immunized, 40 (15.38%) partially and 25 (9.6%) were not immunized at all.

Table No.1: KAP Study regarding EPI among parents attending Paediatric Out door, Nishtar Hospital Multan (n = 260).

Variables	Detail	Numbers	Percentage
Gender	Male	40	15.4%
	Female	220	84.6%
Literacy	Literate	158	60.8%
	Illiterate	102	39.2%
Awareness about EPI	Yes	258	99.2%
	No	02	0.8%
Economic Status	Rich	46	17.7%
	Middle	137	52.7%
	Poor	77	29.6%
Opinion about its Benefits	Beneficial	242	93.1%
	Non Beneficial	18	6.9%
Reactions / Complications	Yes	214	82.3%
	No	46	17.7%
Status of Immunization	Fully	195	75%
	Partially	40	15.4%
	Not	25	9.6%

DISCUSSION

Result of present study showed that out of total 260 parents, 258 (99.2%) knew about EPI. Out of these, number of mothers was 220 (84.6%) and the majority of the mothers knew EPI. Similar results were reported by a study conducted in Peshawar, where 98.57% of urban and 86.37% of the rural women knew about EPI, and they started immunization of their infants. Of the urban sampling 67.14% and rural sampling 48.12% has fully immunized their children against Polio, Hepatitis B, Diphtheria, Whooping Cough, Tuberculosis, Measles and Tetanus¹². In our study number of fully immunized children is 75% (i.e. Fully Immunized Child: A child one year or older having 1 BCG, 3 Polio, 3 Pentavalent & 2 Measles vaccine doses) while literacy rate was 60.8%, while in above mentioned study of Peshawar it is 35%¹². Mother education in urban and rural areas varies significantly and this has an impact on EPI services. Because, adequate and appropriate knowledge about EPI is essential for parents as they have to play important role in the practice of immunization and promoting health education.

In another study conducted in Karachi targeting the impact of maternal knowledge on infant immunization rates revealed that out of 179 mothers, 65% of the literate mothers had got their children fully immunized as compared to 34% of the illiterate mothers getting their children fully immunized. 89% of the literate mothers had kept vaccination cards with them also. This shows that improvement of the maternal

knowledge about EPI can increase the immunization rate of the children throughout the country¹³.

A study conducted in the Rajshahi slums of Bangladesh appreciating the relation between age of children and EPI, showed that aptitude of parents towards the immunization of their children decreased with the increase in the age of child. The low odds ratio for the uptake of immunization at higher age of child indicated that the probability of being immunized of the children was low in the higher ages. The results revealed that the child of age 24 months and above was 0.231 times less likely to be completely immunized than the child in age group 0-23. From this it was concluded that the parents of the children did not properly follow the immunization schedules by EPI guidelines with the increase of age of child. From the results of logistic regression analysis, it appeared that the high birth order has a negative effect on full immunization coverage of children relative to the reference category. The results found that the child of birth order 2+ was 0.987 times less likely to be fully immunized than the single birth order child. This clearly shows the negligence by the mother regarding child immunization at higher birth order¹⁴.

In this study, out of 260 parents, 242 (93.1%) thought that EPI programme is beneficial, while according to 18 (6.9%) it is not. As far as complications or reactions are concerned, these may be due to faulty techniques, hypersensitivity and improper storage of vaccine (cold chain).

Surveys like these increase not only parent's awareness, but doctor's awareness as well as about public health problems. This is very useful to improve quality of health services¹⁵.

These findings from this or similar surveys should be used as a basis for corrective measures to improve medical and education care¹⁶.

CONCLUSION

EPI, as important component of primary health care programme of Pakistan, is effectively being exercised in the community. Continuous monitoring, evaluation and community participation is necessary to strengthen this system. Great emphasis should be placed to raise the level of education, improve the standard of living and continue community based vaccination programme. There should be community efforts to improve health system and health education activities. There should be follow ups of routine immunization activities with the participation of parents, Government and vaccination supervisors. WHO is extending all possible technical supports to our government for the forthcoming national health policy of "HEALTH FOR ALL", through a system which is efficient equitable, effective, easily accessible and affordable to the masses.

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