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Asbestosis

Mohsin Masud Jan
Editor

The first documented death from asbestos was in 1906. The first diagnosis of asbestosis in 1924. Asbestos was widely used as an insulation material in shipbuilding and other industries. The risks associated with all forms of it were increasingly well-documented through the 1930s, 40s, 50s and 60s; and by the 1980s regulations limiting or prohibiting its use started appearing around the world. Today its use is banned in 52 countries. Asbestos has six primary sub-classifications: chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Among these, chrysotile and amosite asbestos are the most common. Exposure to asbestos makes you more prone to cancer-like diseases linked to asbestos, not just poor shanty-dwellers, but the rich and powerful as well – air-borne asbestos particles being unable to differentiate between poverty and wealth.

According to the National Cancer Institute, "A history of asbestos exposure at work is reported in about 70 percent to 80 percent of all cases. However, mesothelioma has been reported in some individuals without any known exposure to asbestos."[1]

According to OSHA, "there is no 'safe' level of asbestos exposure for any type of asbestos fiber.[2, 3] Asbestos exposures as short in duration as a few days have caused mesothelioma in humans. Every occupational exposure to asbestos can cause injury or disease; every occupational exposure to asbestos contributes to the risk of getting an asbestos related disease.

Asbestos exposure becomes an issue if asbestos containing materials become airborne, such as due to deterioration or damage. Building occupants may be exposed to asbestos, but those most at risk are persons who purposely disturb materials, such as maintenance or construction workers. Housekeeping or custodial employees may be at an increased risk as they may potentially clean up damaged or deteriorated asbestos containing materials without knowing that the material contains asbestos. Asbestos abatement or remediation workers and emergency personnel such as firefighters may also become exposed.[4] Asbestos-related diseases have been diagnosed in asbestos workers' family members, and in residents who live close to asbestos mines or processing plants.[5]

Now with the effects of asbestos so well known, in a country like ours, with such a crippled infrastructure, several things often go neglected. Health and safety practices within factories are often inadequate. Dumping of residues and waste products is improperly monitored and, most worryingly, new residential sites are often built on land that was zoned as industrial but was illegally converted to residential plots. No effort is made to check the land near industrial areas for any sources or signs of contamination, and if miraculously, a source is found, nothing whatsoever is done to clear it of Chrysotile asbestos.

Greed, gross incompetence, the failure to implement safe working practices where a dangerous substance is involved, and a willful disregard for the well-being of the public are all obstacles to the prevention of asbestosis. Asbestos is a killer and has been known to be such since the beginning of the 20th century. And Asbestosis is public health problem of almost unimaginable proportions – and wholly preventable. Every effort now needs to be made to at least mitigate the effects of asbestos, with mass-screening in places close to industrial areas, as a baseline intervention, rigid implementation of health regulations and routine checking of any factories working with asbestos to ensure they follow all safety regulations, and that the residues and waste they dump do not contain any harmful or toxic substances.

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The Profile and Outcome of Children admitted in Paediatric Intensive Care Unit of a Public Hospital in Karachi

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ABSTRACT

Objective: To determine the profile and outcome of children admitted in paediatric intensive care unit of a public hospital in Karachi.

Study Design: Descriptive / Observational study.

Place and Duration of Study: This study was conducted at PICU of Civil Hospital Karachi from July 2013 to June 2014.

Materials and Methods: Data of the admitted patients was collected from the file records. It included demographic profile, admitting diagnosis, length of stay and outcome. Descriptive statistics were applied to describe the results.

Results: Overall 243 children were admitted in PICU during the study period. Among which 133 were admitted in 1st half and 110 during the later half of the year. 126 (51.85%) were male, whereas 117 were female. According to the age group, 91 (37.44%) were under 1 year where as 152 (62%) were more than 1 year among which 92 were between 1-5 years of age. Majority, 160 (67%) were admitted through emergency. Duration of stay in the hospital was varied, and 176 (72.42%) patients stayed for more than 24 hours, of these, 90 stayed for 3- 5 days. Upon admission, 83 (34.15%) needed ventilatory support. 16 (6.58%) children needed fluid boluses for resuscitation, whereas inotropic support was required by 49 (20.16%) children. Most of the cases i.e. 68 (27.98%) had respiratory illness as reason for admission. CNS diseases were present in 44 (18%) patients followed by sepsis/infection in 35 (14.40%) cases and Cardiovascular diseases in 22 (9%) cases. Out of total admission, 174 (71.60%) were shifted to the ward. Mortality was recorded in 59 (24%) cases, among which 40 occurred during 1st half of year and 19 during later half of the year, resulting in mortality of 30% in 1st half and 17% in 2nd half, respectively. Out of 59 expiries, 24 (40%) died within 1st 24 hours due to poor status at admission. Sepsis was the most common cause seen in 42 (71%) of non survivors. 7 cases were referred to other specialized centers for further management after initial stabilization, whereas 3 cases left against medical advice.

Conclusion: Respiratory system, central nervous system and infectious disease/sepsis were the commonest reasons for admission. PICU showed improved working in later half of year after its beginning.

Key Words: Paediatric intensive care, profile, outcome

INTRODUCTION

Critical care provision through Paediatric Intensive Care Unit (PICU) is now recognized globally as an essential part of health services to seriously ill patients. It provides support to the vital organ's functions and has resulted in improved survival of sick children from various diseases which were previously considered fatal[1,2].

Pediatric critical care medicine (PCCM) has made great advancements over the last 3 decades in western world and is well established there but in developing countries it is relatively a new subspecialty which is still in infancy and there is paucity of knowledge about pediatric critical care[3,4].

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The current situation here is that there are a few PICUs in some private hospitals of big cities only. Public sector hospitals are almost devoid of it although they do receive a large number of seriously ill children who are managed in pediatric wards.

As a result, there are many studies documenting the outcome of patient of PICUs from developed countries[5,6], but few such studies are available from pakistan[7].

Seriously ill children coming to civil hospital Karachi (CHK) were managed in the pediatric wards before July 2013 when the PICU started working to take care of critically ill children.

Studies regarding the profile & outcome of PICUs are regularly done all over the world as a part of Continuous Quality Improvement (CQI), program in their performance[8].

This study was done to see the performance of PICU of CHK over one year period. It describes the demographic and clinical profile as well as outcome of

patients admitted in PICU of CHK, in order to determine which type of diseases in our children are to be focused more to provide improved quality of care in terms of treatment and prevention.

MATERIALS AND METHODS

All the patients admitted in PICU during the study period were enrolled. As per PICU admission policy, one month to twelve year old children were included, and surgical patients were excluded. Medical records of the admitted patients were reviewed. Permission was taken to utilize this data for research purpose from the concerned authority. Data included basic demographics, primary admitting diagnosis, admission source, length of ICU stay and out come. Descriptive statistics were used to express data in terms of number and percentages.

RESULTS

During the study period, 243 children were admitted in the PICU among which 133 were admitted during 1st half and 110 during the later half of year. 126 (51.85%) were male and 117 were females. Most of them, i.e. 152 (62%) were more than one year old. Out of these 92 were between 1 to 5 years age, 48 between 6 to 10 years age and 12 were more than 10 years old.

Majority 160 (67%) were admitted through emergency. Regarding the length of ICU stay, total 176 (72.42%) patients stayed for more than 24 hours. Out of them 39 stayed for 48 hours, 60 stayed for 3-5 days, 44 stayed for 6-10 days & 33 stayed for more than 10 days.

Upon admission, 83 (34.15%) needed ventilatory support to maintain the oxygenation. 16 (6.58%) needed fluid boluses as part of initial resuscitation. Inotropic support was required in 49 (20.16%) patients inclusive of those who failed to improve upon fluid boluses only.

Most of the cases i.e 68 (27.98%) had respiratory illness which included Broncho pneumonia, Acute Asthma, Lobar Pneumonia etc (Table 1).

CNS problems were the second most which included Encephalitis, Bacterial meningitis, status epilepticus Etc (Table 2). Sepsis and infectious diseases were seen in 35 (14.40%) patients. There were 22 (9%) patients with cardio vascular diseases. 10 (4%) cases had diabetic ketoacidosis and 8 (3%) had acute poisoning. Remaining 56 (23%) were having miscellaneous problems.

Out of total admissions, 174 (71.60%) were shifted to ward upon improvement. 7 (2.8%) cases were referred to other specialized centers after initial stabilization, while 3 cases left against medical advice.

The remaining 59 cases (24%) were expired. Out of which 24 expired within first 24 hours of admission, indicating the severity of illness and poor status at the time of admission. Remaining 35 expiries occurred after 24 hours. Severe sepsis was the most common cause seen in 42 (71%) non-survivors. Other causes among them were fulminant hepatic failure, encephalitis, AKI, Steven Johnson Syndrome etc (Table 3).

During the course of their illness, 3 patients developed T.A.M.O.F. (thrombocytopenia associated multiorgan failure) which improved subsequently.

Table No.1: Pattern of respiratory illnesses

Disease	Numbers (n=68)	%age
Broncho pneumonia	24	35.29
Severe acute asthma	23	33.82
Lobar pneumonia	05	7.35
Bronchiolitis	02	2.94
Others (Including foreign body, plastic bronchitis, necrotizing pneumonia, pleural effusion, collapse, laryngeal papilloma)	14	20.58

Table No.2: Pattern of CNS problems

Disease	Numbers (n=44)	%age
Encephalitis	18	40.90
Bacterial Meningitis	11	25
Status epilepticus	4	4.54
Tuberculous Meningitis	2	9.09
Guillain Barre Syndrome	2	4.54
Complex febrile fits	2	4.54
Brain abscess	1	2.27

Table No.3: Causes among non survivors (59)

Disease	Numbers (n=59)	%age
Severe sepsis (including bronchopneumonia etc.)	42	71.18
Fulminant Hepatic failure	5	8.47
Encephalitis	4	6.77
AKI	2	3.38
Steven Johnsons Syndrome	2	3.38
Myocarditis	2	3.38
Congenital Myasthenia Gravis	1	1.69
Brain abscess	1	1.69

Table No.4: Mortality Pattern during study period

	Number	%age
Overall mortality (among 243 cases)	59	24.28
Within 1st 24 hours of admission	24	9.87
After 24 hours	35	14.4
During July – December 2013 (among 133 cases)	40	30.0
During Jan – June 2014 (among 110 cases)	19	17.27

DISCUSSION

This study described the performance of PICU of a public sector hospital over one year period.

Annual audit of the PICU is an integral component of health planning and management to provide quality health care, as a part of Continuous Quality Improvement, (CQI) which is an ongoing process of evaluation and improvement[8].

The civil hospital Karachi, CHK in most part caters to lower & middle class from all over the province of Sindh, receiving a bulk of non affording poor patients, who are provided free of cost services.

PICU at CHK is a joint venture of dowites 86 and government of Sindh. It started working in July 2013 on public – private partnership basis. It is a 7 bedded intensive care unit of CHK, which is a tertiary care hospital. PICU receives patients from pediatric wards and from emergency room. Currently it is providing services to non-surgical cases only. The PICU is staffed by a paediatrician & postgraduates. Residents of fellowship program are regularly rotated from all the three paedaitric units of CHK. They are supervised by faculty members and senior paediatricians.

The nurse to patient ratio is 1:1. Admission age in PICU is 12 years and below based on existing hospital policy of admission in the pediatric department.

Initial days of working were difficult owing to insufficient staffing and other logistic problems and it was started with only two to three admissions at a time.

On occasions, there were issues regarding co-ordination among various departments of the hospital, as many cases required multidisciplinary management. However, things were improved over time which is well reflected by comparing mortality during first and last six months (Table-4).

Approximately 37.44% i.e 91 patients were less than one year old, which was similar to age pattern noted in other studies of PICU in this region.

Contrary to other studies, male predominance in admissions was not seen.

Majority of diseases requiring PICU admission were related to respiratory system which is similar to other regional studies[11,12].

Children having respiratory distress, acute neurological deterioration, severe infections/sepsis, cardiovascular compromise, and accidental poisoning constitute the major admission to a pediatric intensive care unit[11].

Similar to other regional studies, majority of diseases requiring PICU admission were related to respiratory system, central nervous system and infectious diseases/sepsis[1,12].

Among respiratory problems, bronchopneumonia and severe acute asthma were the commonest.

Encephalitis and meningitis were commonest among central nervous system diseases to be managed in PICU.

Seven patients had to be referred to specialized centers after initial stabilization while 3 patients left against medical advice due to domestic reasons including lack of person for caring of other children at home.

Out of total 59 expires, 24 (40%) died with in 1st 24 hours of admission indicating the severity of illness and poor status at the time of admission.

Remaining 35 (59.32%) deaths occurred after the 1st 48 hours. In this particular population, the development of MODS (Multi organ dysfunction syndrome) was universal, irrespective of the underlying etiology.

MODS is as much a therapeutic challenge in Pakistan as in other regional countries like India and Srilanka[16]. Severe sepsis was the most common cause among non-survivors. Mortality in the 1st six months of year was 30% which decreased to 17% in the second half of year. Overall mortality was 24.28% which was comparable to few PICU studies of the country showing mortality in the range of 22-29[7,13].

As part of CQI implementation program to provide quality health care to our children the following steps should be taken.

There is a need for a full time paediatirc intensivist along with more nursing staff. Several reports have shown that full time trained critical care specialists in ICUs improve the quality of care and are associated with lower mortality rates[1,17].

Mortality was decreased to 14% in private hospital PICU in Karachi when a full time paediatric intensivist was appointed[9].

There is evidence that supports better out come of PICU patients in tertiary centers, which led to the development of a centralized system of PICU world wide, [17] same things is required here.

Better intra hospital coordination among various departments is needed to decrease the referral rate and to decrease mortality due to hospital errors.[19]

Although the concept of Pediatric critical care is relatively new in Pakistan, implementing a Paediatic critical care fellowship programme is the emerging need of the day. This sub speicality should be recognized in the country on urgent basis, to generate pediatric intensivists locally according to the needs.

This PICU proved to be an excellent model of public-private partnership providing maximum health support to the less privileged ones. Similar models can be replicated in other cities of the country.

The PICU further needs to be improved to cater trauma and surgical cases also. Trauma is common in children and in few studies surgical admissions were almost equal to medical admissions or even greater, where majority of admissions were from operating room.[7,9,20]

CONCLUSION

Study showed improved progress during the later half of year, yet there are many miles stones to achieve & maintain as pointed out under CQI implementation.

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Original Article

Frequency of Prediabetes and its Association with Lipid Profile in Patients with Non-Alcoholic Fatty Liver Disease

Non-Alcoholic Fatty Liver

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ABSTRACT

Objective: To determine the frequency of prediabetes in patients with non-alcoholic fatty liver disease and to compare the mean values of cholesterol, triglycerides, low density lipoproteins and high density lipoproteins in patients of non-alcoholic fatty liver disease with and without prediabetes.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at Medical Outpatient Department, Sharif Medical City Hospital, Lahore from 30th December 2013 to 29th June 2014.

Materials and Methods: Three hundred twenty five patients with ultrasonic diagnosis of NAFLD were included. All the patients with other causes like alcohol, viral hepatitis, toxins and drugs were excluded. All patients were screened by Glucose tolerance test (GTT) and if post GTT, blood sugar level came out greater than mg/dl, it was labeled prediabetes. Lipid profile was compared in both groups.

Results: Frequency of the pre-Diabetes is quite high in our population with nonalcoholic fatty liver disease i.e.82.2% and means values of cholesterol, triglyceride low density of lipoprotein and high density lipoprotein in patients of non-alcoholic fatty liver disease are equally distributed patients with and without pre-diabetes. These mean values are, mean value of cholesterols patients with pre-diabetes was 1.86.8±2.3 mg/dl while without pre-diabetes it was 193.4±40.8 mg/dl while mean triglyceride level in patients with pre-diabetes was 180.5±37.2 mg/dl while without pre-diabetes patients it was with 180.7±40.4 mg/dl. Similarly the mean LDL level was 157.8±19.4 mg/dl and with pre-diabetes and 156.8±19.8 mg/dl in patients of NAFLD without pre-diabetes.

Conclusion: It is concluded that frequency of prediabetes and dyslipidemia is quite high so we should screen all patients of NAFLD for glucose intolerance.

Key Words: Diabetes, Prediabetes, Glucose tolerance test, Nonalcoholic fatty liver disease

INTRODUCTION

Nonalcoholic fatty liver disease (NAFLD) is a disease of modern era ranging from simple fatty liver to nonalcoholic steatohepatitis and cirrhosis.[1] It is closely associated with obesity, dyslipidemia, diabetes and atherosclerosis.[2] Current epidemic in Western countries have involved 20 to 30% of adults in the general population and is the most common cause of chronic liver disease.[3] The prevalence of NAFLD in general population of Pakistan is 18%.[4] Patients with NAFLD are at a high risk of atherosclerosis regardless of metabolic syndrome and classical cardiovascular risk factors.[5]

In a study to determine the prevalence and the metabolic impact of prediabetes and type 2 diabetes mellitus in 118 patients with NAFLD, prediabetes was present in 70.3% NAFLD patients.[6] In an Egyptian

study to assess whether type 2 diabetes mellitus-induced hyperglycemia has an effect on the lipid profile in patients with nonalcoholic fatty liver 105 patients, matched in age and weight, were classified into two groups: the first group consisted of patients with NAFLD and the second group consisted of patients with NAFLD in conjunction with hyperglycemia due to the presence of type 2 diabetes mellitus. The outcome levels in first and second group respectively are Cholesterol (mg/dl) 209.4±12.8 and 221.7±19.6, Triglycerides (mg/dl) 174.4±10.1 and 206.7±13.3, LDL-C (mg/dl) 144.3±9.7 and 175.7±7.6, HDL-C (mg/dl) 29.7±2.7 and 21.4±2.1. All the differences were significant except for cholesterol levels.[7,8]

MATERIALS AND METHODS

This cross sectional study comprised 325 patients conducted at Medical Outpatient Department, Sharif Medical City Hospital, Lahore over a period of Six months from 30th December 2013 to 29th June 2014. Both male and female, with age from 30-60 years and

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non-alcoholic fatty liver disease determined by ultrasonography were included. History of cerebrovascular accidents, transient ischemic attack, peripheral vascular disease, connective tissue disorders, vitamin D deficiency, congenital fat storage diseases and ischemic heart disease and acute or autoimmune hepatitis were excluded. After consent, 75 gram glucose tolerance test was performed on all participants. On basis of diabetes screening the participants were divided into two groups i.e. one with prediabetes (blood glucose level from 140 to 199 mg/dl) and other with no diabetes (blood sugar level less than 140mg/dl). Included patients were called next day with a 12-h overnight fast. Sampling for lipid profile was done by a trained nurse under aseptic conditions. The groups were compared regarding lipid profile in terms of serum cholesterol levels, high and low density lipoprotein, triglycerides. All the collected data was entered into SPSS version 19 and analyzed. Independent t-test was used for determination of significant difference. P $\leq$0.05 was considered as statistically significant.

RESULTS

There were 171 (52.6%) males and 154 (45.4%) were females with mean of the patients was 42.2±9.1 years ranging from 28-60 years. Out of 320 patients pre-diabetes was present in 267 patients (82.2%) while 58 individuals (17.8%) were not having pre-diabetes (Table 1). Mean high density lipoprotein was equally distributed among patients with and without pre-Diabetes in included patients. Similar was the case with cholesterol (p value =0.1). Similarly mean serum cholesterol was similar among patients with pre-Diabetes and without pre-Diabetes (p value =0.245). Triglyceride distribution was similar among included patients either they had pre-Diabetes or don't have pre-Diabetes (p value =0.197). Mean Low density lipoprotein were equally distributed with and without pre-diabetes (p value =0.707) [Table 2].

Table No.1: Demographic information of the patients

Variable	No.	%age
Age (years)		
< 40	135	
> 40	190	
Gender		
Male	171	52.6
Female	154	45.4
Prediabetes		
Yes	267	85.2
No	58	17.8

Table No.2: Comparison biochemical parameters with prediabetes in NAFLD

Parameter	Yes	No	P value
High density lipoprotein	24.62± 4.539	25.71±4.619	0.10 (NS)
Cholesterol	186.85± 38.849	193.47±40.803	0.245 (NS)
Triglycerides	180.50± 37.295	187.59±40.411	0.197 (NS)
Low Density Lipoprotein	157.89± 19.427	156.83±19.809	0.707 (NS)

DISCUSSION

Non-alcoholic fatty liver disease (NAFLD) is an increasingly recognized clinicopathological condition that may progress to end-stage liver disease. The pathological picture resembles alcohol-induced liver injury, but occurs in patients who deny alcohol abuse. Non-alcoholic fatty liver disease comprises a wide spectrum of liver damage ranging from simple, uncomplicated steatosis to steatohepatitis to advanced fibrosis and cirrhosis.

In non-alcoholic fatty liver disease has variation in distribution in pre-diabetes from different ethics groups as we have extensively reviewed literature. In our sampled population its frequency was 267 out of 325 included patients i.e. (82.2%) which is quite high. It shows that prevalence of pre-diabetes in NAFLD is too high that every person coming with this diagnosis should be screened while oral glucose tolerance test to determine whether he / she is pre-diabetes or not.

This high prevalence of pre-Diabetes indicates that liver and its pathologies plays a major role in development of disease. Once the life style changes and other modification take into an account it not only reduces the incidences of pre-Diabetes which further converted into diabetes and add on the food of the diabetic patients but also reduced the morbidity associated with NAFLD. High prevalence of pre-Diabetes in our sampled population also sensitized the clinician to be vigilant about the presence of co-existing metabolic syndromes in patients with non-alcoholic fatty liver disease.[10,11]

In our sampled population the male and female ratio was almost equal 47.4% were female and 52.6% were male. The mean age of presentation of NAFLD disease was 40 years and beyond 40. We have a mean value of 42.26 years with ranging from 28 years to 60 years. Twenty eight years patients are quite young, healthy and should be physically active but the result shows that the inactivity and changing life style and dietary behaviors have let to development of non-alcoholic fatty liver disease. One of the most important finding which we want to discuss is the abnormality of the lipids in these NAFLD patients to our surprise we found all patients had high density lipoprotein all

patients had abnormal HDL level and low density lipoprotein levels both shows lack of activity and increase intake of saturated fatty acids this is alarming situation.

The presence of metabolic syndrome and pre-diabetes in both groups is independent of age and sex it means it is simply the presence of NAFLD which makes a person prom to pre-diabetes and it effects the lipid profile in a negative way without presence of pre-diabetes does not affect the lipid markers. HDL, LDL, cholesterols triglyceride all were equally distributed among patients with and without pre-Diabetes .Abnormal lipid-profile in FALD patients also determine that they should be a preventive program to increase the physical activity and reduction in consumption of fats in our diets and change life style behavior shifted to individual is essential in the current situation.[12,13]

CONCLUSION

The frequency of the pre-diabetes is quite high with nonalcoholic fatty liver disease (82.2%) and means values of cholesterol, triglyceride low density of lipoprotein and high density lipoprotein in patients of non-alcoholic fatty liver disease are equally distributed patients with and without pre-diabetes.

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

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Original Article

Prevalence of Myths Related to Dental Health among the Medical and Dental Students of Karachi-Pakistan

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ABSTRACT

Objective: The purpose of this study was to assess the prevalence of myths related to dental health, among medical and dental students of Karachi.

Study Design: Cross-sectional descriptive and analytical study

Place and Duration of Study: This study was conducted at three Medical and Dental colleges of Karachi (Jinnah Medical and Dental College, Ziauddin University and Dow university of Health Sciences) from August 01, 2015 to August 31, 2015.

Materials and Methods: A questionnaire consisting of close-ended questions on prevalence of myths about oral health was distributed among 300 medical and dental students of three different colleges of Karachi. Students from all levels i.e. from the first year till the final year were questioned. Convenient sampling was done. Students who did not consent to participate in the study were excluded from the study. SPSS version 20 was used for data analysis.

Results: The prevalence of myths regarding extraction of teeth was found out to be 16% and scaling was found out to be 26% .Dental students tend to believe more in these myths as compared to medical students despite their educational background. However, the incidence of belief in dental myths decreases with the increase in the level of education.

Conclusion: Dental myths are prevalent among all levels of medical and dental students more so among dental students.

Key Words: Dental Myths, Dental Students, Medical Students.

INTRODUCTION

Myth is a false belief which is generally fabricated by imagination of people but these myths are usually considered sacred and genuine by the community.[1] A dental myth usually originates from a traditional, non-scientific superstitious belief or from unqualified personnel that are associated with the dental practice.[2,3] The anxiety among people with regard to dental health professionals has created an abundance of the dental myths. These myths were passed on by the word of mouth and have become very deeply rooted in our society. It is very difficult for the patients to differentiate between the reality and the myth .Scientifically, these are untrue perspectives that have become extensive.[4,5] Dental myths can put our patient's oral health in danger and prevent them from getting professional dental advice and treatment.[6] Inadequate literature is available about the prevalence of myths related to dental healthcare. Pakistan is a country having below average literacy rate, so it can be assumed

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that these myths would be prevalent in such a society. Moreover, dental problems in Pakistan are common and indicate that the huge numbers of people have little or no awareness of oral health care.

Most people are not capable of differentiating between facts and myths so they follow their ancestors whole heartedly and believe in traditions religiously.[7] It is indeed of prime importance to motivate the general population so that they realize the importance and advantages of treatment from qualified dental professionals.

Generally it is believed that myths are more prevalent in the illiterate population, so the rationale of the present study is to determine the prevalence of dental myths among students of medical and dental backgrounds in order to address these in future.

MATERIALS AND METHODS

A cross-sectional study was done among the medical and dental students from first year through final year of Medicine and Dentistry, respectively. These students were selected on the basis of convenient sampling and their willingness to participate. The students were classified according to their level of education. The first year B.D.S and M.B.B.S students were taken in the

initial level .The second year and the third year B.D.S and M.B.B.S students were included in the middle level where as the final level comprised the fourth year B.D.S and fourth and final year M.B.B.S students.

The data collection was conducted during the month of August 2015.The students of Jinnah Medical and Dental College, Ziauddin University and Dow university of Health Sciences were randomly selected for participation. The source of data was primary i.e. through a self-administered questionnaire in English Language consisting of 5 close-ended questions based on the respondents' belief on dental myths. The response options provided were yes, no and don't know.

Two common myths were found from online sources.[8]. Demographic details based on gender, study background and level of education of the students was also obtained. SPSS Software Version 20 was used for descriptive statistics.

RESULTS

A self administered questionnaire was distributed to a convenient sample of 300 students. 70 (23.3%) were male students while 230 (76.7%) were female students. 50.6 % (n=152) were included from dentistry and 49.3 % (n=148) were MBBS students.

When the students were questioned on the prevalence of dental myths 32.3 % [n=97] of all students answered that they believed in dental myths. 53 % [n=159] respondents did not believe in myths related to oral health whereas 14.6 % [n= 44] had no information. Among the medical students 27 % [n=40] strongly believed in dental myths compared to 37.5 % [n=57] dental student believers. The percentage of non-believers in MBBS and BDS is 54.7 % [n=81] and 51.3% [n=78] respectively. The students who did not know about dental myths were 18.2% [n=27] medical and 11.1% [n=17] dental. The difference between dental and medical students is noted, 37.5% of dental students believe in myths and only27% [n=40] of medical students believed in dental myths. [Table2]

2% [n=3] of all the medical students believed that extraction of tooth affects the vision whereas 72.2% [n=107] medical students did not believe in this myth. The rest of the students had no information at all. Among the dental students 9.2% [n=14] were strong believers and 62.5 % [n=95] went against it, rest of the students had no information at all.

When the students were questioned about the myth that whether scaling causes loosening of teeth or not 25.6 % [n=38] of the medical students replied in affirmative while 64.1% [n=95] of the medical students rejected the myth. The rest had no information at all. Responses from dental students provided results that showed 27.6 % [n=42] students believed that scaling loosens teeth

and 70.3 % [n=107] did not believe in this myth. 2.1 % [n=3] of the students had no knowledge.

The students were asked if they had ever experienced the above stated myths themselves or if their acquaintance had experienced it.16.8% [n=25] medical students had experienced the myth either themselves or their acquaintance had experienced it while 79 % [n=117] had not experienced it. However, 26.3 % [n=40] of dental students had experienced it (either self or through acquaintance) and 69 % [n=105] had not experienced it.

The impact on the students who had experienced the myths was that 10.1 % [n=15] of the medical students never visited a dentist again .6.7 % [n=10] visited dentist for professional advice. 4.7 % [n=7] took home remedy. 11.4 % [n=17] did not show any impact despite their belief in dental myths and 4% [n=6] changed the dentist. Among the dental students 9.2 % [n=14] never visited a dentist, 15.1% [n=23] visited dentist for treatment, 4.6 % [n=7] took home remedy, 11.1% [n=17] did not show any impact despite their belief in dental myths and 7.8% [n=12] changed the dentist.

Table No.1: Demographic characteristics:

Characteristics	Frequency	Percentage (%)
Gender		
Male	70	23.3
Female	230	76.7
Total	**300**	**100**
Educational Background		
Dental Students	152	50.6
Medical Students	148	49.3
Total	**300**	**100**
Level of Education		
A. Initial Level		
Medical Students	68	22
Dental Students	52	17.3
B. Middle Level		
Medical Students	36	12
Dental Students	73	24.3
C. Final Level		
Medical Students	44	14.6
Dental Students	27	9

Table No.2: Prevalence of Dental Myths:

Specialty	Number	Percentage
Medical Students		
Yes	40	27
No	81	54.7
Don't know	27	18.2
Dental Students		
Yes	57	37.5
No	78	51.3
Don't know	17	11.1

DISCUSSION

Dentistry is the arts and science which promotes the management of oral diseases and maintains dental health in our community.[9] There is a vast difference in oral hygiene practices and protocols among various countries. These differences occur due to their population's level of awareness about oral health, traditional and cultural beliefs and socio-economic development of the country.[10] Myths can be prevalent in a culture for a majority of different reasons like lack of education, religious misconceptions and deep seated social beliefs which are usually carried on from one generation to the following generation.[11] Myths in medicine and particularly in dentistry are quite common.[12] It is seen that although the students are from medical and dental backgrounds and belong to the educated sector but they still believe in dental myths and have misconceptions about dental health.

It is often challenging, yet extremely important to change the mindset and educate the population.[13]

The population (dental and medical students) was chosen as they are an ideal representative of the educated youth of Karachi.

In the current study it was seen that belief in dental myths are more prevalent in the female gender as 33.4% (n= 77) of all females believed in myths whereas only 28.5% (n= 20) males believed in the myths which shows that females are more superstitious and emotionally biased. However; Nasir et al. reported that 24.8% of their male respondents believed strongly in the dental myths while 20% of females were strong believers of myths.[7] The level of students in which these beliefs are more prevalent is the initial level, as 34.1% (n=41) of the first year believed in myths, 31.1% (n=34) of the middle level i.e. second and third years firmly believed, whereas only 30.0% (n=22) of the final level believed in myths. This shows that as they advance in academics their misconceptions are cleared and they educate themselves with facts rather than fiction. The results showed that more students believed that scaling loosens teeth compared to the other myth. This also revealed that even medical/dental students still believe in false stories despite the recent advancements in the field of medicine and dentistry. Saravanan and his co-worker also observed that a higher number of respondents from his study population believed that scaling has an effect on tooth structure (34%) compared to the effect of extraction on vision (20%).[14]

The students were asked about their personal experience or the experience of their acquaintance. The results show that 69% (n=104) of the dental students and 79% (n=116) of the medical students had no experience of dental myths, either themselves or through their acquaintances. Only 26.3% (n= 48) dental students and 16.8% (n=32) of the medical students had experienced the myth. It is seen here that more dental students seem to have experienced these myths despite the fact that they are from the dental background. They seem to believe that scaling loosens teeth. This may be because the dental students have observed that when calculus is removed, mobility of the teeth increases.

The students who had experienced the myth were asked in the questionnaire about the impact of the experience. 9.2% (n=14) dental and 10.1% (n=15) medical students replied that they never visited the dentist again, whereas 15.1% (n=23) dental and 6.7% (n=10) medical replied that they visited the dentist for professional advice as before. Only 4.6% (n=7) dental and 4.7% (n= 7) medical students started taking home remedy. 11.1% (n=17) dental and 11.4% (n=17) medical students did not do anything. Only about 7.8% (n=12) dental and 4.0% (n=6) medical students changed the dentist after the experience. So, the impact shows that roughly about a quarter of the study population either did not do anything or they continued to seek professional advice from qualified dentists.

CONCLUSION

The current study shows that dental myths are more prevalent among the dental students than in the medical students despite their professional education background. It was also observed that as the level of education increases, the belief in these myths tend to gradually diminish.

Recommendations: It is our duty to promote dental health education among all sectors of the community including our health care professionals (belonging to medicine and dentistry), so that people visit qualified dental surgeons for professional advice and treatment without the fear of losing their vision and loosening of their teeth.

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

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Original Article

Diagnostic Accuracy of Mid Upper Arm Circumference (MUAC) for Screening Low Birth Weight Babies

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ABSTRACT

Objective: To determine the diagnostic accuracy of Mid Upper Arm Circumference (MUAC) for screening low birth weight babies.

Study Design: Cross-sectional study.

Place and Duration of study: This study was conducted at the Pediatric Unit II and Gynecology Unit II at Civil Hospital Karachi, Pakistan, from January to June 2012.

Materials and Methods: A hospital base study was carried out on full term, singleton 112 live born babies. Birth weight was taken through digital weighing scale as gold standard against anthropometric measurement of MUAC in centimeters. Correlation between MUAC and low birth weight was calculated with 95 % confidence interval. Sensitivity, specificity, positive and negative predictive values were calculated.

Results: Out of 112 newborn babies studied, 44 (39 %) were male and 68 (61%) were female. The mean birth weight was 2.316 ± 0.563 kgs and 51 (45.5%) newborns were low birth weight (LBW). The mean MUAC was 8.90 ± 1.08. In low birth weight mean MUAC was 8.41 ± 0.87; 95% CI (8.21; 8.61) and in normal birth weight mean MUAC was 9.90 ± 0.70; 95% CI (9.66; 10.13).Pearson correlation between low birth weight and MUAC was found statistically significant ($r= 0.858$; P-value <0.001). A cut-off point of <9.3 cm of MUAC showed 81.1% sensitivity and 78.3% specificity.

Conclusion: Mid upper arm circumference was statistically significant anthropometric surrogate of birth weight at cut-off point < 9.3 cm in the study population. Further studies are needed to validate the finding of this study in community setting. MUAC is a simple, practicable, quick and reliable indicator for predicting LBW newborns in the community and can be easily measured by paramedical workers in developing nations.

Key Words: Low birth weight, Anthropometric measurements, MUAC, newborn

INTRODUCTION

Low birth weight has been defined by the World Health Organization (WHO) as weight at birth of less than 2,500 grams (5.5 pounds). This is based on epidemiological observation that infants weighing less than 2,500 g are approximately 20 times more likely to die than heavier babies[1]. It also has an impact on long term growth and development and has association with chronic diseases.[2-4]

Globally four million neonatal deaths occur out of which 98% occur in developing countries. About 38% of under-five mortality occurs during the 1st 28 days of life with 75% occurring during the 1st week of life.[5] The prevalence of global low birth weight is 14% [6-12] but contributes to 60-80% of all neonatal deaths.[6-8]

Early identification and referral of low birth weight is thus important to improve the outcome of such babies. In developing countries like Pakistan most of the deliveries are conducted at home. Low birth weight babies are not identified at birth as most of them are not weighed. A simple and easy method to identify low birth weight babies may circumvent the problem. A number of studies have shown a strong association between anthropometric measurements and birth weight.

This study was thus undertaken to determine the diagnostic accuracy of MUAC for screening of low birth weight babies.

MATERIALS AND METHODS

This hospital based case cross-sectional study was conducted at Pediatric Unit-II and Gynecology Unit-II of Civil Hospital Karachi, Pakistan from January to June 2012. Civil Hospital Karachi is one of the largest tertiary care

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teaching hospitals catering to urban peri-urban areas of Sindh, Pakistan.

The newborns, singleton of either sex, full-term with gestational age of ≥ 37 weeks (confirmed on antenatal ultrasound) presenting within 24 hours of life in Pediatric and Gynecology units of Civil Hospital Karachi (C.H.K) during study period were included in the study.

Sample size was calculated to be 112 with a confidence interval of 95% and margin of error equal to 10%.

The newborns with congenital anomalies/ dysmorphic features, multiple births, hydrocephalus and gestational age of less than 37 completed weeks (pre-term babies) were excluded.

Anthropometric measurements of all neonates that fulfilled the inclusion criteria were taken after obtaining informed consent from the parents. Birth weight was taken in supine position within 24 hours after birth by a digital scale to the nearest 10 grams. To ensure reliability and to avoid confounders all the babies were weighed naked in a single same digital weighing scale which was checked by known standard weight before weighing babies; Mid upper arm circumference was taken at midpoint between the tip of acromion process of scapula and olecranon process of ulna of left arm. MUACs were measured to the nearest 0.1 cm using a non-extendable measuring tape with a width of 1.0 cm.

Data was collected with the help of structured questionnaire containing the information about mother (date of admission/time/name/ place of delivery/mode of delivery), information about newborns (gestational age/general health/gender/ hours of life/birth weight/MUAC)

Data was analyzed by using SPSS version 15.0 software. The mean with standard deviation was calculated for quantitative variables like birth weight, MUAC and gestational age. For the qualitative variables, like gender and mode of delivery, frequency and percentages were calculated. Sensitivity, specificity, positive predictive value and negative predictive value were calculated for MUAC against the actual birth weight of baby taken as gold standard. For outcome variables of the study we developed the cutoff points for measurement on our findings.

RESULTS

A total of 112 new born babies were enrolled in this study.

The mean mid-upper-arm circumference (MUAC) was 8.90 ± 1.08. Among those, 68 (60.7%) were female and 44 (39.3%) were male. A total of 75(67.0%) newborns were Low Birth Weight and 37 (33.0%) newborns were normal Birth Weight (Table-I). A total of 59 (52.7%) newborns had a MUAC Less than 9 cm and 53 (52.7%) newborns had a MUAC greater than or equal to 9.

In univariant analysis, mean MUAC in female was (8.93± 1.04; 95% CI: 8.68; 9.18) and mean MUAC in male was (8.86 ± 1.15; 95% CI: 8.51; 9.21), were found not statistically significant (t-test=0.327; P- value = 0.744).

In low birth weight mean MUAC was (8.41± 0.07; 95% CI: 9.66; 10.13) and normal birth weight mean MUAC was (9.90± 0.87; 95%CI: 12.43 - 12.97), which were found statistically significant (t-test=17.91; P- value = <0.001) (Table-2). The Pearson correlation test showed the positive significant relation (r = 0. 0.858; p- value < 0.001) between MUAC and birth weight (Table 3). In addition, cut off point of MUAC was performed to determine the most accurate cut-off value in order to distinguish LBW from normal birth weight newborns by using sensitivity and specificity test, MUAC <9.3cm correlated with LBW with a sensitivity of 81.19% and specificity of 78.7% (Table 4)

Table No,1: Percentage distribution of Birth Weight (grams)

Birth Weight (grams)	No.	%age
≤ 2500	75	67.0
> 2500	37	33.0

Table No.2: Comparison of MUAC values of newborns based on birth weight

Characteristics	birth weight ≥ 2.5 kg	birth weight < 2.5 kg
Mean	9.90	8.41
Std. Deviation	0.70	0.87
Minimum	9.20	7.30
Maximum	11.10	10.20
Range	1.90	2.90
95% Confidence Interval	(9.66 ; 10.13)	(8.21 ; 8.61)
t-test statistic = 17.91; P- value = <0.001		

Table No.3: Correlation analysis between MUAC and Birth weights

Correlations	MUAC	Birth weight
MUAC	1	0.858*
Birth weight	0.858*	1
Significant P value <0.001		

Table No.4: Sensitivity, Specificity, Positive Predictive and Negative Predictive Values at different MUAC cut off point

MUAC (cm)	Sensitivity (%)	Specificity (%)	Positive Predictive Value (%)	Negative Predictive Value (%)
< 9.3	81.1	78.7	65.2	89.4
< 9.4	62.2	78.7	59.0	80.8
< 9.8	43.2	89.3	66.7	76.1

DISCUSSION

The main aim of this study was to identify and validate the best suitable substitute parameter, proxy to birth weight, which when used by the health personnel in domiciliary outreach will detect the maximum number of at risk neonates for providing them with timely and needed intervention strategy. In our study there was no significant difference in birth weight and anthropometric measurements between male and female newborns. Therefore we analyzed the combined data for both sexes.

The mean birth weight in our study was relatively higher than previous studies from India and Bangladesh[9]. A WHO multicenter study reported that the average birth weight was 2630, 2780 and 3840 grams for newborns in India, Nepal and Sri Lanka respectively. [10] Similar higher mean birth weights of 3195 and 3029 grams have also been reported from other studies conducted in Iran and Nepal.[11-12] Possible reason for higher weight may be because full term (completion of 37 weeks of gestation), singleton live births were included and pre mature were excluded in our study. Previous studies did not specify such criteria and also included pre term babies in the studies. [14, 15]

The proportion of LBW was high in our study which was similar to studies reported earlier where the proportions of LBW varied from 10% to 46%.[16,17,18] In Pakistan different studies have reported a prevalence of low birth weight which varies from 5% to 23% in different settings. [19,20]

Many researchers have attempted to identify a suitable anthropometric surrogate to identify LBW babies which is reliable, simple and logistically feasible in field conditions. Some studies have recommended that Chest circumference (CHC), MUAC and Head circumference (HC) can be used as anthropometric surrogates to identify LBW babies. [9, 14] In our study only MUAC was used as anthropometric surrogate to identify LBW babies. In our study maximum sensitivity and specificity for MAUC was at cut off point of MAUC< 9.3 centimeters. The higher mean birth weight of newborns may be the reason for a slightly higher cutoff point obtained in our study. A study from Bangladesh reported maximum sensitivity (96.2%) and specificity (97.3%) of MAUC at cut off point of < 9 cm possibly because of low mean (2538 gram) of low birth weight reported in Bangladesh. The cutoff point obtained by analysis was relatively higher than those suggested by previous studies. [9]

Further studies are necessary to define a more precise cut off point for Pakistani newborns.

In most developing countries including Pakistan about 75% deliveries occur in rural communities and are attended mainly by traditional birth attendants (TBAs) or relatives, Recording weights for every baby at birth is not feasible in all cases. The present study shows that a simple measurement, like mid-arm circumference can be used as an alternative to weight recording for identifying newborns with low birth weight. It would be logical to assume that this variable would be useful in predicting neonatal outcome. It also would be quite rational to develop some simple device, which would be user friendly and easy for mothers to comprehend and remember where needed in future. A color coded tape indicating weight < 2500 gram may serve the purpose reliably. All health personnel including TBAs can be provided with simple tape or a similar color coded tape as a component of the delivery kit which may be conveniently introduced into the existing health care delivery system as a quick, reliable, practical and cost effective alternative to weighing newborn babies

CONCLUSION

The results of our study suggested that mid upper arm circumference may be used as anthropometric surrogate to identify low birth weight newborns. Further studies are required to validate our results in the field setting and define an optimal cut-off value. A color coded, measuring tape may be suggested for use by health workers to identify LBW newborns in the community setting.

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

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A Comparative Analysis of Lithium Induced Cerebellar Cortical Toxicity in Albino Rats

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ABSTRACT

Objective: To compare the thickness of cerebello cortical gray matter of albino rats after chronic ingestion of Lithium carbonate.

Study Design: Prospective experimental study

Place and Duration of Study: This study was carried out in Animal House affiliated with atomy department BMSI, JPMC, Karachi from April 2012 to June 2012.

Materials and Methods: Thirty male albino rats of 100-200 grams were selected and divided into two major groups A and B. Each major group consisted of 15 animals and my study was conducted according to the time period of the study which was 2 weeks, 6 weeks and 12 weeks. The control group purpose was served by Group A which was given lab diet and B was the Lithium treated group. Lithium carbonate (ADAMJEE PHARMACEUTICALS) was given at a dose of 20mg/kg/day for 2, 6 and 12 weeks. Cerebellar Gray matter thickness was measured at 2nd, 6th and 12th weeks in the normal healthy control group and Lithium treated group.

Results: Group B showed a progressive decrement of gray matter as the time period of study advance.

Conclusion: The present study concluded that Lithium carbonate causes a significant decrease of cerebello cortical gray matter.

Key Words: cerebellum, Lithium carbonate, Gray matter.

INTRODUCTION

Lithium is the most abundant element in nature[1]. It was discovered by Johan August Arfwedson (1772-1841) and was first used in the treatment of gout[3] in 19th century. Lithium carbonate was also used to prevent depression around 1870[4]. Now for the past half decade Lithium salts are used to treat neurological disorder[5] such as schizophrenia[6], cycloid cyclosis[7] major depression[8]. Bipolar affected disorder symptoms include feeling of hopelessness. In 1970 Lithium was approved as favourable treatment for mania. As time passed the medicinal world accepted Lithium as a prime treatment for manic depression[10]. At present in the medicinal world Li_2Co_3 is considered as an anti-manic drug but in many parts of the world, it is still considered as a mood stabilizing agent[11]. Lithium carbonate used for long term treatment has been reported to cause cerebellar degeneration in rat, [12] and the primary target organ in human is the central nervous system[13]. Muscular weakness and renal failure are the other side effects of Lithium therapy [14]. There is growing evidence that Lithium can induce long lasting neurological sequelae, the most frequent clinical feature

is a permanent cerebellar syndrome[15]. Therefore cerebellar toxicity has been recognized as a potential irreversible consequence of lithium therapy[16]. Various studies have approved that lithium cause's damage at multiple sites in the nervous system but cerebellar feature tend to be most prominent[17].

Several studies have been carried out to ascertain the deleterious effect of acute Lithium ingestion on various organs but my present study is designed to evaluate and analyze the cerebellar cortical atrophy due to chronic Lithium administration.

MATERIALS AND METHODS

This prospective study was carried out in the Animal House, Jinnah Postgraduate Medical Center (JPMC), Karachi. For this study 30 albino rats of 100-200 grams of weights were selected for study. They were kept under observation for 7 days prior to commencement of study. The animals were randomized into two experimental groups each comprising of 15 rats. Group A animals were put on laboratory diet (control group) and group B animals were administered Lithium carbonate at a dose of 20mg/kg/day[18, 19, 20, 21] in powder form mixed in flour pellets given at fixed meal time i.e. 10AM. The albino rats were decapitated, and the brain of each rat was removed by parietal bone approach. The cerebellum was separated from the rest of the brain. Formal saline fixed three micrometers thick sections of the tissue were prepared. The thickness of the gray

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matter was measured by optical micrometer and the results were recorded at 2, 6th and 12th weeks in control A group and Lithium treated group. The observations were compared among the group at weekly interval and also comparison between both the major groups was done. Data collected was analyze using student's "T" test. Results were expressed as mean, SEM P<0.001 was considered statistically highly significant. All calculation was done by utilizing computer software SPSS 16 through Microsoft excel in windows.

RESULTS

Group A (Animal on Normal Diet): There was a highly significant (P-<0.001) increase in the mean values of thickness of the gray matter of control group A at 2nd weeks was 347.8 ± 1.84 at 6th weeks 363.4 ± 2.24 and at 12th weeks 381.2 ± 2.42 the results showed that the mean values of the thickness of the gray matter was highly significantly (p<0.001) increased at 12th weeks than 6th and 2nd weeks.

Table No.1: Mean* value of the thickness of the gray matter of cerebellum (μm) in control group at weekly interval.

Group	2nd week		6th week		12th week	
	Mean	SEM	Mean	SEM	Mean	SEM
A (ND)	347.8	1.84	363.4	2.24	381.2	2.42

 Mean* ± SEM

Statistical analysis of the thickness of the gray matter at weekly interval in control group animals

Group	2wk VS 6wk	2wk VS 12wk	6wk Vs 12wk
B vs. A	0.006	0.001	0.002

Highly Significant***

Group B (Lithium Intoxicated Animals) The mean values of the thickness of the gray matter in lithium treated group animals B at 2nd weeks was 275.5 ± 3.19 at 6th weeks 257.3 ± 2.96 at 12th weeks 239.8 ± 6.51 the above results shows a highly significant (P<0.001) decreased in the thickness of the gray matter at 2nd weeks than 6th weeks and 12th weeks and a moderately significant (P<0.001) decreased in the thickness of the gray matter at 12th weeks than 2nd weeks and 6th weeks and an insignificant (>0.05) decreased of the thickness of the gray matter was observed at 12th weeks when compared 6th weeks.

Mean* value of the thickness of the gray matter of cerebellum (μm) in Lithium treated group B animals at weekly intervals

Group	2nd week		6th week		12th week	
	Mean	SEM	Mean	SEM	Mean	SEM
B(Li)	275.5	3.19	257.3	2.96	239.8	6.51

 Mean* ± SEM

Statistical analysis of the thickness of the gray matter at weekly interval in Lithium treated group B animals

Group	2wk VS 6wk	2wk VS 12wk	6wk Vs 12wk
B vs. A	0.001	0.011	0.093

Insignificant Moderately significant**
Highly Significant***

Major Group Comparison: On major group comparison it was found that there was a highly significant (P<0.001) decreased thickness of the cerebellar gray matter of group B lithium intoxicated animals than the control group A

Statistical analysis of the mean value of the thickness of gray matter between group B and group A

Group	P-value
B vs. A	< 0.001 ***

Highly Significant***

DISCUSSION

The cerebellum is the largest part of the hindbrain is dorsal to the pons, and the elemnt of the cerebellar cortex posses a precise geometric order consisting of three main layers. Molecular, Purkinje cell and granular layer or the gray matter and its constituent cell [22]. Many studies reveal severe cerebellar atrophy of the internal granul and Purkinje cell layer due to chronic Lithium use [23]. Observations of our study report that lithium carbonate when used for increasing time period causes a highly significant decrease of gray matter in lithium treated group B, than control group A. the same result were recorded by Gomez and Lucas (2010) [24.] They in their study report that lithium causes severe neurological manifestation and this may be due to the reason that lithium causes inhibition of glycogen synthase kinase-3 leading to an increase in neuronal apoptosis. Inhibition of GSK-3 causes increase translocation of T cells c3/4 (NFAT c3/4) transcription factors to the nucleus, leading to increased Fas ligand (FasL) levels activation. Fas initiates apoptosis by binding to its surface receptor Fas as a consequence there is sequential activation of caspases-3 and release of cytochrome C from mitochondria which causes cellular degradation and death [25]. This neurological apoptosis causes a decrease in the thickness of the molecular layer Purkinje cell layer and internal granular layer [26]. Thus leading to a decrease in the cerebello cortical gray matter this is in accordance with the observations of our study also many studies conducted on the detrimental effect of lithium carbonate in Albino rats record the same results this is in agreement with Tathagat [27] (2011) and Kandovich-Bellin O, (2009) [28].

The results of our study are also in agreement with Bhalla et al.,(2007), they in their study had recorded that Lithium intoxication causes an increase imbalance in antioxidant enzymes which are superoxide dismutase (SOD), Catalase (CAT) and glutathione synthetase (GST), [29] there by leading to excessive generation of free radicals hence resulting in enhanced oxidative stress.[30] Increased oxidative stress leads to cell damage and cell death. [31] the magnitude of atrophy was highest in cerebellum[32]

CONCLUSION

The present suggest that chronic lithium carbonate ingestion causes highly significant deterioration of cerebello cortical tissue and its used should be monitored carefully.

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

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Causes of Acute Renal Failure: An Etiological Perspective Study

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ABSTRACT

Objective: To look into the causes of acute renal failure in this area so that preventive strategy can be designed.
Study Design: Observational study.
Place and Duration of Study: This study was carried out in Medical Outdoors, District Teaching Hospitals, Ghazi Khan Medical College, DG Khan and Khairpur Medical College, Khairpur Mir's from June 2013 to May 2014.
Materials and Methods: A total of 100 patients of acute renal failure were included in the study.
Results: There were 64 (64%) males and 36 (36%) females with ratio of 1.7:1. 60% patients in the younger age group and age range was 10-70 years. Nausea and vomiting were commonest symptoms in 92% of the patients while 88% patients were oliguric. All patients had tachycardia while 38% had volume over load. Blood urea was more than 100 mg/100 ml in 92% of patients. ARF because of pure medical reasons were seen in 48% of patients while surgical and pregnancy related problems were found in 26% each.
Conclusion: Early referral, identification and treatment of pre-renal factor, good perinatal care and cautious therapeutic decisions can substantially bring down the incidence of acute renal failure.
Key words: Oliguric, Hypertension, Perinatal.

INTRODUCTION

Acute renal failure (ARF) is characterized by an acute and usually reversible deterioration of kidney function that develops over a period of days or weeks and results in uremia. A marked reduction in urinary volume is usual, but not invariable. 10 to 20% of the patients of acute renal failure are non-oliguric, a relatively happy group.[1]

Acute renal failure is one of the most common organ failures in hospital practice and is a very challenging emergency seen in medical, surgical and obstetrical practice. Although acute renal failure is potentially reversible but carries a mortality of 40-50%.[2] Moreover, acute renal failure is associated with a very high mortality despite advances made in dialysis therapy as well as care of critically ill patients. Although the reasons are poorly understood but it has been attributed to increasing number of elderly patients developing acute renal failure.[3]

MATERIALS AND METHODS

This study was carried out in Medical Outdoors, District Teaching Hospitals, Ghazi Khan Medical College, DG Khan and Khairpur Medical College, Khairpur Mir;s from June 2013 to May 2014. A total of 100 patients of acute renal failure were included in the study.

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RESULTS

Out of 100 patients 64 (64%) were male and 36 (36%) were female. Male to female ration was 1.7:1. Maximum number of patients were seen between the age of 21-30 years (Table 1). Nausea and vomiting were the commonest symptoms in 92% of the patients while 88% patients were oliguric as shown in table 2. All patients had tachycardia while 39% had volume over load, 22% were volume depleted and 40% patients were euvolumic (Table 3). Blood urea was more than 100 mg/100 ml in 92 patients and 28 patients were having more than 200 mg/100 ml of blood urea (Table 4). Acute renal failure because of pure medical reasons were seen in 48% of patients followed by surgical and pregnancy related problems as shown in table 5.

Table No.1: Age distribution (n=100)

Age (yrs)	No. of cases`	Percentage
10-20	6	6.0
21-30	30	30.0
31-40	24	24.0
41-50	12	12.0
51-60	12	12.0
61-70	16	16.0

Table No.2: Clinical features Symptoms (n=100)

Symptoms	No. of cases	%age
Nausea and vomiting	92	92.0
Oliguric	88	88.
0non-oliguric	6	6.0
Anuric	6	6.0
Shortness of breath	66	66.0

Table No.3: Clinical features signs (n=100)

0Signs	No. of cases	Percentage
Tachycardia	100	100.0
Edematous	38	38.0
Volume overload	38	38.0
Volume depleted	22	22.0
Euvolumic	40	40.0

Table No.4: Laboratory findings (n=100)

Findings	Cases	%age
Blood urea 100 mg/100 ml	92	92.0
Blood urea 200 mg/100 ml	28	28.0
S. creatinine 2-6 mg	30	30.0
S. creatinine >6 mg	70	70.0
Low sodium	60	60.0
Increased potassium	30	30.0
ECG showing hyperkalemia	18	18.0
Low calcium	62	62.0
Pulmonary edema on X-ray chest	20	20.0

Table No.5: Acute renal failure (n=100)

Acute renal failure	No. of cases	Percentage
Pure medically related	48	48.0
Surgically related	26	26.0
Pregnancy related	26	26.0

DISCUSSION

Prevalence of ARF in hospital practice is appallingly high. Unfortunately, no reliable statistics about acute renal failure in Pakistan are available hence it is difficult to measure the magnitude of this problem. A study reveals a figure of around 5% acute renal failure of all hospital admissions and every third patient in intensive care unit was having ARF.[4] Another study reported that out of 2000 hospital admissions 5% were having acute renal failure. These are the large hospital studies but the incidence of ARF in community is at least twice as high the incidence reported from renal unit based study.[5]

Most of the acute renal failure patients in this study had pure medical reasons 48% while surgically related and pregnancy related admissions were 26$ each. This is in contrast to the western studies. A study showed that 60% of all the patients of acute renal failure came with history of trauma and 40% had medical and pregnancy related reasons while 50% of all the patients of ARF had some iatrogenic condition.[6] Our data show that 74% of all cases of ARF are due to medical and pregnancy related problem. This is a significant divergence from the above study however, another study reveals that the sepsis accounted for 38.3%, pregnancy related ARF was seen in 25.7%, haemorrhage in 10.3%, acute GN in 4.6%, obstructive uropathy in 3.4%, nephrotoxic and other poisoning 8.5% of all patients.[7]

In our present study, ARF due to acute GN was seen in 8% of the patients. A study quoted that 7% of all patients of acute renal failure were having glomerulonephritis.[8] Another study reported acute glomerulohephritis in 4.6% of the cases.[7] It is reported in a study that nephrotoxic drugs (particularly NSAIDS and aminoglycosides) were responsible in 13% of all hospital acquired ARF. This is in contrast to the studies reporting higher incidence of nephrotoxic drugs induced acute renal failure.[9,10]

Analysis of the case record of these 100 patients shows that 58 patients had pre-renal element as the initiating event of ARF but many times more than one etiological factor is responsible. In a study, 600 cases of ARF because of acute tubular necrosis were analyzed which showed that about half of the cases had more than single insult to the kidney function[11]. Another study revealed that 55% of all patients of ARF had pre-renal elemt[8]. However, it is found that 40-80% of all cases of acute renal failure had pre-renal reasons.[10]

Pregnancy related acute renal failure accounted for 26% patients. These figures are very frightening and quite high as compared with other study[7]. In the developed world, the incidence of pregnancy related ARF has substantially come down as reported by various observers. In a report, the incidence of pregnancy related ARF fell from 40% to 4.5%.[12] Early recognition of ARF with prompt therapy of reversible cases lead to more favourable outcomes for both gravid and fetus.[13] A Pakistani study reported that the incidence of pregnancy related ARF is much higher than reported in literature and 50% of their patients did not show any recovery in kidney function.[14]

CONCLUSION

Early referral, identification and treatment of pre-renal factor, good perinatal care and cautious therapeutic decisions can substantially bring down the incidence of acute renal failure.

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

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Original Article

Frequency and Outcome of Diabetic Ketoacidosis in Newly Diagnosed Type-1 Diabetic Children

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ABSTRACT

Objective: To determine the frequency and outcome (mortality) of DKA in newly diagnosed cases of T1DM of one to 15 years of age.

Study Design: Cross sectional study

Place and Duration of Study: This study was carried out at the Pediatrics Unit-I, Bahawal Victoria hospital Bahawalpur from 1st January 2011 to 30th March 2014.

Materials and Methods: The study was conducted on newly diagnosed cases of T1DM with or without DKA in children of one to 15 years of age admitting in pediatrics unit-I. The children with DKA were managed in the Pediatric Intensive Care Unit according to the standard DKA protocol of International Society of Pediatric and Adolescent Diabetes. Patients were examined at 96 hours after admission to see the outcome in term of death and survival. The data about the age, sex, severity of the disease and outcome was collected.

Results: There were 65 cases of T1DM in the study; 60% were males. Out of 65 cases of T1DM 56 were cases of DKA; 59% were male. The frequency of DKA was 86.15%. The frequency of DKA among males and females was 84.61% and 88.46% respectively but the difference was statistically insignificant. Out of 56 cases of DKA, 25% were mild in severity, 32.14% moderate and 42.86% severe. The case fatality in DKA was 5.36%. The mortality was only among severe form of DKA.

Conclusion: DKA is common among TIDM with mortality among severe cases of DKA.

Key Words: Type 1 Diabetes Mellitus, Diabetic Ketoacidosis, Outcome; Mortality

INTRODUCTION

Type 1 diabetes mellitus (T1DM), one of the most common chronic diseases in childhood, is caused by insulin deficiency following destruction of the insulin-producing pancreatic beta cells. The incidence of childhood T1DM varies worldwide but is rising rapidly[1]. Its incidence in Pakistan is about 1/100000 per year[2].

The most life threatening acute complication of T1DM is diabetic ketoacidosis (DKA) which is characterized by the triad of hyperglycemia, acidosis and ketosis in the presence of low levels of insulin. It is the leading cause of mortality in children with T1DM[3,4] and is associated with increased morbidity and healthcare expenditure.

The frequency of DKA at diagnosis ranges from 12.8% to 80%, with highest frequencies in the United Arab Emirates, Saudi Arabia and Romania, and the lowest in Sweden, the Slovak Republic and Canada[5]. The mortality varies from 0%-11.7%[6,7,8,9].

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DKA is one of the major neglected health issues in Pakistan. There is very little data available on frequency and outcome of DKA in children with T1DM in Pakistan. The study conducted at the Aga Khan University Hospital, Karachi showed 3.4% mortality in DKA[10]. There is no study conducted in this area on frequency and outcome of DKA in children.

So it was planned to conduct this study to see the frequency and outcome of DKA so that some practical recommendations could be provided for early detection of DKA and subsequent better management to reduce morbidity and mortality in children with DKA in Pakistan.

The objective of this study is to determine the frequency and outcome (mortality) of DKA in newly diagnosed cases of T1DM of one to 15 years of age.

MATERIALS AND METHODS

This cross sectional study was conducted on newly diagnosed cases of T1DM with or without DKA in children of one to 15 years of age admitting in pediatrics unit-I, Bahawal Victoria hospital Bahawalpur from 1st January 2011 to 30th March 2014. The verbal consent from the parents/guardian was taken.

A diagnosis of T1DM was made on one of the three glucose abnormalities that might need to be confirmed

by repeat testing[11]:

1. Fasting plasma glucose concentration ≥126 mg/dL,

2. A random plasma glucose ≥200 mg/dL with symptoms of hyperglycemia (polyuria, polydipsia and loss of weight),

3. An abnormal oral glucose tolerance test (OGTT) with a 2-hour postprandial plasma glucose concentration ≥200 mg/dL.

The children having age more than 15 years or less than one year or known case of T1DM or newly diagnosed case of diabetes with initial management in some other center, case of diabetes having obesity, child with acanthosis nigricans, hypertension, or dyslipidemia or hyperglycemia secondary to steroids, renal failure, sepsis or poisoning, child with co-morbid conditions like valvular heart disease, chronic liver disease and pulmonary disease or child having family history of diabetes mellitus were excluded from the study.

The biochemical criteria for the diagnosis of DKA[12] were: hyperglycemia (plasma glucose > 200mg/dL), venous pH <7.3 or bicarbonate <15mmol/L, and the presence of ketonemia or Ketonuria. The severity of DKA was categorized into mild (PH between 7.2 to 7.3 and HCO_3 between 11 to 15 meq/L), moderate (PH between 7.0 to 7.1 and HCO_3 between 6 to 10 meq/L) and severe (PH <7 and HCO3 ≤5 meq/L). The outcome was measured in term of mortality during first 96 hours of hospital admission.

The children with DKA were managed in the Pediatric Intensive Care Unit according to the standard DKA protocol of ISPAD (International Society of Pediatric and Adolescent Diabetes). Patients were examined by researcher herself at 96 hours after admission to see the outcome in term of death and survival. The data about the age, sex, severity of the disease and outcome was collected.

The data was entered and analyzed by using computer software SPSS version-14. The qualitative data was calculated as percentages and compared with Chi square test. P value <0.05 was be taken as significant.

RESULTS

There were 65 cases of T1 DM in the study; 39 (60%) males and 26 (40%) were females. There were 56 cases of DKA, 33 (59%) were male and 23 (41%) were females.

Out of 65 children were admitted 56 were in the DKA giving frequency of 86.15%. The frequency of DKA among males and females was 84.61% and 88.46% respectively but this difference in frequency was statistically insignificant (Table-I). The frequency of DKA among children <8 years and ≥8 years of age was 85.71% and 86.36% respectively but the difference was statistically insignificant (Table-I).

Out of 56 cases of DKA, 14 (25%) were mild in severity, 18 (32.14%) moderate and 24 (42.86%) were severe.

The case fatality rate in DKA was 5.36% (Table-2). The case fatality among males and females DKA cases was 3.03% and 8.7% respectively but this difference was statistically insignificant (Table-II). The case fatality among <8 years and ≥8 years DKA cases was 5.55% and 5.26% respectively but this difference was statistically insignificant (Table-II).

The mortality among severe form of DKA was 12.5% while there was no mortality among cases of mild and moderate form of DKA but this difference was statistically insignificant (Table-2).

Table No.I: Frequency of DKA in relation with Age and Sex

Characteristic	Total cases	Cases with DKA	Frequency of DKA	P value
SEX				
Male	39	33	84.61%	
Female	26	23	88.46%	0.7307
AGE				
<8 years	21	18	85.71%	1.0000
≥8 years	44	38	86.36%	
Total	65	56	86.15%	

Table No.2: Outcome of DKA

Characteristic	Total cases of DKA	Deaths with DKA	Case fatality	P value
SEX				
Male	33	1	3.03%	0.5619
Female	23	2	8.7%	
AGE				
<8 years	18	1	5.55%	1.0000
≥8 years	38	2	5.26%	
SEVERITY				
Mild	14	0	0%	
Moderate	18	0	0%	0.12085
Severe	24	3	12.5%	
Total	56	3	5.36%	

DISCUSSION

The available studies done on DKA in TIDM did not reveal uniform results. There were 60% males in this study while Ugege O et al 2013[13] showed male to female ratio 1:1 in T1DM. The reason may be male sex preference in our society.

The frequency of children admitted in the DKA was 86.15% in this study which was higher than any other study available. Onyiriuka AN et al 2013[7] showed that 77.1%, Ugege O et al 2013[13] 62.5%, Choleau C et al 2014[14] 43.9%, Fritsch M et al 2013[15] 37.2%, Klingensmith GJ et al 2013[16] 34%, Ješić MD et al 2013[17] 32.9%, Jefferies C et al 2015[18] 27% while Razavi Z 2010[19] showed 24% children were having DKA at the time of admission.

This study showed that 59% of cases of DKA were male and 41% females. The study done by Syed M et al 2011[10] showed that 66% cases of DKA were males while the study conducted by Lone SW et al 2010[20] showed female dominance i.e. 59.8% cases of DKA were females. The study done by Ugege O et al 2013[13] showed 60% of DKA were males while Kanwal SK et al 2012[21] and Klingensmith GJ et al 2013[16] showed equal sex distribution. The study done by Jefferies C et al 2015[18] showed 48%, Onyiriuka AN et al 2013[7] showed 40.5% and Razavi Z 2010[19] showed 39.6% of patient with DKA were males.

The frequency of DKA among children <8 years and ≥8 years of age was 85.71% and 86.36% respectively but the difference was statistically insignificant. Lone SW et al 2010[20] showed that 61% cases of DKA were >10 years of age. Jefferies C et al 2015[18] showed that increasing age at diagnosis was associated with greater likelihood of DKA at presentation (p = 0.025). Ugege O et al 2013[13] showed no patient of DKA was less than 8 years. Fritsch M et al 2013[15] showed that frequency of DKA was negatively associated with age at onset.

As for the severity of DKA was concerned, 42.86% were severe in this study. Kanwal SK et al 2012[21] showed that nearly two third presented with severe DKA. Razavi Z 2010[19] observed severe DKA in 54.5%, Jefferies C et al 2015[18] in 26%, Syed M et al 2011[10] in 20.5%, Choleau C et al 2014[14] in 14.8%, Fritsch M et al 2013[15] in 11.2% and Ješić MD et al 2013[17] in 9.6% cases.

The case fatality rate of DKA was 5.36% in this study. Kanwal SK et al 2012[21] showed that 12.72% had fatal outcome. Syed M et al 2011[10] showed 3.4% mortality. Lone SW et al 2010[20] showed no mortality. Onyiriuka AN et al 2013[7], Ugege O et al 2013[13], Razavi Z 2010[19] showed no mortality.

All mortalities were among severe form of DKA in this study. Syed M et al 2011[10] and Kanwal SK et al 2012[21] also gave the same results.

The results of this study are not the same as of other studies. The reasons of this difference might be due to the study design, selection of age group, type of diabetes mellitus included for the study, level of care, early diagnosis and racial differences. So multicenter study is needed to know the effect of these factors on frequency and outcome[5].

CONCLUSION

DKA is common among TIDM with mortality among severe cases of DKA.

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

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Original Article

Restorative Material of Choice for A Moderately Sized Class I Cavity in a Lower Permanent Molar

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ABSTRACT

Objective: To study dentist related factors affecting choice of restorative material in a moderately sized, simple class I cavity on a permanent molar.

Study Design: Cross sectional / descriptive study

Place and Duration of the Study: This study was carried out at Jinnah Medical and Dental College between February 2015 to July 2015

Materials and Methods: Dentists from public and private sectors were requested to respond to a self administered questionnaire regarding their choice of restorative material for a moderately sized class I cavity in a permanent molar.

Results: 66%, 54% and 16% of the dentists graduating in the years 2011-2015, 2006-2010 and 2001-2005 respectively chose amalgam. Whereas, 31%, 35% and &73% graduating in the same years preferred composite. 38% of the dentists practicing privately and 69% of dentists working in institutional setup selected amalgam.66% of female dentists selected amalgam and 30% chose composite. In contrast, 43% of male dentist selected composite and 44% chose amalgam.

Conclusion: The dependable blend of enduring service of amalgam with its cost effectiveness makes amalgam a better choice for posterior teeth in our settings. (Pakistan)

Key Words: Class I cavity, amalgam, composite, restorative material, choice

INTRODUCTION

One of the major reasons that patients present to the Dental OPD is the restoration of cavitated lesions. The size of the cavity may range from small to large with extensive loss of tooth structure. The location of the lesion may also vary. G.J. Mount defines a moderately sized lesion as having sufficient sound tooth structure that can maintain integrity of the remaining crown and accept occlusal loads. He calls this a size 2 cavity. According to his site and size classification, a moderate sized cavity on pits and fissures of a lower molar would be a site1 size 2 classification.[1]

The choice of restorative material depends on various factors including dentist related factors. These factors were identified from the literature[2,3].

Two most preferred direct restorative materials for posterior restorations include amalgam and resin composite. The durability of amalgam restorations is twofold higher than composite. This could be due to the certain de-merits of composite which include

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polymerization shrinkage, deficient marginal adaptation, low wear resistance, difficulty in achieving proper proximal contour leading to food impaction, inadequate condensation of composite at the base of the cavity.[4,5] However, there are certain limitations of amalgam as well loss of tooth structure in order to gain retention of the restoration and cutting through the marginal ridges weakens the remaining tooth structure, increasing the likelihood of fracture of remaining tooth substance (mostly buccal and lingual surfaces). Moreover, amalgam does not adhere to the tooth structure. Despite the disadvantages, replacing amalgam with resin-composites is not at all solution to the problem.[6]

The objective of the current study is to determine the dentists related factors that affect the choice of restorative material in a moderately sized class I cavity in permanent first molar.

MATERIALS AND METHODS

This is a cross-sectional descriptive survey. 377 Dentists from public and private sectors were requested to respond to a self administered questionnaire regarding their choice of restorative material for a moderately sized class I in a permanent molar. First

section of the questionnaire inquired about the respondents demographic data and the second section included questions based on type of practice, year of graduation and the choice of restorative material.

RESULTS

When selection of material was compared with level of experience of the dentist, 66% dentists graduating in the years 2011-2015 selected amalgam and 31% of dentists graduating in the same year selected composite. 54% of dentists graduating in year 2006-2010, however chose amalgam while 35% chose composite. 16% of dentists graduating in year 2001-2005 chose amalgam whereas 73% chose composite.

38% of dentists practicing privately chose amalgam while 49% chose composite. On the other hand 69% of dentists working in institutional setup preferred amalgam and 27% selected composite. Among dentists who worked in both setups 45% selected amalgam and 43% selected composite.

66% of female dentist preferred amalgam over composite for moderately sized Class I occlusal carious lesions. A smaller proportion 30% however, chose composite. In contrast, 43% of male dentist chose composite over amalgam while 44% chose amalgam over composite.

DISCUSSION

Dental amalgam has served as an outstanding restorative material for several years, in spite of periods of debate. The discussion to fill amalgam or not in dentistry is very old. Though, with the availability of composite resins the dispute in literature appears to be shifting towards indications of replacement of amalgam.[7]

In a web-based survey Rosenstiel found out that amalgam restorations were among those restorations that could survive for more than 20 years[8]. Bharti etal have suggested that if economics becomes the reason for choice of restorative material, amalgam can be considered the material of choice.[9,10] Nascimento in assessing dentists' choice of restorative material for posterior teeth found that composite resin was considered the first choice.[11]

In the current study 38% of dentists practicing privately and 69% of dentists working in institutional setup preferred amalgam. In US and other countries, dental institutes are still educating about the contra-indications for using composite in posterior teeth[12], and contemplating amalgam use for posterior teeth[13]. Not only that, the practitioners also prefers amalgam for posterior restorations.[14] In a local study done in Lahore, Ahmad and colleagues found out that class I tooth preparations were mostly restored with amalgam (twice that of resin composite) followed by resin composite, Glassionomers/Cermet and Compomer[15]. Interestingly, despite the decline in the use of amalgam in some

institutes it is still accepted as the best choice for restoring molars and premolars.[16]

A Brazilian study found out that the use for amalgam increased with years of experience. Beachle also found out that dentists who graduated after 1980 were slightly more inclined towards composite restorations. Kopperrd concluded in his study that young dentist prefer to conserve the tooth structure and hence their material of choice is composite.[17] This is in contrast with the current study in which 66% of the dentists graduating after 2010 preferred amalgam whereas only 16% of the dentists who graduated in year 2001-2005 chose amlagam. The reason appears to be related to economics, and longevity of restoration as still being focused by some institutions.

Parolo et al and Beachle concluded in their study that for both direct and indirect restorations, tooth colored restorations were selected more frequently than non tooth colored restorations. Beachle also found out that even though female dentists indicated aesthetic restorations slightly greater than male dentists, gender based selection of restorative material was not statistically significant. Advancement in composites, improved training over time, curricular revisions and most of all, increasing demands for aesthetic from patients, may have led to a shift towards preferring composites for moderately sized class I restorations.[19,20] On the contrary, in our study 66% of the female dentist selected amalgam and 30% chose composite.

CONCLUSION

The dependable blend of enduring service of amalgam with its cost effectiveness makes amalgam a better choice for posterior teeth in our settings. (Pakistan)

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

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Firearm Fatalities in Rural Setting: Autopsy Based Study at Tehsil Headquarter Hospital

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ABSTRACT

Objectives: Present study was conducted to find out the incidence, pattern and demographic characteristics of the victims died of firearm injuries brought for Medico legal Autopsy at Tehsil Headquarter Hospital located in the suburbs of Punjab, Pakistan and to study the parameters of age, gender, number and site of injuries on the body of those victims.

Study Design: Descriptive study

Place and Duration of Study: This study was carried out at Tehsil Headquarter Hospital Gojra, District Toba Tek Singh, Punjab Pakistan during the period of two years i.e. 1st January 2009 to 31st December, 2010.

Materials and Methods: All the victims of unnatural deaths brought for Medico legal Autopsy to Government Eye-cum General Hospital (Tehsil Headquarter Hospital) Gojra District Toba Tek Singh were studied in detail. The finding were tabulated, analyzed & compared with those of other studies conducted in different areas of Pakistan as well as other countries.

Results: Out of the total 110 unnatural deaths, 83 (75.45%) were males and 27 (24.55%) females. Sixty five victims of age range 21-40 years constituted 59.09% of the death toll followed by 14 (12.73%) and 13 (11.82%) cases belonging to 2nd & 5th decades of life respectively. Firearms remained the most common modality to kill 52 (47.27%) victims including 42 (80.77%) males and 10 (19.23%) females giving a male to female ratio of 4:1. Out of the total 52 victims of firearms, 67.30% belonged to rural areas while 32.70% were residents of suburbs. Thirty four victims of firearms, with the age range of 21-40 years constituted the death toll of 65.38%. The most common site of injury was neck & chest involving 57.70% victims. The fatal firearm injuries on the head were noted in 17.30% dead bodies whereas extremities were involved only in 7.70% cases.

Conclusion: The young males aged between 21-40 years were commonly involved in the fatalities resulting from firearms in rural setting belonging to Tehsil Gojra of Punjab. The situation is alarming & eye opener for the law enforcing agencies. To prevent such killings, there should be combined effort from all sections of the society. Appropriate steps should be taken for control of the extremism, socio-economical development of the area & proper employment facility for the youth. Concrete efforts for prevention need to be initiated through implementation of the rule of law, strict control on the firearms, as well as education and awareness among rural / urban population.

Key Words: Medico legal Autopsy, Firearms Fatalities, Homicide, Postmortem Examination

INTRODUCTION

The violent crimes with Firearms have become increasingly more common, reflecting the deterioration of law and order in our society. Firearms cause hundreds of thousands of deaths and more than one million injuries each year, as well as permanent physical and psychological damage, the destruction of families, lost productivity and the diversion of resources from basic health services [1].

According to a report of World Health Organization (WHO), approximately 100,000 deaths per year occurred due to gun violence; the suicide rate due to

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firearms is higher (about 70%) in high income countries, whereas in middle and low income countries,

the guns are responsible for most of homicides (about 75% and 90%, respectively), with the United States and Brazil both having alarmingly high rates of homicide [2]. Firearms are the leading means of homicide in some areas of high gun violence (80% of the total homicidal deaths in Colombia & 66% in South Africa). Guns are the major cause of all fatal injuries, much higher than traffic accidents[3]. Besides high death toll, firearm injuries cause significant morbidity, long-term disability for individuals, families, communities, and societies [4].

Although invention of the fire brought about a turning point to human civilization but on the other hand, invention of the firearm became a curse to this world. The primitive Matchlock system of firearm has been improved day by day leading to the semi automatic and automatic weapons which have become the dreadful killing tool used by human being [5]. Firearms are the main source of state power, as has been very aptly

epitomized by none other than Mao-Tung, the Great evolutionary leader of modern China as the "Political power flow from the barrel of the gun" [6]. The number of deaths caused by firearms has increased tremendously all over the World [7]. The death toll due to Guns violence is high in the United States but the condition is also not better in Europe, as for as the homicidal firearm deaths are concerned. The availability of firearms has been described as a cancer spreading across the developing world [8]. The Firearm injuries are frequently encountered and severely affect the criminal justice and healthcare systems. Studies from the United States and other developed countries reported that firearms are used in more than 60% of all homicides, over 25% of all assaults, more than 35% of all robberies, and almost 50% of all suicides [9].

In the United States the most frequent method of killing in cases of homicide and suicide is by firearms. More than 30,000 people die every year in the United States by firearm injuries [10]. The most frequent firearm used in England & Wales, are shotguns both in case of homicide and suicide, but firearm as a whole is less frequent method of killing than in many other countries [11]. The higher death toll due to firearms has also been documented by few authors in Italy [12] and Turkey [13]. Firearm fatalities in South Africa outnumber deaths from car accidents; and shootings are the leading cause of non-natural deaths in the general population [14]. The killings due to Firearms in Brazil is approximately four times higher than the rate in United States [15,16,17].

Guns took the lives of 31,076 Americans in homicidal, suicidal and unintentional shootings during 2010. This is the equivalent to more than 85 deaths each day and more than three deaths each hour [18].

Firearms related violence is commonly seen in poor urban areas in conjunction with gang violence, usually involving juveniles or young adults [19,20]. The situation in the developing world, including Pakistan, is worse where poverty, social inequality, unemployment and access to illegal weapons are common [21]. The use of locally made illegal firearms is very common in the developing countries due to the reason that these weapons are very cheap and readily available to the criminals [22]. These are manufactured without any fixed standards and the material used is of low quality [23].

Gunshot wounds are the most common cause of death, followed by stab wounds, blunt trauma and asphyxia [24]. Fatalities due to firearms have been on the rise in developing countries like ours, mainly due to waves of terrorism, surge of sectarian / religious clashes, unsafe borders with the neighboring countries, political violence & armed robberies [25]. The easy availability of highly sophisticated weapons, have also contributed to increase the rate of deaths by firearms. There is powerful correlation between the acquisition of guns and their use in suicides, murders, assaults, and unintentional deaths. As a result of the invention of

more advanced guns and availability at the global level, there has been dramatic increase in the death rates because of firearm injuries [9].

The number of violent deaths resulting due to firearms in Pakistan is not different from other low income countries. A few researchers in Pakistan documented the firearms as weapon of choice for killing the human being. A study from Dera Ismail Khan District has reported that out of the total 341 medico legal autopsies conducted over a period of two years 2007 & 2008, firearms were responsible for 59% of the homicidal deaths; while another study documented 86% firearm fatalities of the total autopsies conducted in Peshawar[26,27]. The risk factors associated with firearms are amendable; and if promptly documented and addressed could decrease the burden of violent deaths[28].

This study was aimed to know the incidence / pattern of firearm fatalities & to study the demographic profile of those victims autopsied at the rural settings of Punjab i.e. Govt. Eye-Cum General Hospital, (Tehsil Headquarter Hospital, Gojra) located in the suburbs of District Toba Tek Singh in Punjab.

MATERIALS AND METHODS

The current study was conducted by examination of the autopsy record of Tehsil Headquarter Hospital, Gojra District Toba Tek Singh for a period of two years from January, 2009 to December, 2010. Demographic profile of all the victims of unnatural deaths brought for medico legal autopsies were studied in general; whereas the cases of firearm fatalities particularly studied in detail. The reports were classified according to the manner of death while special emphasis was given to the homicidal deaths.

Among the autopsy reports of alleged homicide only those reports were selected which involved firearm as a means to homicide. These victims were classified according to age group, gender & body areas involved whereas; the incomplete reports were eliminated from study. Resulting data was tabulated and descriptive analysis was done.

RESULTS

Out of the total 110 autopsies conducted during the period of two years i.e. 1st January, 2009 to 31st December 2010, majority 83 (75.45%) were males and 27 (24.55%) Females (Table-1).

Sixty five victims of age range 21-40 years constituted (59.09%) of the death toll followed by Fourteen (12.73%) and Thirteen (11.82%) cases belonging to 2nd & 5th decades of life respectively. Whereas, 5 (4.54 %) victims belong to the ages of less than 10 years. (Table-2).

Firearms remained the most common modality to kill 52 (47.27%) victims. Nineteen (17.27%) persons became the victims of fast moving vehicles while

Fourteen (12.73%) were killed by sharp edged weapons. Blunt injuries were responsible for the death of Seven (6.36%) persons, Two (1.82%) were the victim of asphyxial death and only one out of total 110 cases died due to poisoning. In Eight (7.27%) cases, exact cause of death could not be determined (Table-3).

Table No.1:   Gender Distribution in Victims. (n=110)

Gender	No. of Victims	Percentage
Male	83	75.45%
Female	27	24.55%

Table No.2: Age Distribution in Victims. (n=110)

Age Group (Years)	No. of Victims	Percentage
Up to 10	5	4.54 %
11-20	14	12.73 %
21-30	45	40.91 %
31-40	20	18.18 %
41-50	13	11.82 %
51-60	10	9.09 %
61 & above	3	2.73 %
Total	**110**	**100 %**

Table No.3:   Weapons / Modalities involved in Medico- legal Deaths. (n=110)

Type of Weapon / Modalities	No. of Victims	Percentage
Firearm	52	47.27%
Blunt Weapon	7	6.36%
Sharp Edged Weapon	14	12.73%
Strangulation / Asphyxia	2	1.82%
Poisoning	1	0.91%
Burns / Suffocation	7	6.36%
Road Traffic Accidents	19	17.27%
Undetermined	8	7.27%
Total	**110**	**100 %**

Out of the total 52 victims of firearms, brought for medico legal autopsy during the two years study period (1st January, 2009 to 31st December, 2010), majority 42 (80.77%) were males and 10 (19.23%) females, giving a male to female ratio of four : one (Table-4).

Thirty five (67.30%) victims of firearms were inhabitants of rural area while seventeen (32.70%) persons belonged to the urban communities (Table-5).

Thirty four victims of age range 21-40 years constituted (65.38%) of the death toll resulting due to firearms followed by 8 (15.39%) and 4 (7.70%) cases belonging to 2nd & 5th decades of life respectively. Whereas, age of one (1.92%) victim of firearm was less than 10 year. Table-6.

Table No.4: Gender distribution in Victims of Firearm Fatalities. (n=52)

Gender	No. of Victims	Percentage
Male	42	80.77%
Female	10	19.23%

Table No.5: Community Character of the victims of fatal Firearm injuries. (n=52)

Residential Background	No. of Victims	Percentage
Rural	35	67.30%
Urban	17	32.70%

The regional distributions of injuries in firearm victims are given in Table-7. The most common site of injury was neck & chest, found over the body of thirty (57.70%) victims. The fatal firearm injuries were observed on head of 9 (17.30%) dead bodies & on abdomen of 6 (11.54%) victims whereas, upper / lower extremities were involved in 4 (7.70%) cases and injuries over the multiple regions were observed on the bodies of 3 (5.77%) victims of firearms.

Table No.6: Age distribution in Victims of firearms. (n=52)

Age Group (Years)	No. of Victims	Percentage
Up to 10	1	1.92%
11-20	8	15.39%
21-30	19	36.54%
31-40	15	28.84%
41-50	4	7.70%
51-60	3	5.77%
61-70	2	3.84%
Total	**52**	**100 %**

Table No.7: Regional distribution of the fatal firearm injuries on various body parts of victims (n=52)

Body Areas Involved	Frequency	Percentage
Head	9	17.30%
Neck &Chest	30	57.70%
Abdomen	6	11.53%
Extremities	4	7.70%
Multiple areas	3	5.77%
Total	**52**	**100%**

DISCUSSION

Injuries from gunshots are major problems that severely affect the victims, families, social setup, health care system and criminal justice. Such injuries are also common in urban as well as rural areas of Pakistan. Despite the magnitude of this problem, little is known about the epidemiologic characteristics of these injuries. The observations of this study are almost consistent with the study conducted at Dera Ismail Khan by Mujahid M et al[26], documented that firearms were responsible for killing 58.8% of victims out of the total homicides.

As the study was aimed to know the various epidemiological aspects related to the victims died of the fatal firearm injuries, the males were 4 times more likely to become victims of firearms as compared to females. Similar male predisposition of dying with firearms has been reported in almost all parts of the world [29,30].

The degree of this preponderance varies with the level of development of the region and the proactive role of males. The ratio is wider in countries like Pakistan, India, Turkey and Saudi Arabia,[31,32] but becomes somewhat narrower in the western parts of the hemisphere in places like Greece [33].

The age most prone to death by homicidal firearm weapon was 21-30 years (39.4 %). Studies in Turkey and India show a similar age of predilection [31,34]. This was in accordance with the studies by Pradip K et al, [35] Sachidananda et al [36] and Avneesh et al [37]. The high incidence of fatalities in above age group may be explained by the fact that they are more often required to deal with the outer world to pursuit their work.

The predisposition of rural society to violence can be explained by the generally low levels of education in this group, whereby they tend to breed enmity amongst themselves and their emotions tend to flare-up more rapidly.

Another explanation can be given that these groups of people are shorter tempered as compared to the both extreme age groups. However, studies in Africa, USA and Brazil showed an earlier age group most prone to such deaths.[19, 20]. Other studies conducted by some researchers in different parts of the world indicate that males between the ages of 15-30 years are the primary victims of homicide due to rifled weapons[38-40]. Both rural as well as urban populations have been documented more prone to be victims of firearms in different parts of the world depending on the socio demographic setup of the concerned populations. Thirty five (67.30%) of deaths in our study belonged to rural areas as compared to 17 (32.70%) cases of the urban citizens. This trend has been reported in few studies conducted in different areas of the United States. [41-43]

CONCLUSION

The victims of firearms in rural setting belonging to Tehsil Gojra of District Toba Tek Singh were commonly young people aged between 21-40 years. Concrete efforts for prevention need to be initiated by law enforcing agencies through strict control on the firearms, rule of law as well as education and awareness among rural / urban population. Strict checking for the illegal firearms should be done by law enforcement agencies and a system of surveillance for control of violence and street crimes may help in reducing the burden of deaths from firearms especially in the rural areas in order to prevent the young adults / only bread winners belonging to the low and middle income classes of the community.

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

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Genotype Distribution of Hepatitis C Virus in District Jacobabad, Sind, Pakistan and the Risk Factors Associated With it

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ABSTRACT

Objectives: Our study focused on HCV's genotype distribution in district Jacobabad and its associated risk factors.
Study Design: Cross sectional study
Place and Duration of Study: This study was carried out at a Private Clinic in Jacobabad, Sind, Pakistan from January 2013 to July 2013.
Materials and Methods: 153 samples were collected and their HCV status was confirmed by PCR.
Results: Out of 153 people, 100 were male and 53 females .Majority of the people were natives of Jacobabad city (90%).Genotype 3 was the most prevalent form (80%) with 3a being the most prevalent subtype.65% had a history of using unsterilized needle of which 3a had the highest association (87.4%).5.5% of the subjects had received transfusions during their lifetime, with type 1 and 4 genotype having a 50% history of it.69% had no history of sharing needles. 12.2% had a history of surgical intervention. Surgery had a 100% association with genotype 1. 2.5% had received dental treatments in the past, most evident with types 3 (65%).61.1% had visited their barber recently .6.3% people had ever received a tattoo, while majority of the people (92.8%) had no history of drug addiction. Reports of accidental pricks, sexual contacts or transmissions during delivery were negligible. History of tattooing, accidental pricks and transmission via sexual contact were mostly seen with type 3.No apparent cause of HCV was seen in 15%.
Conclusion: Unsterilized needles and visits to the barbers for shaving are a major risk factor for Hepatitis C in this region of Pakistan. This could be attributed to the lack of knowledge about these dangerous practices.
Key Words: HCV; genotype; Pakistan, Jacobabad, Sind; genotype distribution; risk factors

INTRODUCTION

Hepatitis is a global public health issue and according to WHO, around 3% of the world's population is infected with Hepatitis C virus (HCV), amounting to 170 million people.[1] Pakistan is said to have a high prevalence of the disease, around 5%, which amounts to 10 million people being infected with HCV.[2,3]

A few areas of Sind and Punjab are said to have even higher levels of Hepatitis C than the general prevalence seen in Pakistan.[4]

HCV has been classified into 6 major genotypes, from type 1-6. These genotypes differ in their response to therapy, transmission and the end result.

Currently studies about HCV genotype distribution in Pakistan are still in its early stages and those conducted primarily focus on the major cities of Pakistan.

Our study focuses on a rural area of Sind that has not been covered by any researcher so far. Through our

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study we collected 153 samples, all of whom had visited our clinic in Jacobabad, Sind. Since Jacobabad lies at the junction of 3 main provinces of Pakistan and the dire need of such studies in this region highlights the importance of our research for Pakistan and this region.

MATERIALS AND METHODS

This questionnaire based cross sectional study was conducted at a private clinic in Jacobabad, Sind, Pakistan. Sind, being the 3rd largest province area wise and the 2nd largest population, with Jacobabad lying near its junction with Punjab and Baluchistan.

The study period was of 6 months that is from January 2013 to July 2013. A total of 200 people visited us during this period, out of which 153 subjects who tested positive for HCV by PCR were included in our study (76.5%).PCR was carried out by a local laboratory in the city.

The included subjects were not only the local residences of Jacobabad city but also people visiting our clinic from nearby towns and villages of Punjab and Baluchistan as well. The visiting patients included men, women and children of all age groups and religion.

Our questionnaire was divided into 3 parts; the first one involving the person's demographic details, while the second one dealt with the current laboratory reports and investigations of the individual and the third one inquired about the risk factors.

Questions were asked and the questionnaires was filled out personally by the principal investigator himself and an informed consent was obtained prior to this.

Data entry and analysis was done using Statistical Program for Social Sciences Program (SPSS) version 17.0 and frequencies, cross tabulations and chi square test were obtained.

RESULTS

Among 153 people whom we questioned, 100 were male (65%) and 53 were females (35%). The ratio of male: female correspondents was 1.88. The mean age reported was 37.06 years with a standard deviation of 6.58.Majority of the people were natives from Jacobabad city (90 %) while a few were from Baluchistan (6%) and Punjab (4%).

The genotype frequency seen in our study had the given pattern: genotype 3 being the most prevalent with 80% followed by genotype 2 which was 15%, genotype 1 being 4% while the mixed genotype (1 & 4 and 3 & 4) making up the rest. The least frequent was genotype 4 (0%). (as shown in figure 1).In genotype 3, subtype 3a was the most prevalent form seen in around 50% of the patients followed by subtype 3b in 17% and subtype 3c in 0.5%.(Figure: I)

Out of 153 people who had tested positive for HCV, 65% the genotypes had a history of using unsterilized needle of which 3a had the highest association 87.4% which was followed by 3b with 74%.

5.5% of the subjects had received one or more transfusions during their lifetime, with those with type 1 and 4 genotype having a 50% history followed by type 2 with 34.6% and type 3 with 19.7%.Those with type 3 and 4 had no history.

69% responded no when asked about a history of sharing needles.12.2% of the correspondents had a history of surgical interventions. In our study surgery was mostly associated with type 1 genotype (100%) then type 2 genotype (73%) followed by type 3 (65%).while 2.5% had received dental treatments in the past. An association with dental treatments was most evident with types 3 (seen in 65% of the people who had type 3) and in 50% of those with type 2 genotype.

When asked about their visits to the barber, 61.4% had visited their barber recently, while 38.6% had responded no to this question.

Only 6.3% people having HCV had ever received a tattoo, while when asked about drug addiction, majority of the people (92.8%) had no such history. Tattooing in our study was mostly seen in type 3 (15.8%) followed by type 2 (15.4%)

Almost all of those who had tested positive for HCV had no history of accidental pricks (seen in 0.2% only) or of sexual contacts or transmission from mother to child during birth (0.8%). Accidental pricks in our study were mostly seen in type 3 (3.9%) and type 2 genotype (3.8%). Another interesting fact noted was that out of all the type 3 had the highest association of sexual contact (seen in 7.9%) followed by type 2 (3.8%) and type 1 n 4 that had no association. While a few cases had no apparent cause seen in 15%.(Figure 2: Main risk factors that our subjects were exposed to).

GENOTYPES AND THEIR PERCENTAGES
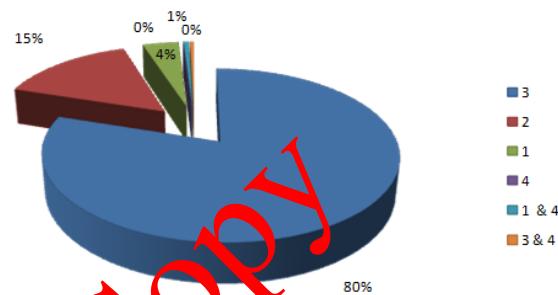
Figure No.1: Showing prevalence of different HCV's genotypes in Jacobabad, Sind, Pakistan
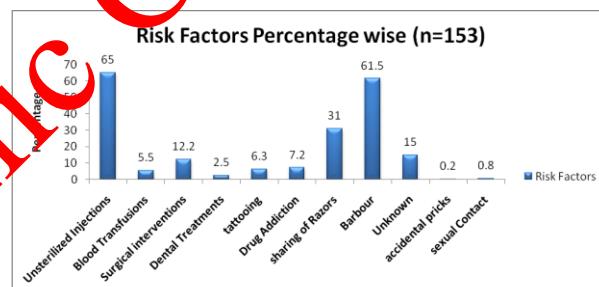
Figure No.2: The main risk factors that our subjects were exposed to

DISCUSSION

HCV which is a linear stranded RNA having positive polarity[5] was first identified in 1989 and belongs to the Flavi group of viruses. Hepatitis C is acquired through IV needle use, razors, sharing tooth brushes, sexual contact and from the mother to child during delivery. While acute form of hepatitis C is mainly asymptomatic, it is the chronic form that can leading to the hepato-cellular cancer and cirrhosis.[2]

Diagnosis of Hepatitis C is made by ELISA or PCR.[4]

According to Yasir et al the main cause of transmission of hepatitis C in Pakistan is armpit and facial shaving through barbers. A similar pattern is seen in our study with unsterilized needles and arm pit shaving being the main causes of transmission. Although Pakistanis were aware about HCV but knowledge about its risk factors still seem to be low. A study conducted at a clinic in Karachi, Pakistan showed that 61% found hepatitis C to

be a viral disease and 49% felt that needles and injections are vehicles for its transmission.[6]

Worldwide HCVs prevalence in blood donors is around 0.5-8% while in Pakistan there is 9% anti HCV positivity amongst professional blood donors, 4% for healthy family donors and 8% for voluntary blood donors. A history of blood transfusion was only seen in 5.5% of our patients who had HCV.

IV drug users have the highest risk of acquiring HCV (around 90%) as also seen in our research and was the main cause of HCV in our patient population (seen in 65%).Although HCV has been found in milk and saliva but transmission via breast milk hasn't been documented yet.[7]

HCV has been phylogenically been divided into 6 major genotypes. These different genotypes have different properties, treatment responses and outcome.[5]

HCV 1a and 1b are the main genotypes found in USA and European countries.[8,9] Japan mainly has type 1b[10] while genotype 4 is found mainly in Middle East and the north African countries.[11] Genotype 5 is prevalent in South African while genotype 6 in Hong Kong.[12,13]

South East Asia mostly has genotype 1 n 3. Sustained virology response is mainly predicted through HCV genotype and patients with different genotype respond differently to alpha interfon.[1]

Genotype 3 was the predominant genotype in Pakistan, occurring in the highest amount in all provinces of Pakistan followed by genotype 1 in Punjab while un-typable genotype in the rest of the provinces.[5] Genotype 3 was also the most prevalent form in our study, but genotype 2 came 2nd with type 1 being 3rd.

Studies have confirmed that the form of HCV genotype prevalent in Pakistan is type 3 (75-90%) with type 3a being the main one[2] and 86% of those infected with 3a in Pakistan were the ones who had a history of receiving multiple injections.[14]

Genotype 1a and 1b are transmitted via surgeries and dental procedures, a pattern seen in our research as well while genotype 4 is not prevalent in Pakistan and is also transmitted by surgeries.

In another study conducted by the department of zoology of Islamia College Peshawar in 2011, genotype 3 accounted for 79% of all genotypes with its rate in Punjab being 69%, Sind 77%, Khyber Pakhtunkhwa (KPK) 58% and 61% in Baluchistan. There was no difference in the HCV genotype with regards to the age and sex of the patient.[5]

In a study conducted in Baluchistan, Pakistan, 40 HCV seropositive samples from different locations in Baluchistan were selected and were genotyped. The results showed genotype 3a to be the most prevalent form.[2]

Idrees concluded that the only area of Pakistan where regional difference in genotype was observed was in the province of Baluchistan [14]

Genotype 3 being most prevalent in Pakistan does have its advantages as it has a shorter treatment duration along with it being less costly and its lack of side effects when compared to genotype 1.Genotype 1 has the 2nd highest frequency and it is along prevalent in China and Iran and may have entered Pakistan through the migration of people.[5]

Idrees also concluded in his study of 3351 samples of HCV genotype obtained from all four provinces that the frequency of genotype 1 is slowly increasing in Pakistan while genotype 3 frequency remains constant and would be in the coming decade or so be replaced by genotype 1.[14]

CONCLUSION

Since Hepatitis is a global public health issue and has a high prevalence in Pakistan, the general public should be made aware about its mode of transmission and its risk factors as the reuse of non sterilized syringes, poverty, lack of education, unscreened transfusions of blood, contaminated razors used by barbers are the main reasons aiding its spread inside Pakistan. Our study confirms genotype 3 and 3a to be the most prevalent genotype form and subtype seen in this region of Pakistan.

Unsterilized needles and visits to the barbers for shaving are a major risk factor for Hepatitis C in this region of Pakistan. This could be attributed to the lack of knowledge about this dangerous practice (using used syringes and contaminated blades for shaving) and local physicians and clinics in Jacobabad and adjoining areas trying to cut down on their costs while maximizing their profits.

Since studies on the distribution of Hepatitis C genotype among the Pakistani population, specially from the remote regions of Sind and Baluchistan are lacking, this research could be an important step in finding out the prevalence of Hepatitis C genotype along with its method of transmission amongst this population.

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

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Original Article

The Evaluation of the Changes in Blood Pressure of Patients During Tooth Extraction

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ABSTRACT

Objective: This study was conducted to evaluate the changes in blood pressure of hypertensive patients having dental extraction under a local anesthetic containing epinephrine.

Study Design: Cross-sectional descriptive and analytical study

Place and Duration of Study: This study was carried out at Jinnah Medical & Dental College (JMDC) from January 2015 to April 2015.

Materials and Methods: The data was collected from the patients visiting the Oral Surgery OPD of Jinnah Medical & Dental Colleges, Karachi. The study was conducted at Jinnah Medical and Dental College to evaluate the changes in blood pressure of patient with a known history of hypertension controlled using medications. All the patients underwent uncomplicated dental extraction. The blood pressure was recorded at three times: before the local anesthesia, 3 minutes post local anesthesia, and 3 minutes post extraction.

2 % Lidocaine with adrenaline 1:180,000 was used for local anesthesia. Careful administration of anesthesia was ensured to avoid direct injection into the bloodstream. In majority of cases only 2 anesthetic ampules were used (only two patient required 3 ampules). The data was stored in excel worksheet and was analyzed using SPSS.

Results: The total sample size was 122 patients seen in the Oral and maxillofacial surgery department of JMDC. There were 52 females and 70 males. Mean age was 46.17 ±18.26 years (range 25-78). The age was further divided into four groups;

Group 1: 25-34, Group 2: 35-44, Group 3: 45-54, Group 4: 55 and above. There was no significant change in diastolic and systolic blood pressure blood pressure at three time points. Paired sample T test was used, the only significant difference was in SBP before (SBP1) and after anesthesia (SBP2) (t= -2.28 p=0.045). No significant change noticed in the DBP values at DBP1, DBP2 and DBP3. Amongst the age group the significant variation in systolic blood pressure was seen in the age group 3 and 4.

Conclusion: This study was conducted to find out the changes in blood pressure of patients with a known history of hypertension controlled using medications. The study showed no significant changes in the observed parameters.

Key Words: Blood pressure changes, Hypertension, Local anesthesia with vasoconstrictor

INTRODUCTION

For successful dentistry achieving good-quality local anesthesia (LA) is a prerequisite. Local anesthesia acts by blocking the nerve conduction of both myelinated and unmyelinated nerve fibers. It is a reversible change and it slows down the depolarization phase, and decreases the influx of sodium ions.

Local anesthetic agents commonly used in dentistry is Lidocaine in combination with vasoconstrictors like Epinephrine.[1] Epinephrine is added in local anesthetic to reduce bleeding and increase its safety as lower anesthetic doses are required for effective anesthesia.[2,3,4] Physiological responses associated with local anesthetic solutions containing a vasoconstrictor include changes in heart rate and blood pressure.[5,6,7] Researchers observed a significant increase from 5 to 12 mmHg in the systolic blood pressure in patients submitted to root surface debridement without local anesthesia.[8,9] Use of epinephrine in patients with known history of CVS problems is controversial, although new research shows that using vasoconstrictor in local anesthesia appears to be safe and it also provide relief patient's pain and discomfort during dental treatment.[10,11]

This study was conducted to find out the changes in blood pressure of hypertensive patients having dental extraction under a local anesthetic containing epinephrine.

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MATERIALS AND METHODS

The study was conducted at Jinnah Medical and Dental College (JMDC) from January 2015 to April 2015.The study was conducted to evaluate the changes in blood pressure of patient with a known history of hypertension controlled using medications. A comprehensive history and clinical examination was performed to assess the health status . All patients had OPG done to evaluate the dental health status. All the patients underwent uncomplicated dental extraction. The blood pressure was recorded at three times: before the local anesthesia, 3 minutes post local anesthesia, and 3 minutes post extraction.2 % Lidocaine with adrenaline 1:180,000 was used for local anesthesia. Careful administration of anesthesia was ensured to avoid direct injection into the bloodstream. In majority of cases only 2 anesthetic ampules were used (only two patient required 3 ampules).The patients having controlled hypertension using medications, maximum systolic blood pressure of 140 mmHg, and maximum diastolic blood pressure of90 mmHg were included in the study. Consent was taken from all patients and the purpose of the study was explained. Patients underwent uncomplicated dental extraction. No premedication like anxiolytic was given to relax the patients. Patients were asked to take their routine medicine after breakfast on the day of extraction. Patients were instructed to avoid alcohol and smoking from the night prior to extraction. Mercury sphygmomanometer was used to record the blood pressure (BP). The blood pressure was recorded in sitting position on the right hand. For local anesthesia 2 % Lidocaine with adrenaline 1:180,000 was used. Infiltration along with inferior alveolar nerve block was used for lower molar extractions. Auto aspirating syringe was used to deliver anesthesia to avoid directly injecting the anesthesia into the bloodstream. In majority of cases only 2 anesthetic ampules were used (only two patient required 3 ampules).The data was stored in excel worksheet and was analyzed using SPSS.

RESULTS

The total sample size was 122 patients seen in the Oral and maxillofacial surgery department of JMDC. There were 52 females and 70 males. Mean age was 46.17 ±13.26 years (range 25-78). The age was further divided into four groups;

Group 1: 25-34, Group 2: 35-44, Group 3: 45-54, Group 4: 55 and above.

Gender Distribution
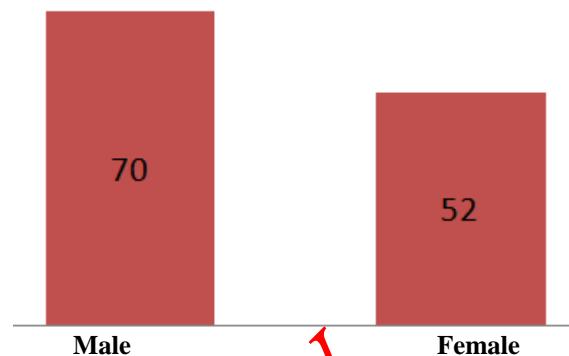
Age Group Distribution
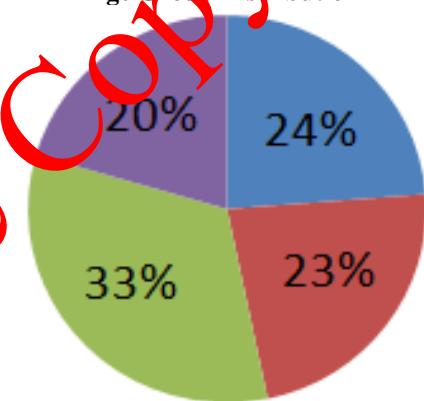
36% of the total patients were using antihypertensive drugs along with other drugs for other comorbidities. The most commonly used antihypertensive drug was Atenolol which accounted for 55% followed by angiotensin II receptor antagonists 35%, and about 10% were using calcium antagonists.

Table No.1: Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	SBP1 SBP2	-1.680	9.150	.828	-3.320	-.040	-2.028	121	.045

Table No.2: Paired Samples Test

		Paired Differences							
			Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean			Lower	Upper	t	df	

Pair 1	SBP1 SBP3	-.779	13.996	1.267	-3.287	1.730	-.615	121	.540

Comorbidities were present in 76.3% of the patients; the remaining 23 % had only hypertension. Type 2 diabetes mellitus and Ischemic heart disease were the most common comorbidities. 45/122patients were smokers. Regarding number of ampules in majority of cases only 2 anesthetic ampules were used (only two patient required 3 ampules). The reasons for extraction included; dental caries in 90 cases, periodontal problems in 14 cases, and combination in 18 cases.

Data showed no significant changes in diastolic and systolic blood pressure blood pressure at three time points. Paired sample T test was used, the only significant difference was in SBP before (SBP1) and after anesthesia (SBP2) (t=-2.28 p=0.045). No significant change noticed in the DBP values at DBP1, DBP2 and DBP3.Table1.

Those patients who required less than two anesthetic ampules showed a non-significant change in SBP between the first and third time points (i.e.,SBP1 and SBP3) (t= -0.615 p=0.0540). Table 2.

Amongst the age group the significant variation in systolic blood pressure was seen in the age group 3 and 4. Table 3.

Table No.3: Age-wise Mean BP

Age Group	SBP1	SBP2	SBP3
1	117.24	120.34	117.76
2	121.79	121.25	119.29
3	123.00	125.38	123.00
4	131.80	133.20	129.80

DISCUSSION

In literature many studies have investigated the blood pressure changes in the patients undergoing tooth extraction in local anesthetic injection with vasoconstrictor[12,13,14]. In our study there was no significant difference in diastolic and systolic blood pressures at three time points. The only significant difference noticed was in SBP before the procedure (SBP1) and after anesthesia (SBP2). There was no difference in diastolic blood pressure (DBP) at any point that is (DBP1, DBP2 and DBP3). In our study we used vasoconstrictor with the local anesthesia and it did not significantly affect the blood pressure similar findings were reported in the study conducted by Silvestre et al.[15]

The only significant finding was a slight increase in mean SBP before and after the anesthesia. This could be because of anxiety or discomfort.

CONCLUSION

This study was conducted to find out the changes in blood pressure of patients with a known history of hypertension controlled using medications. The study showed no significant changes in the observed parameters.

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

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When appropriate, may be included.

ACKNOWLEDGMENTS

List of all contributors who do not meet the criteria for Authorship, such as a person who provided purely technical help, writing assistance or department chair who provided only general support. Financial & Material support should be acknowledged.

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