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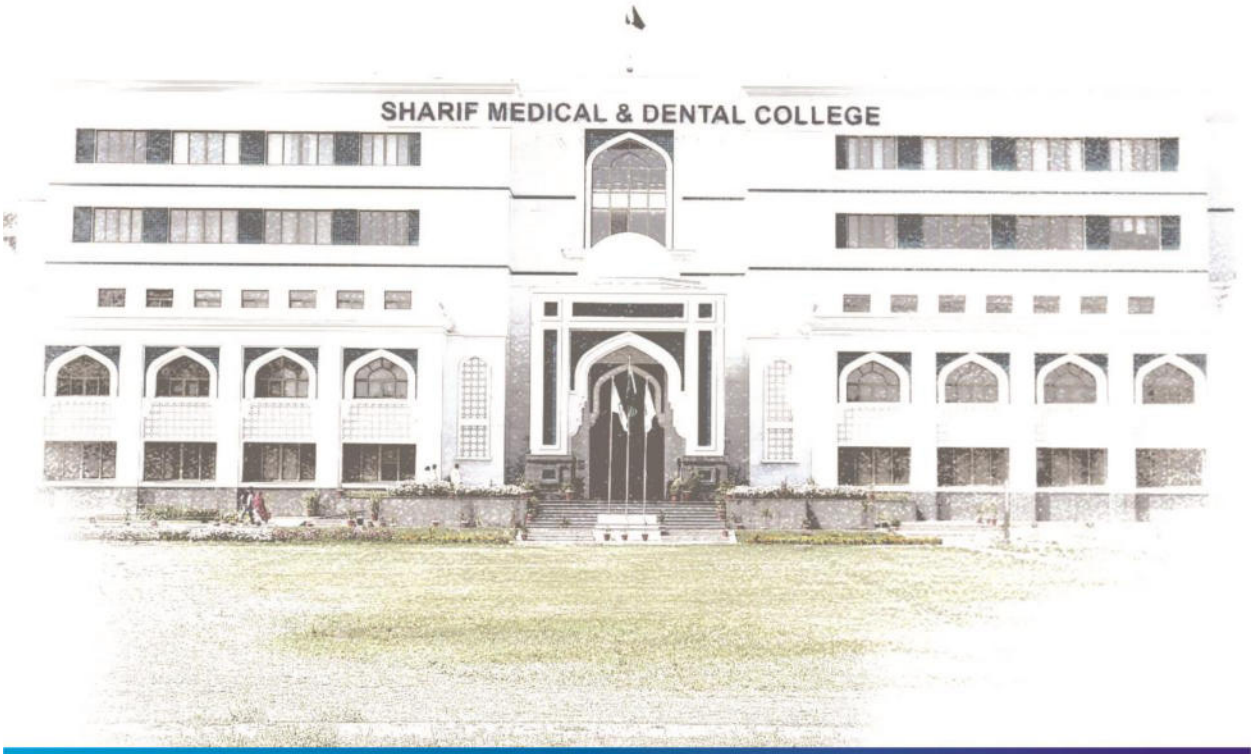

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Editorial

Aspiration of Foreign Bodies in Children

Zafar Ahmad

Foreign body aspiration in children is a serious medical problem, with clinical manifestations ranging from acute asphyxiation, resulting in anoxic cardiac arrest to insidious lung damage. Most of the time, this accident is unobserved. Five percent of paediatric deaths under 3 years occur due to this cause in developed countries and probably, the incidence is much more in developing countries. It is an easily preventable accident in small children. Unobserved aspiration of foreign bodies by small children especially less than three years is a global problem even today.[1] The male-to-female ratio as reported in medical literature is 2:1. Younger children are at the highest risk for accidental foreign body aspiration. This increased incidence has been attributed to several factors including the tendency to put small objects into their mouths, crying, shouting, running and playing with small objects in their mouths and absence of molars to chew certain foods adequately. According to different studies, 15% of foreign body aspirations occur among children older than 5 years of age.[7]

The most common eatables which are aspirated by small children are like popcorns, peanuts, fried lentils, fried nuts, raisins and grapes. The other items which can be aspirated by children are toy parts, crayons, pen tops, tacks, pins, nails, screws, bullets and casings. In Southeast Asian countries, pieces of betel nuts are other common foreign bodies. Small children pick up these objects and put them in their mouths or other older children put these items in the mouths of smaller children while the mothers are busy attending to their household affairs.[2]

These days, the incidence is on the increase as more working mothers have to leave their children in day care centers and it is a known fact that the day care personnel are at times not very vigilant.

The history of foreign body aspiration in children in most cases is not available for the reasons stated above.

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The clinical events depend on the size, shape and surface of aspirated foreign body and site of impaction in the respiratory tract. The more difficult cases are those in which aspiration is not witnessed, unobserved or are unrecognized and, therefore, is unsuspected. In these situations, the child may present with persistent or recurrent cough, wheezing, persistent or recurrent pneumonia, lung abscess, focal bronchiectasis or hemoptysis. Unexplained pulmonary pathologies in small children should have bronchoscopy done for suspected aspiration of foreign bodies.[3]

Apart from aspiration some foreign bodies may be ingested. Objects that travel past the esophagus generally do not cause symptoms, unless rare complications such as bowel perforation or obstruction occur. If the object passes into the stomach, the child is usually asymptomatic but may exhibit clinical manifestations if the esophagus was injured during transit of the object. Uncommon complications of objects that travel through the pylorus relate to bowel obstruction. Symptoms may include abdominal pain, distention, vomiting, and feeding intolerance. Bowel perforation is another rare but significant complication that is characterized by abdominal pain, distention, vomiting, and fever. Subacute or chronic complications of an esophageal foreign body may include damaged mucosa or strictures of the esophagus, decreased oral intake, failure to thrive, or recurrent aspiration pneumonia.[6]

The identification of a patient with an aspirated foreign body can be quite subtle. Often parents or attendants have not observed that a choking event has occurred, which is the initial and diagnostic symptom of aspiration of foreign bodies in small children. If the aspirated foreign body is not large enough to cause acute respiratory obstruction of the trachea with acute asphyxia and hypoxic cardiac arrest, it will pass down to smaller bronchi, and in these situations in later days, the child may present with persistent or recurrent cough, wheezing, persistent or recurrent pneumonia, lung abscess, focal bronchiectasis, or haemoptysis.

Standard radiographic examinations may not reveal the foreign body as 70 percent of aspirated foreign bodies is radiolucent.

The main diagnostic problem faced by the paediatrician in cases of unwitnessed radiolucent aspirated foreign

bodies in small children is when a child presents with recurrent migratory pulmonary infiltrates. Because many different pulmonary disorders clinically present in the same way, including cystic fibrosis, various immunodeficiency syndromes and congenital anomalies of respiratory tract; these very pathologies have to be excluded through investigations.

Most of the aspirated food particles are hygroscopic, they absorb moisture from the bronchial secretions and swell up and become friable and during their removal they fragment especially when metallic graspers are used for their extraction. Hence wire baskets (Dormia baskets) are safer and easy to use for their removal through the rigid/flexible bronchoscopes or laryngeal mask airway.[4]

Clinically, there are four scenarios in cases of aspiration of foreign bodies in children

A. The child has aspirated a foreign body which is either of the same diameter or bigger than the diameter of the larynx or trachea and the child gets acutely asphyxiated and develops hypoxic cardiac arrest. This is often diagnosed as unexplained sudden deaths in small children.

B. The second scenario is that the foreign body is smaller than the diameter of the larynx or trachea of the child and initially it produces choking sensation, this initial symptom is not usually witnessed and later passes distally where it gets lodged in the smaller bronchi. These very patients later on manifest the recurrent symptoms of chest infections, radiologically and clinically the symptoms and signs are those of atelectasis, pneumonia, obstructive emphysema of the segment, lobe or whole lung, due to partial obstruction of bronchi.

C. The third scenario is where the foreign body keeps on changing position (migratory), producing shifting pathologies in different parts of the lung parenchyma.

D. Unobserved aspiration of foreign bodies by small children pose a special problem as there is no history of observing by an adult of initial symptoms of choking, cough and cyanosis.[5]

The standard method of removing aspirated foreign bodies is with the rigid ventilating bronchoscope using a metallic grasper but the problem faced by the surgeon is that the foreign body disintegrates due to its hygroscopic swelling especially the peanuts and fried seed of vegetables or fruits. Hence it has to be removed piecemeal. It takes a long time to remove the whole of the foreign body, with its attended complications of hypoxia and bronchial mucosal damage by the metallic grasper and chemicals released by the foreign bodies.

We have adopted a safer method of removing aspirated foreign bodies in small children.

For removing the foreign bodies from the bronchial tree, constant communication, good cooperation and clear understanding between surgeon and anesthetist are essential.

The patient is anaesthetised without relaxation and ventilation of the patient is done through laryngeal mask airway. The patient is connected to the monitor, which constantly monitors oxygen level in blood, pulse rate and rhythm, blood pressure, and breathing rate. Latest versions of monitors even show the carbon dioxide level in the blood.

The following method is safe and is being practiced in most centers of the world.

Fiber optic flexible bronchoscope is passed through the laryngeal mask which is being used for administering anesthesia gases and a wire basket (Dormia catheter) is passed through the suction channel of the flexible bronchoscope; the foreign body is visualized and is engaged in the wire basket and the foreign body along with the fiber optic bronchoscope is removed. The laryngeal mask is replaced with an endotracheal tube, the bronchial tree is cleared of secretions through suction and the patient oxygenated. It takes a very short time and by entrapping the foreign body in the wire basket, it prevents fragmentation of hygroscopic items.

Referred by the paediatricians over the last ten years i.e. 1988 to 1998 we have removed about 124 foreign bodies from children aged 1 year to 5 years by this method with no complications. An experienced anaesthetist manages the patient during the procedure and if there is any slight evidence of hypoxia, the procedure is temporarily stopped to allow the anaesthetist to properly oxygenate the patient by passing an endotracheal tube.

Foreign body aspiration usually presents as an unwitnessed episode and a high index of suspicion by the surgeon, even in the absence of a positive history is necessary to prevent morbidity and mortality due to delay or misdiagnosis.

Bronchoscopy in children is now a safe procedure, bronchoscopy should be carried out in all cases where there is high degree of suspicion of aspiration of foreign bodies.[7]

Therefore keeping in mind, the risk of misdiagnosis of FB injuries due to nonspecific clinical presentation and the severity of complications to which a FB injury may be associated, it is essential to develop primary prevention strategies for foreign body injuries.

Educational programs should be carried out for parents and care takers to stress the importance that children eat food and play with toys that are appropriate for their age (e.g. avoiding nuts and seeds and, more generally, small round food items, as berries, in kids younger than 4 years of age, guaranteeing adult supervision when young children are playing or eating).

Primary prevention is also represented by the

involvement of manufacturers and consumer associations, providing strict regulation on manufacturing, packaging, quality control and commercialization of hazardous objects (particularly toys, magnets and batteries).

So, prevention is the best cure. Increasing public awareness is key to prevention of paediatric foreign body aspiration.

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Original Article

Dermatological Manifestations in Patients on Hemodialysis: Experience at Sharif Medical City Hospital

Roshina Anjum, Mohammad Saleem, Uzma Ihsan, Salman Tahir Shafi, Tahir Shafi

ABSTRACT

Objective: The objective of this study was to determine the frequency of dermatological manifestations in patients on hemodialysis at Sharif Medical City Hospital.

Methodology: A random sample of 50 patients, who were 18 years or older and had end stage renal disease on maintenance hemodialysis, were selected. Symptoms attributed to abnormal dermatological manifestations including pruritus, dry mouth and hair loss were inquired. Skin, oral cavity, hair and nails were examined after proper exposure by a qualified dermatologist.

Results: A total of 50 patients were included in the study. Mean age of patients was 43.5±13.7 years. Out of 50 patients, 16 (32%) were male and 34 (68%) were female. Mean number of dermatological abnormalities was 4.1±1.1 in all patients. Cutaneous, oral, nail and hair abnormalities were noticed , 20%, 50% and 42% of all patients respectively. Xerosis (58%), pigmentary changes (46%), pruritus (32%), cutaneous fungal infections (26%), acanthosis nigricans (38%), xerostomia (10%), half and half nails (26%), koilonychia (16%) and sparse body hair (20%) were the most common abnormalities. There was significant positive correlation between age of patients and number of dermatological manifestations (r=0.37, p 0.009).

Conclusion: Cutaneous and mucosal abnormalities were common in patients on hemodialysis. Older age was associated with higher number of abnormal findings.

Keywords: *Hemodialysis. End Stage Renal Disease. Xeroxes. Pruritus.*

INTRODUCTION

End stage renal disease (ESRD) is associated with a wide variety of skin manifestations that are caused either by underlying disease or uremia. Skin changes may vary from common conditions like xerosis, pruritus and hyperpigmentation to relatively uncommon conditions like acquired perforating dermatosis. Skin diseases have negative effect on physical and mental health of patients as they can cause anxiety, depression and affect quality of sleep in these patients.[1] The prevalence depends on the underlying systemic disease leading to ESRD, duration and severity of uremia. In the dialysis population, skin manifestations have a wide prevalence of 50 to 100%.[2] In local studies, frequency of dermatological manifestations was found to be 82-100%.[3-7]

The objective of this study was to determine the frequency of various dermatological abnormalities in hemodialysis patients at Sharif Medical City Hospital.

METHODOLOGY

The study was conducted at Department of Nephrology, Sharif Medical City Hospital. Study design was cross-sectional. A random sample of 50 patients, who were 18 years or older and had ESRD on maintenance hemodialysis, were selected. Study was approved by institutional review board. Informed consent was obtained from every patient. Patients' history and medical records were reviewed to obtain information on demographics, duration of dialysis, diabetes mellitus, hypertension and hepatitis C status. Symptoms attributed to abnormal dermatological manifestations including pruritus, dry mouth and hair loss were inquired. Skin, oral cavity, hair and nails were examined after proper exposure by a qualified dermatologist.

Continuous parametric variables were reported as mean ± standard deviation or median and interquartile range for non-parametric data; and categorical variables were expressed as percentages. Categorical variables were compared using the Chi-square test. Mean between two groups was compared using t-test. Linear correlation between two continuous variables was estimated using Pearson's correlation.All statistical analyses were performed using SPSS 20.0. For all tests, p-values <0.05 were considered statistically significant.

RESULTS

A total of 50 patients were included in the study. Mean age of patients was 43.5±13.7 years. Of all patients, 16 (32%) were male and 34 (68%) were female. Median duration on hemodialysis was 12.5 months (IQR 33 months). Out of all patients, 21 (42%) had diabetes mellitus, 33 (66%) had hypertension and 25 (50%) had hepatitis C. All patients were found to have at least one

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dermatological manifestation. Mean number of dermatological abnormalities was 4.1±1.1 in all patients. Frequency of abnormal skin findings is shown in Table 1. All patients had at least one isolated cutaneous manifestation. Xerosis was the most common abnormality found in these patients. Frequency of abnormal oral manifestations is shown in Table 2. Out of 50 patients, 10 (20%) had at least one oral mucosal manifestation. Xerostomia was the common abnormality. About 10% of all patients complained of xerostomia. Frequency of abnormal nail findings is shown in Table 3. Of all patients, 25 (50%) has at least one nail abnormality. Half and half nails was the most common abnormality noticed in 26% of all patients.

Table 4 depicts frequency of abnormal hair finding in these patients. Of all patients, 21 (42%) had at least one body hair abnormality. Spare body hair were noticed in 20% of all patients. There was significant positive correlation between age of patients and number of dermatological manifestations (r=0.37, p 0.009). No significant correlation was found between duration of dialysis and number of dermatological manifestations (r=-0.09, p 0.5). There was a trend towards higher number of dermatological manifestations in patients with diabetes mellitus. Mean number of dermatological manifestations was 4.43±1.1 in patients with diabetes mellitus and 3.83±1.1 in those without diabetes mellitus (p 0.07). There was no significant difference in number of dermatological manifestations in patients with (4±1.2) and without hepatitis C (4.2±1.1) (p 0.48) or between males (4.1±1.4) and females (4±1) (p 0.94).

Table 1: Frquency of abnormal skin findings in all patients (N=50)

Abnormal Skin Findings	Frequency (Percentage)
Xerosis	29 (58)
Pruritis	16 (32)
Pigmentary changes – Brownish Black	23 (46)
Pallor	6 (12)
Perforating Folliculitis	3 (6)
Kyrle Disease	0 (0)
Reactive Perforating Collagenosis	4 (8)
Elastosis Perforans Serpiginosa	1 (2)
Purpura and Eccyhmosis	6 (12)
Cutaneous viral infections	5 (10)
Cutaneous bacterial infections	9 (18)
Cutaneous Fungal infections	13 (26)
Plantar Keratoderma	1 (2)
Acanthosis Nigricans	19 (38)

Table 2: Frequency of abnormal oral manifestions in all patients (N=50)

Abormal Oral Findings	Frequency (percentage)
Xerostomia	5 (10)
Macroglossia	1 (2)
Gingivitis	4 (8)
Ulcerative stomatitis	0 (0)
Angular Chelitis	4 (8)

Table 3: Frequency of abnormal nail findings in all patients (N=50)

Abnormal Nail Findings	Frequency (percentage)
Half and half nails	13 (26)
Leukonychia	2 (4)
Koilonychia	8 (16)
Subungual hyperkeratosis	3 (6)
Onycholysis	3 (6)
Mees Lines	0 (0)
Beau's Lines	2 (4)
Splinter hemorrhages	0 (0)

Table 4: Frequency of abnormal hair findings in all patients (N=50)

Abnormal Hair Findings	Frequncy (percentage)
Diffuse hair loss from scalp	6 (12)
Sparse body hair	10 (20)
Hair discoloration	1 (2)
Dryness of hair	7 (14)

Figure 1: Acquired Icthyosis

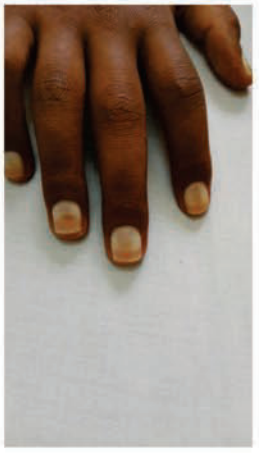

Figure 2: Half and half nails

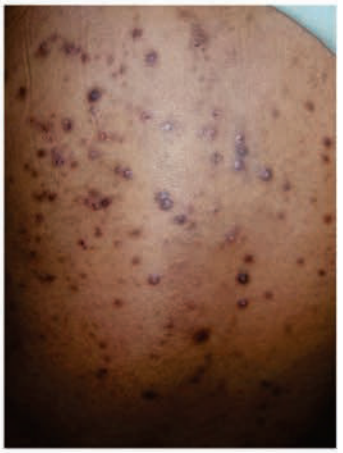

Figure 3: Reactive perforating collagenosis

DISCUSSION

In this study, we found that all patients on hemodialysis had abnormal dermatological manifestations. There was a significant correlation between patients' age and number of dermatological abnormalities.

Our results are comparable with other local studies. Frequency of dermatological manifestations in other local studies has ranged from 82%-100%.[3-7] However, one study included patients with chronic kidney disease and didn't specify number of patients on hemodialysis among these.[6]

Xerosis was the most common abnormality in our study, noticed in 58% of all patients. Frequency of xerosis in other studies has ranged from 28-96%.[3-5,7-11]

Other noticeable skin findings were pigmentary changes (46%), pruritus (32%) and cutaneous fungal infections (26%). Xerosis is caused by atrophy of sweat glands.[12] Pruritus results from either systemic inflammation, activation of mu receptors or xerosis its self.[13,14] In other studies, frequency of pigmentary changes, pruritus and cutaneous fungal infections was found to be 20-94%, 15-64% and 27-52% respectively.[3,5,8-10,15]

Oral mucosal abnormality was found in 20% of all patients. Xerostomia was the most common abnormality found in 10% of all patients. Frequency of xerostomia in other studies has ranged from 11-60%.[5,8]

Other noticeable abnormalities include angular chelitis

(8%) and gingivitis (8%). Frequency of Angular chelitis was found to be 6% in another study.[5]

Nail abnormalities were noticed in 50% of all patients. Half and half nails and koilonychia were found in 26% and 16% of all patients. Frequencies of half and half nails and koilonychia in other studies have been found to be 7-40% and 7-12% .[4,5,8,11,16]

Abnormal hair findings were found in 42% of all patients. Sparse body hair was the most common finding, noticed in 20% of all patients followed by dryness of hairs (14%) and hair loss from scalp (12%). Frequency of sparse hair in other studies has ranged from 2.6-70%.[3,5,11,15,17] Dry lustreless hair and hair loss from scalp were found in 18-47% and 16-70% in other studies respectively.[3,5,8]

We found a significant positive correlation between dermatological abnormalities and patient's age. There was no significant association between skin findings and duration of dialysis, diabetes mellitus or hepatitis C.

In summary, cutaneous and mucosal abnormalities are common in patients on hemodialysis. Older age is associated with higher number of abnormal findings. Patients on hemodialysis should undergo regular skin examination to diagnose and treat dermatological diseases. Further studies are needed to see whether such abnormal findings are associated with quality of life and survival in our local population.

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Original Article

Frequency of Iron Deficiency Anemia in Pregnant Females attending Antenatal Care Clinic at Sharif Medical City Hospital

Samina Khalid, Laila Afzal, Amna Iqbal, Qurat ul Ain, Ufaq Ishtiaq, Sunniya Siddique
Muhammad Shahid Iqbal

ABSTRACT

Objective: To determine the frequency and various predictors of iron deficiency anemia among females who are pregnant and visiting antenatal care clinic at Sharif Medical City Hospital.

Methodology:It was a cross–sectional descriptive study in which 100 pregnant females attending the Gynae and Obstetrics OPD of Sharif Medical City Hospital were interviewed. Data was collected through a questionnaire, which was analyzed by using SPSS 23.0.

Results: The frequency of anemia in the pregnant females was calculated to be 53%, out of which 20% had mild anemia, 31% had moderate anemia and 2% had severe anemia. Anemia was found to be more prevalent in the pregnant females >30 years of age (68.2%) and in their 3rd trimester of pregnancy (56.1%). Educational status of the pregnant women, monthly income of the household, the type of family (nuclear or extended) and the number of children were the factors that had statistically significant and definite relationship with anemia in pregnancy.

Conclusion: This study showed that anemia in pregnancy is one of the serious health issues in Pakistan. Giving knowledge to women on the early start of antenatal clinic attendance and addition of iron would decrease the problem of anemia in pregnancy. Further researches should be carried out to know the exact cause of anemia in pregnancy so that appropriate steps could be taken by the Health Department to alleviate this problem.

Keywords: *Pregnant women. Iron Deficiency anemia. Antenatal care. Hemoglobin levels.*

INTRODUCTION

Anemia during pregnancy is a worldwide growing concern and a major constrain in the Millennium Development Goals no. 4 and 5 directed towards a mother and child care. About 50% pregnant females are anemic world widely. According to the World Health Organization (WHO), about 17% of the pregnant women in the developed countries and 64% in the developing countries are anemic. The prevalence rate in Pakistan is about 51%.[1]

WHO defines anemia in pregnancy as Hemoglobin (Hb) levels <11g/dL. It is further classified into mild anemia (Hb 10–10.9g/dL), moderate anemia (Hb 7-9.9g/dL) and severe anemia (Hb< 7g/dL).[2]There is an increased iron requirement during pregnancy due to greater expansion in the plasma volume. Therefore, any hemoglobin level less than11g/dL in pregnancy is taken as anemia.

The most common cause of anemia in pregnancy is iron deficiency anemia. It is generally considered that half of the cases of anemia are due to iron deficiency include a low intake of iron, less absorption of iron from diets containing high quantity of phenolic compounds and time periods when iron is required in a greater amount as in growing age and period of reproduction. Nutritional deficiencies like vitamin B12, folic acid, riboflavin, parasitic infection, heavy menstrual bleeding and chronic infections such as tuberculosis can also lower blood hemoglobin concentrations. Grand multiparity, inadequate child spacing, late booking for antenatal care and low socioeconomic status also contribute to anemia in pregnancy.[3]

In pregnancy, anemia affects the health of the mother as well as the fetus. Anemia during pregnancy may present as anorexia, fatigue, irritability, breathlessness, palpitations, weakness, pale skin and difficulty in concentrating. Consequences of iron deficiency anemia in pregnancy may include still–birth, low birth weight, preterm births, reduced fetal brain maturation, pediatric cognitive defects, maternal depression and death from anemic heart failure.[4]

Antenatal care is the most important part of safe motherhood strategy and it can decrease the morbidity and mortality. Centers for Disease Control and Prevention (CDC) advises screening for anemia in pregnant women and iron intake to meet the iron requirements of pregnancy, globally.[3] The rationale is to screen pregnant women and maintain maternal iron stores by treatment which is beneficial to both mother and neonate.

Prevalence of anemia in Pakistan is high and is due to low socioeconomic status and other factors of the population. In spite of the high magnitude of the disease, not enough research data has been collected to unveil the heavy load of the problem in Pakistan.

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Therefore in light of the above mentioned factors, it is very pertinent to conduct this study.

METHODOLOGY

It was a cross-sectional descriptive study conducted at Gynae and Obstetrics outpatient department, Sharif Medical City Hospital. A sample of 100 pregnant women was taken by non-probability sampling. Only the pregnant women coming for antenatal checkup were included in the study. Women who were unwilling to participate or who presented with an acute illness were excluded. Formal consent and permission were taken from concerned authorities. Data was collected during the month of July 2016 using a semi structured questionnaire.

Data was entered and analyzed with SPSS Software 23. Data was presented in frequencies and percentages by applying Chi-square test between different categorical variables. A P-value of < 0.05 was used as a cut-off point for statistical significance.

RESULTS

Out of 100 pregnant females, 70% were 20–30 years old, 8% were less than 20 years old and 22% were more than 30 years old. Eighteen respondents were illiterate and eighty three were educated. Majority of respondents (94%) were housewives, 5% were doing a job as well. Husbands of the 32% respondents were businessmen while 24% were govt./private employees. Out of 100 study respondents, 17% respondents had a monthly income <10,000 rupees, 37% had between 10,000–20,000 rupees while 46% had an income >20,000 rupees. Seventy seven respondents were residing in an extended family. Out of 100 pregnant women, 11 were in the 1st trimester, 32 were in the 2nd trimester and 57 were in the 3rd trimester of pregnancy. Thirty six respondents were having their first pregnancy while 54% had1-3 children. Out of 100, 59% respondents had no previous history of miscarriage (Table 1).

Out of 100 pregnant women, 47% women had no anemia, 20% had mild anemia, 31% had moderate anemia and only 2% had severe anemia (Table 2).

The frequency of anemia was highest in women >30 years of age (68.2%). In pregnant women who were housewives anemia was seen in 54.3% and in 75% females whose husbands were laborers. The statistical association between low monthly income and anemia in the pregnant women was found to be highly significant ($p<0.01$). Similarly, statistically significant results were found ($p<0.05$) while comparing the relationship of anemia with educational status of women, type of families and number of children of women. The frequency of anemia was 53.2% in those living in extended families, 88.9% in illiterate women and 70% in women with 4-7 children (Table 3).

Anemia was more frequent in the women who were in their 3rd trimester (56.1%) and who had a previous history of miscarriage (56.1%). The frequency of anemia in women who took fresh fruits and vegetables once a month was 100% whereas it was reduced to 50% in those who used to take daily. Similarly, it was 80% in those who consumed meat rarely as compared to 41.7% in those who took meat daily. It was 45.5% in respondents who ate just like routine during pregnancy as compared to 47.4% in those who ate less than previous during pregnancy. The frequency of anemia was higher in the pregnant women who do not use iron supplements (63.6%), who had never used any contraceptive measure (54.8%) and in those who had a birth interval of 3-4 years between their children (77.3%). However, the relationship between any of these factors and anemia was not statistically significant ($p>0.05$) (Table 3).

DISCUSSION

Anemia in pregnancy is a worldwide issue both in the developing and the developed countries. This present study indicates an anemia load of 53% in the pregnant women visiting an antenatal clinic at a tertiary care hospital in Pakistan. This percentage is much higher as compared to that observed in Ethiopia (36.6%), Kenya (36.2%) and Palestine (21.7%). [3,5,6] Our results are comparable with a study conducted in India in which prevalence of anemia in pregnant women was 50.1%.[7] This discrepancy may be due to poverty, lack of health awareness and health facilities in Pakistan. A similar research carried out in another tertiary care hospital in Pakistan in the past showed similar results i.e. an anemia load of 57% in the pregnant females.[2]

Out of the 100 pregnant women included in this study, 20% had mild anemia, 31% had moderate anemia and 2% had severe anemia. In a similar Kenyan study, the prevalence of mild anemia was 51.4%, moderate anemia was 47.8% and severe anemia was 0.3%.[6] An Indian study showed that 63.5% of the pregnant women had mild anemia, 35% had moderate anemia and 1.5% had severe anemia.[7] According to our present study, the frequency of anemia in the pregnant women aged <20 years was 50%, in women between ages 20-30 years was 48.6% and 68.2% in the women of age >30 years. However, the study carried out in Kenya showed that anemia was more prevalent in the women aged between 21-30 years (39.1%) as compared to women of age <20 year (29.8%) and 29.9% in the >30 years age group.[5] The results of this study indicate that anemia was most frequent in the illiterate women mounting to 88.9% while it was least in the graduate women (23.3%). This is because increased educational levels is expected to

improve knowledge and hence is expected to reflect more awareness regarding health problems. This finding was found consistent with a study carried out in Turkey.[8]

Anemia was found to be more frequent in housewives (54.3%) than in working women. This contradicts the results of the Ethiopian and Palestinian studies.[3,6] This difference in results may be due to the fact as more housewives were observed in our study. The frequency of anemia in women with total family income <10,000 rupees was 88.2%, it was less in other groups. Anemia is mostly associated with poverty as consistent with the results of the studies carried out in Nigeria and Turkey.[9,10]

The results of this study show that the frequency of anemia is highest in the 3rd trimester of pregnancy (56.1%). These results are consistent with those observed in the Ethiopian and Palestinian studies.[3, 6] This may be due to hemodilution of the blood in the 3rd trimester or the high prevalence of anemia in the second and third trimester may also be attributed to late initiation of antenatal care. This causes late detection and missing of opportunity to correct the deficiency through iron supplementation early in the pregnancy. The frequency of iron deficiency anemia in the pregnant women living in a nuclear family was 52.2% whereas it was slightly more in the women living in extended families i.e. 53.2%. These results contradict the results of the Indian study.[7]

The women having a previous history of miscarriage had more frequency of anemia (56.1%) than the women who did not have any history of miscarriage (50.8%). It is consistent with the Ethiopian study.[3] The frequency of anemia in the women not using contraceptives was slightly higher (54.8%) than those using contraceptives (43.7%) and severe anemia was also frequent in these women (2.4%). This is in harmony with a study in Ethiopia and a similar study carried out in the past in Islamabad.[3,2]

The women who took vegetables monthly were 100% whereas it was reduced to 56.4% in women who took vegetables daily. This finding were almost similar to a study in Ethiopia.[3] Similarly, the frequency of anemia in the pregnant women who consumed meat rarely was 80% whereas it was reduced to 41.7% in the pregnant women who took meat daily. Comparable results were also seen in another study conducted in Ethiopia.[3] This shows that pregnant women who take diets with iron of low biological value have low hemoglobin levels and are usually anemic. The prevalence of anemia among the pregnant women with a systemic disease like hypertension and diabetes mellitus was low (45.5%) whereas it was high in women with a current systemic disease (56.7%). This is inconsistent with the results of the Palestinian study.[6]

The frequency of anemia was higher in the pregnant women who do not use iron supplements (63.6%). This is an expected observation as iron supplementation is the major treatment option for iron deficiency anemia in the pregnant women. This result is supported by the result of the Palestinian study.[6]

Table 1: Total respondents by socio-demographic characteristics

Characteristics	Frequency	Percentage
Age (in years)		
< 20	8	8
20-30	70	70
>30	22	22
Educational status		
Illiterate	18	18
Primary	8	8
Middle	7	7
Matric/intermediate	37	37

Graduate	30	30
Occupation of wife		
Housewife	94	94
Working	1	1
Both	5	5
Husband's occupation		
Farmer	8	8
Laborer	20	20
Businessman	32	32
Employee(govt./private)	24	24
Other	16	16
Monthly income		
<10,000 Rs.	17	17
10-20,000 Rs.	37	37
>20,000Rs.	46	46
Type of family		
Nuclear	23	23
Extended	77	77
Trimester		
1st	11	11
2nd	32	32
3rd	57	57
No. of children		
First child	36	36
1-3	54	54
4-7	10	10
<7	0	0
H/O miscarriage		
Yes	41	41
No	59	59

Table 2: Frequency distribution of pregnant women according to different grades of anemia

Hemoglobin level(g/dl)	Frequency	Percentage
Hemoglobin level(g/dl)		
No anemia (>11)	47	47
Mild anemia (10-10.9)	20	20
Moderate anemia (7-9.9)	31	31
Severe anemia (<7)	2	2

Table 3: Comparison of factors affecting anemia with hemoglobin levels of respondents

Characteristic	No anemia	Mild anemia	Moderate anemia	Severe anemia	Statistical significance
Age (in years)					
< 20	4(50%)	0(0%)	3(37.5%)	1(12.5%)	p>0.05
20-30	36(51%)	12(17.5%)	21(30.5%)	1(1%)	
>30	7(32%)	8(36%)	7(32%)	0(0%)	
Educational status					
Illiterate	2(11%)	6(33%)	9(50%)	1(6%)	
Primary	4(50%)	1(12.5%)	3(37.5%)	0(0%)	p>0.05
Middle	3(43%)	2(28.5%)	2(28.5%)	0(0%)	
Matric/intermediate	15(40%)	8(22%)	13(35%)	1(3%)	
Graduate	23(77%)	3(10%)	4(13%)	0(0%)	
Occupation of wife					
Housewife	43(46%)	18(19%)	31(33%)	2(2%)	p>0.05
Working	1(100%)	0(0%)	0(0%)	0(0%)	
Doing both	3(60%)	2(40%)	0(0%)	0(0%)	
Husband's occupation					
Farmer	4(50%)	1(12.5%)	3(37.5%)	0(0%)	
Laborer	5(25%)	8(40%)	6(30%)	1(5%)	p>0.05
Businessman	20(62.5%)	2(6.5%)	10(31.5%)	0(0%)	
Employee(govt./private)	13(54%)	5(21%)	6(25%)	0(0%)	
Others	5(31.25%)	4(25%)	6(37.5%)	1(6.25%)	
Monthly income					
<10,000 Rs.	2(12%)	5(29%)	8(47%)	2(12%)	p>0.05
10-20,000 Rs.	16(43%)	10(27%)	11(30%)	0(0%)	
>20,000Rs.	29(63%)	5(11%)	12(26%)	0(0%)	
Type of family					
Nuclear	11(48%)	9(39%)	3(13%)	0(0%)	p>0.05
Extended	36(47%)	11(14%)	28(36%)	2(3%)	
Trimester					
1st	6(55%)	3(27%)	2(18%)	0(0%)	p>0.05
2nd	16(50%)	8(25%)	7(22%)	1(3%)	
3rd	25(43.5%)	9(16%)	22(38.5%)	1(2%)	
No. of children					
First child	25(69%)	5(14%)	5(14%)	1(3%)	p>0.05
1-3	19(35%)	11(20.5%)	23(42.5%)	1(2%)	
4-7	3(30%)	4(40%)	3(30%)	0(0%)	
H/O miscarriage					
Yes	18(44%)	11(27%)	11(27%)	1(2%)	p>0.05
No	29(49%)	9(15%)	20(34%)	1(2%)	

Fresh fruit consumption					
Daily	28(50%)	10(18%)	16(28.5%)	2(3.5%)	p>0.05
Weekly	19(53%)	6(16.5%)	11(30.5%)	0(0%)	
Monthly	0(0%)	1(100%)	0(0%)	0(0%)	
Rarely	0(0%)	3(43%)	4(57%)	0(0%)	
Vegetables consumption					
Daily	24(44%)	11(20%)	19(34%)	1(2%)	
Weekly	22(52%)	8(19.5%)	11(26.5%)	1(2%)	p>0.05
Monthly	0(0%)	1(100%)	0(0%)	0(0%)	
Rarely	1(50%)	0(0%)	1(50%)	0(0%)	
Meat consumption					
Daily	7(58.5%)	0(0%)	4(33.5%)	1(8%)	
Weekly	33(52%)	14(23%)	14(23%)	1(1%)	p>0.05
Monthly	5(31%)	4(25%)	7(44%)	0(0%)	
Rarely	2(20%)	2(20%)	6(60%)	0(0%)	
Specific food believes					
Yes	9(56%)	3(19%)	4(25%)	0(0%)	p>0.05
No	38(46%)	17(20%)	27(33%)	2(2%)	
In-laws advice to eat specific food					
Yes	26(54%)	7(15%)	14(29%)	1(2%)	p>0.05
No	21(40%)	13(25%)	17(33%)	1(2%)	
Daily eating habits					
Routine	24(54.5%)	9(20.5%)	10(23%)	1(2%)	
Double than previous	13(35%)	8(22%)	15(40%)	1(3%)	p>0.05
Less than previous	10(52%)	3(16%)	6(32%)	0(0%)	
Use of iron supplements					
Yes	43(48%)	19(22%)	25(28%)	2(2%)	p>0.05
No	4(36.5%)	1(9%)	6(54.5%)	0(0%)	
Time of use of iron supplements					
Before pregnancy	7(78%)	2(22%)	0(0%)	0(0%)	
During pregnancy	37(46%)	17(21%)	25(31%)	2(2%)	p>0.05
After pregnancy	0(0%)	0(0%)	0(0%)	0(0%)	
Never	3(30%)	1(10%)	6(60%)	0(0%)	
Current systemic disease					
Yes	18(54.5%)	7(21.5%)	8(24%)	0(0%)	p>0.05
No	29(43.5%)	13(19%)	23(34.5%)	2(3%)	
Contraceptive use					
Yes	9(56%)	3(19%)	4(25%)	0(0%)	p>0.05
No	38(45%)	17(20.5%)	27(32.5%)	2(2%)	
Birth interval					
First child	23(68%)	5(14.5%)	5(14.5%)	1(3%)	
<2 years	17(46%)	7(19%)	12(32%)	1(3%)	p>0.05

3-4 years	5(23%)	6(27%)	11(50%)	0(0%)	
> 4 years	2(28.5%)	2(28.5%)	3(43%)	0(0%)	

CONCLUSION

This study showed that anemia is a serious threat to the health of the pregnant women. The frequency of anemia in the pregnant women is alarmingly high (53%) with the majority having moderate anemia (31%). Educational status of the pregnant women, monthly income of the household, the type of family (nuclear or extended) and the number of children were the factors that were related to anemia during pregnancy. These statistics show a dire need for educational, nutritional, family planning programs and strengthening of health care system.

RECOMMENDATIONS

- People should be counseled regarding the nutritional requirement, antenatal registration and regular checkup during pregnancy.
- The importance of taking iron supplements, intake of iron-rich foods and the use of foods which enhance the absorption of iron must be emphasized.
- Health education regarding nutrition and family planning through electronic and social media and health care programs should be imparted to women.
- National nutritional programs should be implemented for iron and folic acid fortification of flour.

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Original Article

Comparison of Capsular and Uveal Compatibility Between Acrylic Hydrophobic and Hydrophilic Intraocular Lens for Cataract Surgery.

Haroon Tayyab, Tehmina Jahangir, Samina Jahangir

ABSTRACT

Objective: To assess the difference in the uveal and capsular compatibility between two commonly used intraocular lens materials in patients with phacoemulsification with intraocular lens implant.

Methodology: This quasi experimental study included 100 eyes of 100 patients planned for phacoemulsification with intraocular lens implant due to age related cataract. The 100 eyes were divided into 2 consecutive groups based on the type of acrylic intraocular lens implanted. In group A, fifty patients were implanted single piece monofocal aspheric hydrophobic intraocular lens and in group B, fifty patients received single piece aspheric monofocal hydrophilic intraocular lens. After this, all patients were called for followup at 1st, 3rd, 6th and 12th post operative months. At each post operative visit, all patients went detailed slit lamp and visual acuity examination in which special emphasis was put on anterior uveitis and posterior capsular opacity.

Results: There were no significant (p-value = 0.59) difference at one week post operative anterior uveitis between both groups. There was no statistically significant (p-value = 0.74) in post operative posterior capsular opacity formation at the end of one year followup.

Conclusion: There is no significant difference in capsular and uveal compatibility between hydrophilic and hydrophobic acrylic foldable intraocular lens.

Keywords: *Hydrophobic. Hydrophilic. Intraocular lens. Uveitis. Posterior capsular opacity.*

INTRODUCTION

Cataract is one of the leading causes of reversible blindness in the world. This burden of disease can only be expected to grow as more and more population grows old.[1] In Pakistan, cataract is reported to be responsible for 66% of blindness.[2] Cataract is caused by pathological or age related opacification of natural crystalline lens. Cataract surgery is one of the most common surgeries performed world wide.[3] Due to recent advances Ophthalmology, the method of cataract extraction has evolved from intracapsular cataract extraction (ICCE) to extra capsular cataract extraction (ECCE) to a modern day small incision suture less surgery called phacoemulsification. Nowadays, modern phacoemulsification is being augmented by femto second laser as well and it had greatly improved the visual results and safety profile of cataract surgery.[4] With the evolution in techniques of cataract surgery, there has also been developments in the biocompatible material and design of intraocular lens (IOLs). There has been a lot of discussion on the definition of biocompatibility of IOLs and Amon classified this into capsular and uveal biocompatibility of IOLs (lens epithelial cells response to IOL and uveal tissue response to IOL) which is regraded as a foreign in the eye.[5]

Acrylic IOLs have a long clinical history as one of the safer biomaterials for intraocular implantation. Acrylic IOLs with hydrophobic or hydrophilic surfaces have known to reduce cell proliferation in capsular bag and thus reducing the incidence of posterior capsular opacification (PCO).[6,7] But, there is still an on going discussion and clinical studies that which of these two materials has lower rates of PCO formation.[8]

Researchers have also proposed the following three criteria for assessing the biocompatibility if IOLs: anterior capsular opacification, flare in anterior chamber and angle of contact of IOL edge with posterior capsular wall.[9] Given the various designs and biomaterials of IOLs, studies have shown that not every IOL is suitable for all cases. One such example is documented lower PCO rate of hydrophobic IOLs but their enhanced ability to attract inflammatory cells thus rendering them inferior to hydrophilic IOLs in cases of active uveitis.[10] Similarly, silicone IOLs have fallen out of favour in patients with anticipated pars plana vitrectomy (PPV) in future due to adherence of silicone oil to IOL surface and ultraviolet absorbing IOLs are favoured in cases of cataract surgery of diabetic patients.[11,12] Thus no single IOL type is suitable for all cases.

The purpose of this study was to compare capsular and uveal compatibility of hydrophilic and hydrophobic IOLs in normal and healthy Pakistani population with no known history of collar or systemic disease.

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METHODOLOGY

This quasi-experimental study included 100 eyes of 100 patients selected for phacoemulsification and IOL implant at a tertiary care ophthalmic facility of Lahore from January 2015 to July 2015. All surgeries were performed after obtaining informed consent from the patients and permission for this study was also sought from hospital ethical committee. All surgeries were performed by the same surgeon. All patients included in this study were diagnosed with age related cataract after complete ophthalmic examination of anterior and posterior segment. Pre-operative IOP was measured and pre-operative visual acuity recorded. Those patients having been diagnosed with diabetes mellitus (regardless of absence of diabetic retinopathy), history of ocular trauma, uveitis, glaucoma, extremes of axial lengths (less than 18mm or more than 25mm) and per operative eventful surgery (anterior or posterior capsular tear, vitreous loss, per-operative pupillary constriction, excessively prolong and difficult surgery, use of capsular tension ring etc) were excluded from the study.

The 100 eye were divided into 2 consecutive groups based on the type of acrylic IOL implanted. In group A, fifty patients were implanted single piece monofocal aspheric hydrophobic IOL (AcrySof IQ SN60AT Alcon Laboratories, Inc., Fort Worth, TX, USA) with 6 mm optic diameter, 13 mm total length, 0* haptic angulation and square edge design. In group B, fifty patients received single piece aspheric monofocal hydrophilic IOL (Superflex Aspheric 920H by Rayner) with optic diameter of 6.25 mm and total length of 12 mm.

All surgeries were performed by the same surgeon. Standard Phacoemulshfiction with IOL implant was carried out under local anaesthesia. Any eventful case was excluded from the final analysis. Patients were prescribed routine and uniform post operative topical and systemic medications. All patients were called for follow up on 1st and 7th post operative day. After this, all patients were called for followup at 1st, 3rd, 6th and 12th post operative months. At each post operative visit, all patients went detailed slit lamp and visual acuity examination in which special emphasis was put on anterior uveitis and PCO. Anterior uveitis was graded according to standard and recommended method and PCO was graded using Sellemen and Lindstrom system.

All data was analysed using SPSS version 20.0. Qualitative variables were described using frequency and percentages and quantitative variables were expressed using mean and standard deviation. Chi-square test was used to analyse association between the type of intraocular lens and occurrence of post operative anterior uveitis and PCO. Results were considered significant if p-value was < 0.05.

RESULTS

The mean age of patients in group A was 63.42 ±7.4 yeas and that of group B was 61.98 ± 8.5 years. In group A, 44% were males and 66 % were females. In group B, 71 % were males and 29 % were females.

Table 1 shows the 3 months post operative best corrected visual acuity (BCVA) of group A and B. Chi-square analysis showed no statistically significant difference in BCVA between groups A and B (p-value = 0.357). Similarly, there were no significant (p-value = 0.59) difference in one week post operative anterior uveitis between both groups. Table 2 shows that there was no statistically significant (p-value = 0.74) in post operative PCO formation at the end of one year follow-up.

DISCUSSION

Posterior capsular opacity remains one of the most frequent sequel after an uneventful cataract surgery and its initial reports have been made by Sir Harold Ridley from his first few cases.[14,15] Although, PCO can be rectified very easily and rapidly through Nd:YAG laser, still there remain some potential side effects of laser as well like cystoid macular oedema and retinal detachment. So, all measures available should be taken

Table 1: Mean post operative best corrected visual acuity at 3 months follow-up

	Mean BCVA at 3 months
Group A (N = 50)	6/6p
Group B (N = 50)	6/6p

P-value = 0.357

Table 2: Number of visually significant posterior capsular opacification at 1 year

	Posterior capsular opacification at 1 year
Group A	3 / 50
Group B	4 / 50

P-value = 0.74

into account to minimise or abolish the occurrence of PCO.[16,17]

In this study, we implanted hydrophobic and hydrophilic IOLs in 100 patients divided into to equal groups A and B respectively. With our results analysis, we evaluated the capsular and uveal compatibility of these two most commonly used acrylic IOLs and our results failed to show any statistically significant difference between the two IOLs. Apart from using these IOLs, we also practised all the recommended methods to reduce the chances of PCO formation like keeping the size of continuous curvilinear capsulorrhexis slightly smaller that size of the optic portion of IOL; the aim of this technique was to cover the anterior portion of IOL optic edge with anterior capsule.[18] We also employed the technique of anterior capsular polishing which has also been shown to effectively reduce the chances of PCO formation.[19,20]

Our results are comparable to other similarly designed studies which showed the rate of PCO formation at their final follow-up to be from 1.8 - 3.5 %. These results are comparable to our study results.[21]

The reason for very low rate of PCO formation in our study was because of multiple factors; these factors included expert surgical technique as mentioned before, square design of IOL and effectively using the "sandwhich theory". This theory suggests that once the anterior capsule rests of the anterior edge of IOL, this retards the migration of lens epithelial cells onto the posterior capsule once the posterior capsule is strongly adherent to posterior surface of IOL.[22,23] The 90 degree vertical edge also provides a significant barrier against lens epithelial cell migration between posterior capsule and posterior surface of IOL.[24]

Our surgery was limited by the small number of sample size and relatively shorter follow-up period. But, it's results are validated due it's comparative design, single surgeon and carefully selected patients and cases for final analysis.

Despite nearly seven decades of IOL use and experience, no surgical intervention to date has been able to permanently eradicate the chances of PCO formation despite remarkable advances in surgical techniques, IOL designs and materials and continuously evolving safer and shorter surgeries.

CONCLUSION

With the evidence of our results and light or comparative studies, we conclude that there is no significant difference in capsular and uveal compatibility between hydrophilic and hydrophobic acrylic foldable IOLs.

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Original Article

Acetaminophen Induced Hepatotoxicity and Effects of Pomegranate Peel Extract on Livers of Adult male Albino Rat

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ABSTRACT

Objective: To observe the effects of pomegranate peel extract on acetaminophen-induced hepatotoxicity.

Methodology: A randomized control study was conducted at the University of Health Sciences, Lahore, Pakistan. Twenty four rats weighing 175±25gm each were included in this study. Animals were divided into three groups; A, B & C by random balloting method. Group A served as control and was given 5ml/kg normal saline intraperitoneally. Group B & C were given on day 1 intraperitoneally 750 mg/kg acetaminophen dissolved in 5 ml/kg normal saline. Group A & B received 5 ml/kg normal saline orally from day 2 till day 14 of experiment whereas group C received pomegranate peel extract (PPE) 50mg/kg dissolved in 5ml/kg distilled water orally. After 14 days of experimental period animals were sacrificed and their livers were removed and processed for histological examination.

Results: Mean body weight at end of experiment in group B showed marked decrease as compared to group C. Histological examination of group B showed necrosis with vacuolar degeneration and a number of apoptotic bodies. Results of group C showed preservation of normal histological architecture.

Conclusion: Pomegranate peel extract due to its antioxidant property remediated the effect of acetaminophen induced hepatotoxicity.

Keywords: *Hepatotoxicity. Apoptotic bodies. Acetaminophen. Pomegranate peel.*

INTRODUCTION

Acetaminophen is a commonly used analgesic in adults and children worldwide but it is considered a potentially harmful drug due to its narrow therapeutic index.[1] Acetaminophen is a non-steroidal anti-inflammatory drug (NSAID), belonging to the para-amino phenol class and is an active metabolite of two anilines, phenacetin and acetanilide which were both found to metabolize to paracetamol and P-phenatidine or aniline, respectively.[2] Toxic doses of acetaminophen is known to cause hepatic necrosis, nephrotoxicity and death in humans and experimental animals.[3] Recommended dosage of acetaminophen in adults is 0.5-1gm four to six hourly with a maximum daily dose of 4gm.[4] Dosage in children is calculated according to age and body weight which is less than 40mg/kg/day.[5] Acetaminophen is 90% metabolised by sulfotransferases and glucuronyl transferases to phenolic glucuronide and sulfate in the liver which is ultimately excreted in the urine.[6] About 2% of the residual acetaminophen is excreted unchanged in the urine and about 5% to 10% gets metabolized by the cytochrome P450 to N-acetyl-p-benzoquinone imine (NAPQI).[6] Overdosage of acetaminophen causes saturation of glucuronyl transferases and sulfotransferases, diverting the drug to be metabolized by cytochrome P450, resulting in generation of large amounts of NAPQI hence depleting glutathione, resulting in the accumulation of NAPQI in the hepatocytes.[7] This produces NAPQI-induced glutathione depletion and oxidative stress leading to lipid peroxidation and irreversible cell membrane injury and cell death.[7,8].

Extracts of Pomegranate (Punica Granatum L.) plant from its different parts have high antioxidant activity.[9] This plant includes chemically diverse polyphenol antioxidants, primarily punicalagin and ellagic acid.[10] The high content of polyphenols are found in Pomegranate peels such as condensed tannins, anthocyanins, proanthocyanidins (delphinidin, cyanidin and pelargonidin 3-glucosides and 3, 5-diglucosides) and flavinoids which are antioxidants.[11] These antioxidants are known for scavenging free radicals and inhibition of lipid peroxidation.[11] Dried peel of pomegranate is reported to have diverse pharmacological functions and antioxidant activity and is used for the cure of diarrhea, respiratory and urinary tract infections.[12] Different parts of this plant or its extract have been used as an anticancer, antibacterial, antidiarrhoeal, antifungal and antiulcer remedy.[13] Peel also has antifertility, hepatoprotective, cytotoxic and hypoglycemic effects.[14-17] Peels of pomegranate have been shown to possess relatively higher antioxidant activity than other parts of this plant and, therefore, are a rich source of natural antioxidants.[11] Since the hepatoprotective effect of methanolic extract of pomegranate peel (PPE) has never been tried on acetaminophen-induced hepatotoxicity, the current study was designed to observe the acetaminophen-

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induced histological changes in the liver of rat and the effect of PPE on these changes.

METHODOLOGY

At the University of Health Sciences, Lahore, Pakistan, a randomized controlled study was conducted on healthy male albino Wistar rats. The study was approved by the ethical committee of the university. The animals were divided through random balloting into three equal groups A, B, and C and were individually caged in stainless steel units with wood shavings on the floor. Standard rat diet and water ad libitum were fed to the animals and they were kept at 23±2°C and humidity (50±5%) with 12 hours day and night cycle. The experiment was started 2 days after acclimatization of the animals. The control Group A was given 5ml/kg normal saline intraperitoneally (IP) on the day 1 and then 5ml/kg distilled water orally from day 2 till day 14; groups B and C were given 750 mg/kg acetaminophen IP dissolved in 5ml/kg normal saline on day 1 of the experiment. From day 2 till day 14, group B was given 5ml/kg distilled water, while group C was given 50 mg/kg PPE dissolved in 5ml/kg distilled water orally. On the day15, under chloroform anesthesia, the animals were sacrificed and the livers were removed, washed and weighed. For histological examination 3-5mm pieces were excised and prepared.

Data was analyzed by using SPSS 20. Analysis of variance (ANOVA) was used to compare variables followed by Post Hoc Tukey test. $P<0.05$ was considered statistically significant.

RESULTS

Twenty four (24) rats were taken weighing 175±25gm with 8(33.3%) rats in each group. Mean body weight at the start and end of the experiment in groups A, B and C was 184±6.347 and 203.13±6.379gm, 183.25±9.099 and 174.50±8.229gm and 181.25±3.536 and 203.25±3.454gm respectively. Comparison of body weight of animals at the end of the experiment is shown in Table 1. Animals of group A and C remained healthy and active for the entire duration of the experiment whereas animals of group B showed exhaustion and lethargy.

Histologically, normal hepatolobular features were seen in control animals of group A (Figure 1).

In histological preparations from group B, general hepatic architecture was deranged; cells showed necrosis and were empty looking containing many vacuoles of varying sizes pushing the nucleus to one side. The liver parenchyma was also disrupted. A number of apoptotic bodies were also clearly seen in group B (Figure 2).

In group C, liver parenchyma showed restoration of classical architecture. There was barely any indication of damage to the organ; no necrosis, vacuoles or apoptotic bodies were observed. We also observed signs of regeneration in group C as evident by multinucleation (Figure 3) similar to those seen in control group A.

Table 1: Effect of single intraperitoneal (IP) injection of acetaminophen (group B) and the effect of methanolic extract of pomegranate peel orally for 14 days (group C) on the body weight of rats at the end of an experiment.

Parameters	Groups			Post Hoc Tuckey	p-value
Weight at end of experiment in gm	A Control (n=8) Mean±SD	B Acetaminophen 750mg/kg (n=8) Mean±SD	C Acetaminophen (750mg/kg) body weight i.p and PPE (50 mg/kg) (n=8) Mean±SD		
	203.13±6.38	174.50±8.229		28.625*	.009*
		174.50±8.229	203.25±3.45	-25.250*	.024*
	203.13±6.38		203.25±3.45	-.125	1.000

* p-value <0.05 is statistically significant.

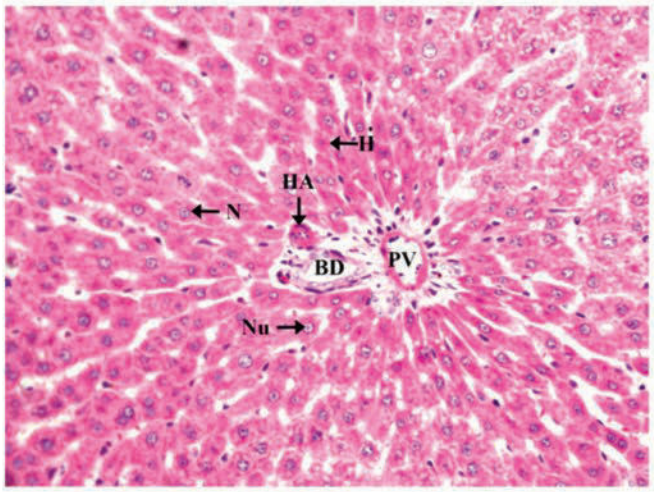

Figure 1: Photomicrograph of liver section from Group A, showing Portal triad consisting of portal vein (PV), bile duct (BD) lined by cuboidal cells and Hepatic artery (HA). Hepatocyte (H) with nucleus (N) and nucleoli (Nu) are also seen. H&E stain. X400

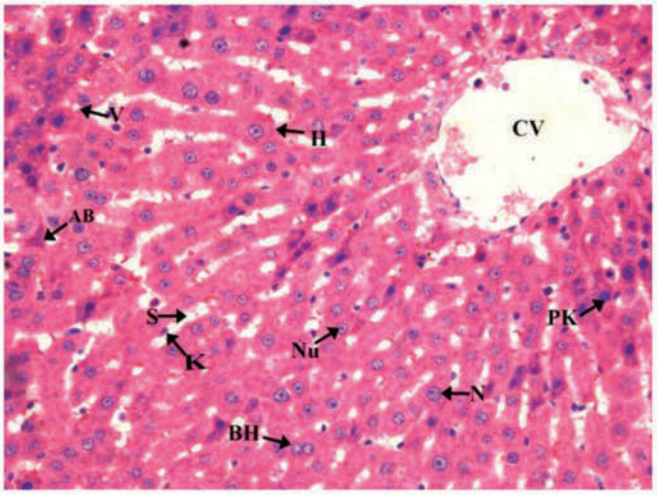

Figure 2: Photomicrograph of liver section from Group B, showing hepatocytes (H) with cytoplasmic vacuoles (V). Areas of necrosis (Ne) were also evident by fragmented (Fr) and pyknotic nuclei (PK) and apoptotic bodies (AB). H&E stain. X400

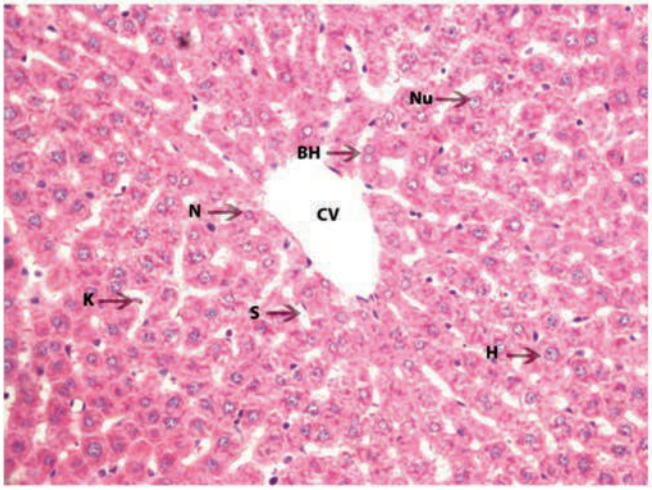

Figure 3: Photomicrograph of liver section from Group C, showing hepatocytes (H) having nucleus (N) with prominent Nucleoli (Nu) and central vein (CV). Kupffer cells (K) with prominent nuclei are seen projecting into the lumen of Sinusoids (S). Few binucleated hepatocytes (BH) are also present. H&E stain. X400

DISCUSSION

In the current investigation, we observed a statistically significant difference in the body weight of group B as compared to groups A and C at the end of the experiment. This was presumably due to decreased food intake and lethargy of the rats on account of experimental intervention, also supported by earlier work which reported a marked decrease in body weight of animals after acetaminophen injection; in the same experiment decrease in body weight was more in animals injected with a higher dose of acetaminophen.[18-20] Our results demonstrated that acetaminophen was toxic to the liver as evident by various histological changes. The normal architecture of liver in group B was disturbed (Figure-2). This loss of classical arrangement of hepatocyte was due to necrosis similar to previously reported effects after acetaminophen treatment of albino rats.[21,22] In the current experiment, PPE restored the general architecture of liver in group C (Figure 3). The current results corroborate previous study in which administration of a single dose of 2g/kg of carbon tetrachloride (CCl4) caused deranged hepatic architecture and treatment with PPE showed restoration of hepatic architecture.[16] In group B of the current study, many vacuoles were observed in the hepatocytes, which were indicative of degeneration.[23] It has been reported that the toxic metabolite of acetaminophen binds covalently to cell macromolecules; NAPQI, toxic metabolite of acetaminophen, was reported to be metabolized by cytochrome P-450 in the liver and subsequently

detoxified.[23] Hepatotoxicity had been reported due to oxidative stress and free radical production.[23] In the current experiment, it is also suggested that acetaminophen is responsible for hepatotoxicity of group B animals by increasing oxidative stress. In group C, protection was provided by PPE since the extract contained strong antioxidants and flavinoids and polyphenols such as condensed tannins and proanthocyanidins, anthocyanins (cyanidin, delphinidin, 3, 5-diglucosides and pelargonidin 3-glucosides).[11] It appears that the ingredients present in PPE restored hepatotoxic changes by decreasing the oxidative stress induced toxicity of acetaminophen (Figure 3). Evidence of regeneration was present in group C which was treated with PPE (Figure 3). Literature reports that hepatocytes which are multinucleated (mostly binucleated) with prominent nucleoli and two cell thick liver cords as seen in animals of group C are suggestive of regeneration.[24] Therefore, we can hypothesize that PPE restored the toxic effects of acetaminophen when given orally. However, it is recommended to do further comprehensive studies to establish and confirm these effects.

CONCLUSION

The present study demonstrated acetaminophen-induced hepatotoxicity in albino rats as manifested by histological changes; total loss of hepatic architecture with centrilobular hepatic necrosis, vacuolization and apoptotic bodies. However, treatment with PPE reversed these changes, showing its ameliorating effect. PPE deserves further intensive study as a protective and preventive agent since it has more potential being a rich source of antioxidants.

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Original Article

Comparison Between 0.2% Brimonidine Tartrate and 0.03% Bimatoprost in Controlling Increase in Intraocular Pressure After Neodymium:Yttrium-aluminium-garnet Laser Posterior Capsulotomy

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ABSTRACT

Objective: To compare the effectiveness of 0.2% brimonidine tartrate and 0.03% bimatoprost in controlling post Neodymium:Yttrium-aluminium-garnet (Nd:YAG) laser capsulotomy intraocular pressure spike when given in a prophylactic manner.

Methodology: A total of 90 patients divided in two equal randomised groups receiving either 0.2% brimonidine tartrate or 0.03% bimatoprost one hour before Nd:YAG laser capsulotomy. Intraocular pressure was measured one hour before and then one and three hours after the laser procedure. A pressure rise of more than 5mmHg was considered significant.

Results: Results showed that 43 (95.5%) patients in group A had effective IOP control where 30 (66.66%) patients in group B had effective IOP control at 3 hours post Nd:YAG laser capsulotomy. There was statistically significant difference between two groups in regards with control of IOP (p-value <0.003).

Conclusion: This study showed that prophylactic topical 0.2% brimonidine tartrate one hour before Nd:YAG laser capsulotomy effectively controls immediate post Nd:YAG laser IOP spike at three hours.

Keywords: *Posterior capsular opacity. Intraocular pressure. Cataract. Nd:YAG laser.*

INTRODUCTION

Ever since the introduction of square edge intraocular lens (IOL) and improved micro instruments of phacoemulsification, the rate of posterior capsular opacification has decreased considerably.[1, 2] However, PCO still remains to be the most frequent visually significant sequel after an uneventful phacoemulsification with IOL implant.[3] The rate of PCO has been documented to be between 7 - 31% and its occurrence is dependent on multiple factors.[4] Although PCO can be very easily dealt with Neodymium: Yttrium-Aluminium-Garnet (Nd: YAG) laser on out door basis. Despite the tested long term efficacy and preference of Nd: YAG laser for PCO, there are some side effects known to occur with this laser. The common side effects include intraocular pressure (IOP) rise sharply after laser, hyphema, cystoid macular oedema, IOL pitting and in rare cases, retinal detachment.[5] IOP spike after Nd: YAG laser occurs due to direct blockage of trabecular meshwork with capsular debris. This IOP spike is known to occur at 2-3 hours after performing Nd:YAG laser posterior capsulotomy.[6] This is the reason that most surgeons prescribe topical pressure lowering agents after performing Nd: YAG laser capsulotomy. Most of the known ocular hypotensive drugs can effectively reduce the IOP spike encountered after Nd:YAG laser procedures.[7] Out of these topical pressure lowering drugs, 0.2% brimonidine tartrate is the routinely prescribed pressure lowering agent after laser capsulotomy. It has also been a routine practice to prophylactically instil topical pressure lowering agents to avoid the spike of IOP. Brimonidine tartrate (0.2%) when applied 1 hour before laser procedure gives a very good pressure lowering effect in the immediate post laser period. This is because its onset of action is within one hour and peaks at 2-3 hours.[8] Prostaglandin analogues are the first line anti glaucoma agents in current clinical practice but their efficacy in the discussed scenario has not been widely explored. Some reports have shown superiority of prostaglandin analogues over brimonidine in preventing such rise in IOP.[9]

We conducted this comparative study between prostaglandin analogue (0.03% bimatoprost) and alpha agonist (0.2% brimonidine tartrate) to assess and compare their efficacy and safety when given prophylactically one hour before Nd: YAG laser capsulotomy.

METHODOLOGY

This randomised controlled prospective study was performed at Sharif Medical and Dental College, Lahore (a tertiary health care facility) from May 2016 to September 2016. All patients signed an informed

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consent and Hospital Ethics Committee allowed for this study after reviewing the methodology and intervention involved. Ninety consecutive patients meeting the inclusion criteria were enrolled in this study and were randomised in two groups (group A and Group B) using random number table. All patients were 50 years or more of age including both genders. All patients had age related cataract and a visually significant PCO that was rendering their best corrected visual acuity (BCVA) < 6/12. Patients with history of glaucoma, uveitis, traumatic cataract, childhood cataract, retinal detachment, steroid responders and prolonged use steroids were not included in this study.

Complete eye examination along with IOP was performed on each patient. Intraocular pressure was measured one hour before Nd: YAG laser capsulotomy. Group A received topical 0.2% brimonidine tartrate and Group B received topical 0.03% bimatoprost one hour before intervention. All lasers were performed by a single surgeon. Intraocular pressure was again measured at 1 and 3 hours after laser capsulotomy.

Statistical analysis was done by using SPSS version 20. The two groups were statistically compared. P-value equal or less than 0.05 was considered significant.

RESULTS

Mean age of patients in Group A and B was 55.47± 10.77 years and 57.33 ± 9.41 years. Nineteen (42.22%) patients in group A and 15 (33.33%) in group B were male. Results of this study showed that 43 (95.5%) patients in group A had effective IOP control where 30 (66.66%) patients in group B had effective IOP control at 3 hours post Nd:YAG laser capsulotomy. There was statistically significant difference between two groups in regards with controlling post Nd:YAG laser posterior capsulotomy (p-value <0.003).

DISCUSSION

This prospective comparative study compared the two commonly used topical pressure lowering drugs 0.2% brimonidine tartrate and 0.03% bimatoprost. Patients were randomised in two equal groups; group A comprising of 45 patients received topical 0.2% brimonidine tartrate and group B received topical 0.03% bimatoprost prophylactically one hour before Nd: YAG laser capsulotomy.

Group A had very good IOP control at 3 hours after Nd: YAG laser with 95.5% patients showing less than 5mmHg spike of IOP at 3 hours. Group B had less favourable response with 66.66% patients showing effective IOP control under same parameters.

Brimonidine tartrate has been known to effectively control IOP after YAG laser procedures and is the generally the preferred drug for this purpose. In one study conducted by Oner, results were comparable to our study when 0.2% brimonidine tartrate was compared with fixed combination of 0.2% brimonidine tartrate and 0.5% timolol maleate.[10,11] Although, some studies have shown no role of prophylactic treatment with 0.2% brimonidine tartrate like the one conducted by Oatts, but he measured post Nd:YAG laser IOP after one hour of the intervention where as 0.2% brimonidine tartrate is known to reach its maximum effect at 3 hours after instillation.[12] In the similar comparative study, 0.2% brimonidine tartrate was compared with all leading ocular hypotensive agents and the hypotensive effect of 0.2% brimonidine tartrate was maximum. Other topical agents used in the study mentioned included latanoprost, timolol, dorzolamide and pilocarpine.[11] The results were similar to the results quoted by our study. Similarly, Seong also showed that one hour prophylactic use of 0.2% brimonidine tartrate before Nd:YAG laser capsulotomy effectively controlled IOP spike in 92.7% patients at three hours post laser. The parameters of effective IOP control were same as in our study. The only difference was that Seong also instilled one drop of 0.2% brimonidine tartrate immediately after performing the laser procedure.[13] Similarly, in nother study, 0.2% brimonidine tartrate effectively controlled post laser IOP spike at 48 hours when used one hour before laser. The control group in this study received sham treatment and it was a double masked study. The over all results and recommendations were same as in our study.[14] However, the results of Artunay and colleagues showed better IOP control with 0.03% bimatoprost when compared with 0.2% brimonidine tartrate in a setting similar to our study. The difference in the results cannot be explained.[15]

In our study, all patients were prescribed post laser topical steroids and ocular hypotensive agents for 2 weeks. We encountered one patient in group A who was steroid responder and his topical steroids were switched to flouromethalone which is known to least influence IOP. No other complications were encountered in our study.

CONCLUSION

We recommend use of prophylactic topical 0.2% brimonidine tartrate one hour before Nd:YAG laser capsulotomy to effectively control IOP spike after this procedure.

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Original Article

Incidence of Pulmonary Complications in Post Cardiac Surgery: A Study of 100 Cases with Cardiopulmonary Bypass

Muhammad Saeed Afridi, Saba Rauf, Hina Nabi Ahmed, Syed Khalid Rasheed, Matti-u-Rehman

ABSTRACT

Objective: To find the incidence of pulmonary complication in patients undergoing cardiac surgery with cardiopulmonary bypass (CPB).

Methodology: A prospective observational study included 100 patients with heart disease undergoing cardiac surgery on cardiopulmonary bypass (CPB) at cardiac surgery department, Punjab institute of cardiology, Lahore, from 2nd November 2015 to 10th January 2016. Both genders of mean age 42 were included in this study.

Results: Overall rate of pulmonary complications was 25%, with mortality of 8% in those patients. The mortality rate from all causes was 2%. The incidence of pulmonary complications was 26% in Coronary artery bypass grafting patients, in valvular patients 18%, and in congenital heart diseases patients, the incidence was 35%.

Conclusion: The incidence of pulmonary complications was highest in congenital heart disease patients.

Keywords: *Cardiac surgery on cardiopulmonary bypass. Coronary artery bypass. Pulmonary complications.*

INTRODUCTION

Cardiac surgery is common mode of treatment for patients with the rheumatic disease, valvular disease, congenital heart diseases and ischemic heart diseases. Cardiac surgery has been revolutionized by the use of extracorporeal circuit also known as the heart lung machine. Regardless of great advances in surgical techniques, postoperative care and anesthesia, major postoperative morbidity in cardiac surgery are due to postoperative pulmonary complications.[1-4] Moreover, patients referred to cardiac surgery nowadays are older with complex co-morbidities. These complications drastically increase the ICU and hospital stay after cardiac surgery.[5]

Routine surgical procedures like thoracotomy or sternotomy have harmful effects on chest wall which can cause mechanical damage to pulmonary function. The cold topical solution used over myocardium for its protection can also add in phrenic nerve injury which may lead to mechanical problems.[3,5,7] Increased pressures in left heart may lead to edema of alveoli and drug or transfusion reaction may increase the permeability of pulmonary capillaries which leads to flooding of alveoli and mechanical alterations in functions of lungs.[6,7,8]

Blood contact with CPB circuit activates complement system and neutrophils which cause increase in permeability of pulmonary capillaries.[3,23] At the same time oxygen free radicals are generated as a consequence of reperfusion injury after ischemia adding to lipid peroxidation. The levels of thromboxane are raised during CPB. They are activated by extracorporeal circuit after they are released from platelets and they causes platelets aggregation and vasoconstriction, thus damaging the microcirculation.[3,10,11]

The possible post-operative pulmonary complications are pneumonia, atelectasis, respiratory failure, prolonged ventilation, bronchospasm, cardiogenic and noncardiogenic pulmonary edema and pulmonary emboli.[1,4,13] Pneumonias and atelectasis are the two most common post cardiac surgery complications which were due to prolonged anesthesia duration and the complexity of the surgical procedure.[11,14]

Smoking, bronchitis, chronic obstructive pulmonary disease, asthma, emergency cardiac surgery, chronic heart failure are the other major risk factors that can increase the incidence of postoperative pulmonary complications. Complex co morbidities in the older patients also add to the load of post operative pulmonary complication.[17,18] Our aim was to find the incidence of post cardiac surgery pulmonary complications.

METHODOLOGY

It was a prospective observational study conducted at the Cardiac Surgery Department, Punjab Institute of Cardiology, Lahore. The study was approved by ethical committee of the hospital and written consent was taken from all patients. A sample size of 100 cases was

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estimated by taking 95% confidence interval and 5% margin of error with expected population proportion of outcome in patients undergoing cardiac surgery.

Non-probability purposive sampling technique was used. Patients of both genders undergoing cardiac surgery were included in this study. Critically ill patients with chronic renal failure were excluded from the study.

Data was analyzed by using SPSS version 20. Mean ± S.D was given for quantitative variables (Age, height, weight, body surface area, flow rates). Frequencies, percentages and graphs were given for qualitative variables (post pulmonary complications associated with cardiac surgery on CPB, mortality rate etc.). A p-value of $\leqslant 0.05$ will be considered statistically significant.

RESULTS

This study included 100 cardiac surgery patients (67 males & 33 females) the average age was 42.5 years that ranged from 15-75 years. The patients were divided into 3 groups:

(1) CABG included 50 patients (39 males and 11 females with a mean age of 51.9 yrs).

(2) Valvular replacements include 30 patients with a mean age of 47 years (15 females and 15 males).

(3) Patients with congenital heart diseases were 20 (7 females and 13 males) with a mean age of 4.9 years.

The overall rate of pulmonary complications was 25%, with mortality of 8% in those patients. The mortality rate from all causes was 2%.

ARDS occurred in 3% patients in which 2 patients died and one recovered, pneumonia in 3%, atelectasis in 7% and pleural effusion in 12% and pneumothorax in 3%.

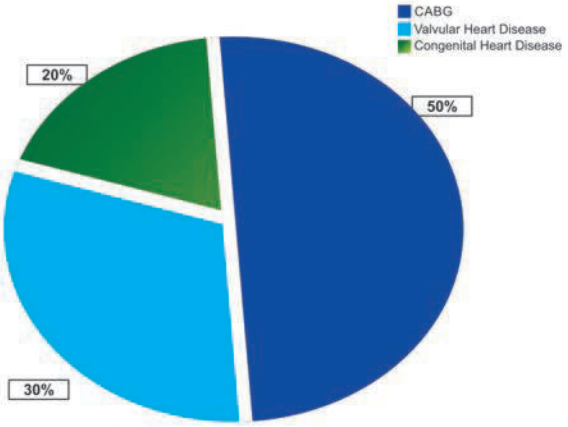

Figure 1: Graphical distribution according to procedure type

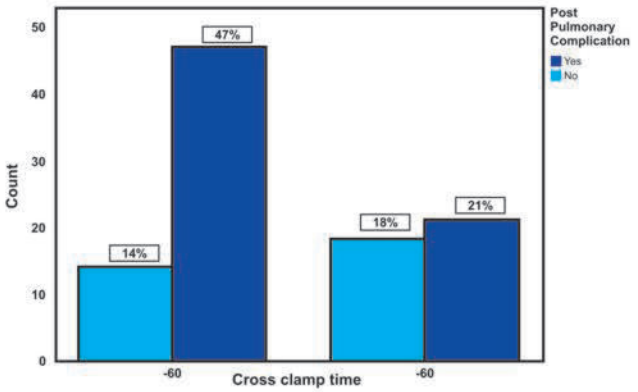

Figure 2: Graph showing association between cross clamp time and incidence of post pulmonary complication

Table 1: All Postoperative pulmonary complication after open heart surgery

Procedure	Total no.	ARDS	Pleural effusion	Atelectasis	Pneumonia	Pneumo thorax	Pulmonary edema	Total no.	Total % age
Coronary artery revascularization	50	2	8	1	1	1	1	14	28%
Valve replacement	30	1	1	1	1	1	2	7	23%
Congenital heart disease	20	1	3	1	1	1	0	7	35%
Total	100	4	12	3	3	3	3	28	28%

Table 2: Association between duration of mechanical ventilation and postoperative pulmonary complications.

Duration of ventilation (hours)	Complications								
	No PPC	ARDS	Plueral effusion	Pneumonia	Pneumo thorax	Pul-edema	Atelactasis	Total	p-Value
2-24	63	1	4	2	2	3	3	79	
24-48	1	0	5	0	0	0	2	4	
48-72	3	1	1	1	1	0	1	12	
>72	1	1	2	0	0	0	1	5	
Total	68	3	12	3	3	4	7	100	0.007

DISCUSSION

The aim of the study was to measure incidence of pulmonary complications after open heart surgery. One hundred patients (67 males and 33 females) were included in this study. Open heart surgery with cardiopulmonary bypass was used in these cases.

In this study we found the incidence of ARDS was 4%, our results are almost same as the report of Faker Ali et al. According to him incidence was 3.35%.[1]

According to our results, the incidence of postoperative pneumonia was 3%. Comparable results were seen in a study conducted in Yemen.[1] Another studies showed a higher incidence (15-20%) of post operative pneumonia.[13,14,16,]

In our study atelectasis occurred in 3% of cases diagnosed clinically and radiographically. Similar results were seen in another study, which showed 6% incidence of atelectasis.[9]

In another study conducted by Brooks, incidence of atelectasis was found 70%. The reason of low incidence of atelectasis may be due to micro atelectasis or military atelectasis usually undetectable both clinically and radiographically, use of positive pressure (7-8cm of H_2O) during postoperative period of mechanical ventilation.[14,9]

The incidence of pneumothorax according to this study was 3%, comparable results were seen in another study.[9]

Incidence of pleural effusion showed a wide variation in different studies. According to our study it was 12%. A study conducted by Faker Ali et al. showed incidence of pleural effusion was 2% whereas, Richard et al. reported pleural effusion in 62% study cases.[1,7]

CONCLUSION

The incidence of pleural effusion was highest among pulmonary complications in post cardiac surgery patients.

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Original Article

Short Term Outcome of Facial Reconstruction of Burn Patients with Tissue Expanders

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ABSTRACT

Objective: To observe the short term and cosmetic outcome of facial reconstruction of burn patients with tissue expanders.

Methodology: This study was conducted in Sharif Medical City Hospital, Lahore from June 2010 till June 2013. A total of 20 patients of age 17-30 years with facial and neck burn were selected after informed consent. All the patients received treatment with tissue expanders. All surgeries were done under general anaesthesia. All the patients were followed up to 6 week after reconstruction for any complications (expander extrusion, expander site infection, hematoma or necrosis of injection port site). Patients having no complications were labeled as success. The cosmetic outcomes based on assimilation of color and thickness with surrounding skin color and satisfaction were also measured.

Results: Indications for tissue expansion were, fire burn in 13 (65%) patients and acid burn in 7 (35%) patients. Out of 20 patients, 15 (75%) were females and 5(25%) were males. Most common complication was infection in 2 (10%) patients, for which expander had to be removed. There was no other complication. The donor site was covered in 18 (90%) cases and hence the success was achieved in 18 (90%) patients. Flap color and texture assimilation was achieved in 18(90%) patients. Satisfaction was very good in 16(80%) patients.

Conclusion: Tissue expansion is a safe and feasible technique with high success rates for faces and neck area reconstruction.

Keywords: *Tissue expander. Acid burn.Grafts.*

INTRODUCTION

Tissue expansion has become a routine procedure in plastic surgery.[1] Neumann in 1965 was the first one to recognize the potential of tissue expansion in reconstructive surgery.[2] Radovan used tissue expanders for breast reconstruction after mastectomy.[3] Subsequently, tissue expansion has become the treatment method of choice for many congenital and acquired defects in children and adults.[4,5] Expanders are silicone envelops that have self sealing injection ports through which saline is injected progressively through the port at twice weekly intervals which enlarges the expander.[1]

At the cellular level, the epidermis undergoes mitotic changes in the expanded skin and there is recruitment of adjacent tissue.[1] The dermis thins but there is a thick fibrous tissue that focuses around the capsule.[6,7] Skin expansion allows the surgeon to generate additional precious tissue.[2,5] This enables the surgeon to cover defects using local skin of appropriate color, texture and adnexal structure, especially the face where we want near perfect match.[8] Distant donor site complications can be avoided.[1] Hair bearing skin can be expanded and used for specialised areas of facial reconstruction like eyebrows.[6] Asian faces tend to scar badly after burn injury. Fire and chemical burn to face are practically challenging without satisfactory results with traditional techniques. Grafts, local flaps, pedicle flaps and microvascular free tissue transfer are other methods of facial reconstruction.[9]

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METHODOLOGY

This prospective study was carried out in Plastic Surgery Department at Sharif Medical City Hospital, Lahore. This study included 20 patients of ages between 17-30 years with burns on face and neck area. All patients were counseled about the procedure and possible complications of the procedure and were included in the study after informed consent was signed by the patients. Standard photographs were taken before and after surgery. All cases were done under general anaesthesia and as a day case. Before incision, a prophylactic antibiotic (Injection Ceftriaxon in a dose of 1gram through intravenous route) was given. A small incision was made in the area where the pocket for the expander had to be placed adjacent to the burned area after the skin was prepared with povidone-iodine. Blunt dissection was done below the skin and subcutaneous tissue. Meticulous homeostasis was achieved. The expander was examined for its safety and leakage.The expanders were placed in the pocket created and another small pocket was created separately for the port in subcutaneous plane. Skin was closed with prolene 4/0 in a mattress fashion. Pressure dressing was applied for 24 hours. After the operative scar had healed by 8th – 10th day, twice weekly inflation of expander with

normal saline was started for over a period of 6 to 8 weeks. At the end of which tissue expander was removed and the reconstruction of the face and neck done at the same time. All patients were followed up for 6 months after surgery for any complications (expander extrusion, expander site infection, hematoma or necrosis of injection port site). The outcome were labeled in terms of success as 'yes' if there was no complication and the donor area was adequately covered at the end of 6 week follow up. The cosmetic outcome were also assessed. The color assimilation was labeled as very good, good or satisfactory based on matching previous preoperative photographs with postoperative photographs. Flap texture was labeled as very good, good and satisfactory by comparing the texture of adjacent skin with that of reconstructive site through physical examination. Donor or recipient site scar formation was poorly accepted or fully accepted which was based on patient's own subjective perception. Satisfaction of the patients was a subjective parameter which was based on patient's overall experience and was labeled as very good, good or satisfactory. All the data was collected in specially designed proforma. The data was analysed through SPSS version 20. The study was approved by hospital ethics committee.

RESULTS

The age group was from 17-30 years. There were 15 (75%) female patients and 5 (25%) male patients. The indications of surgery were fire burn in 13(65%) patients and acid burn in 7(35%) patients. The patients were also distributed according to anatomical site which is given in Table 1. The frequency of complications is given in the Table 2. The donor site was adequately covered in 18 (90%) patients, so the success was achieved in 18 (90%) patients. Cosmetic outcomes of the procedure were shown in Table 3.

Table 1: Anatomic sites

Anatomic site	Frequency (N) & Percentage (%)
Face	16 (80%)
Neck	4 (20%)

Table 2: Complications of expanders

Complications	Frequency (N) & Percentage (%)
Expander extrusion	0(0)
Expander site infection	2(10)
Hematoma	0(0)
Necrosis of injection port site	0(0)

Table 3: Cosmetic outcome of the procedure

Parameters	Number (n)		Percentage(%)
Color assimilation of flap with the adjacent skin	Very good	18	90
	Good	1	5
	Satisfactory	1	5
Texture assimilation of flap with adjacent skin	Very good	18	90
	Good	1	5
	Satisfactory	1	5
Donor site scar formation	Fully acceptable	18	90
	Poorly acceptable	2	10

Recipient sites scar formation	Fully acceptable	18	90
	Poorly acceptable	2	10
General satisfaction	Very good	18	90
	Good	1	5
	Satisfactory	1	5
Donor site scar formation	Very good	16	80
	Good	2	10
	Satisfactory	2	10

DISCUSSION

The ability to increase local tissue by controlled soft tissue expansion has led to a rapid increase in the use of tissue expanders in plastic surgery.[2] As a well established principle in facial reconstruction surgery, one should use local tissue wherever possible to provide the best tissue for color and texture match and sensation maintenance.[1] The lack of mismatch of soft tissue is a common challenge facing the reconstructive surgeries especially when it comes to facial reconstruction.[10] Tissue expansion in facial reconstruction provides skin with near perfect match in color and texture as well as sensation .[1,11]

With tissue expansion there is no new unduly disfiguring defects and there is avoidance of distant flaps as well.[1] Whereas, skin grafting may suffer from mismatch of color, skin thickness and lack of proper contour in relation to neighbouring tissue.[8] Also, skin grafting causes scar contracture leading to disfiguring of important structure such as eyelids and corners of mouth.[12-14]

Even with its disadvantages like temporary cosmetic deformity during expansion phase, prolonged periods of expansion and the need for multiple procedure, the results of tissue expansion are superior to the traditional methods of skin grafting.[2,9,15] With proper control of infection with intravenous antibiotics and increased operative experience, the major complication such as infection and early expander exposure are reduced to the minimum.[1,2,7,16]

The overall decrease in complication is the likely result of increased operative experience and the use of antibiotics.[7] While complications like infection, implant exposure, deflation, hematoma and seroma may occur and alter the timing of reconstruction, they barely compromise the results.[2,3]

We achieved meticulous homeostasis, so did not see any hematoma or expander extrusion during follow up.

In a study of Bakhshaeekia, a total of 78 patients underwent facial reconstruction by insertion of a tissue expander in the cheek or the neck due to burn scar, traumatic scar, leishmaniasis or large pigmented nevi, the rate of infection was 2.6%.[17] In a study of Yamin of 36 patients, 77.78% patients were satisfied with reconstructive surgery of extensive face and neck burn scars using tissue expanders.[18] While in our study we got very good cosmetic outcomes in 18(90%) patients and the overall satisfaction was achieved in 80% patients. We measured the satisfaction by asking the patients a simple question that how satisfied are you with the treatment. This was based on a subjective criteria. And patient's recall bias may be involved. However, we could not find any other authenticated criteria for describing satisfaction in a measurable term. Previously, Yamin also used the similar outcome parameters.[18] In their study, they also described satisfaction based on personal experience of the patients. However, there is need to develop scales which can objectively measure the satisfaction of the patients after reconstruction of face and neck with tissue expanders. One of the limitation of our study was a limited sample size.

CONCLUSION

Tissue expansion is a safe and feasible technique with high rate of success and achieves a high level of satisfaction among patients for facial reconstruction of burn patients. So, it may be opted as a first line treatment option for neck and face burns.

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Original Article

Frequency of Emotional Distress Among Patients of Hypospadias Repair in Adolescence or Adulthood

Naveed A Khan, Saeed ur Rahman

ABSTRACT

Objective: To determine the frequency of emotional distress among patients of hypospadias repair in adolescence or adulthood.

Methodology: This was a descriptive study (cross-sectional survey), conducted at Outpatient Department of Plastic Surgery Department of Sheikh Zayed Hospital Lahore. The cases were follow-up patients of hypospadias repair, who were contacted and called up for the purposes of the study. Forty five patients who were known cases of hypospadias who had been diagnosed based upon physical examination at Plastic Surgery OPD were selected for this study. Sampling technique was convenience sampling. Emotional distress or clinically significant symptoms of anxiety and/or depression were assessed using Hospital Anxiety and Depression Scale which is a standardised and validated instrument to measure anxiety and depressive symptoms in medical patients, in urdu translated form. The main outcome variable was frequency of elevated symptoms of emotional distress, which were presented as frequency distribution tables.

Results: Out of 45 patients of hypospadias repair, 32 were definite cases of clinically significant anxiety and 19 were definite cases of clinically significant depression.

Conclusion: Frequency of emotional distress in these patients is high. Assessment of anxiety and depression in this group of patients should be routine. Clinicians should give due attention to the emotional needs and concerns of patients undergoing hypospadias repair, particularly those who have had repeated surgeries.

Keywords: *Hypospadias. Hospital Anxiety and Depression Scale. Depression.*

INTRODUCTION

Hypospadias is a common congenital abnormality of penile development and structure, in which there is incorrect location of the urethral opening, chordee or ventral bending of the penis and incomplete formation of the foreskin.

It is a malformation which is commonly corrected by paediatric urologists within the first year of life in first world countries. Success rates vary, and some operations which are deemed "successful" during childhood start manifesting complications during adulthood.[1] Reconstructive surgery for failed hypospadias repair, in adulthood, frequently has poor results and repetitive surgeries are required, leaving more scars and depleting penile tissue.[2] Such is the plight of the so-called "hypospadias cripples", who then face an adult life of urinary and sexual dysfunction, as well as cosmetic dissatisfaction.

Psychosexual adjustment problems occur, with psychological distress, problems of self-image and inhibition of sexual behaviour.[3,4] It might be expected that such patients may have elevated levels of anxiety and depressive symptoms as well as lower self-esteem.

The outcomes in adulthood, patient adjustment and patient satisfaction with hypospadias repair that was done in childhood has been studied in the West, and the toll of repetitive reconstructive surgeries on the "hypospadias cripples" is well known in the West too, but there is a third group which is relatively rare in Europe and the US, which is those who undergo hypospadias repair for the first time in adulthood or adolescence.[2] This group is relatively common in Pakistan and other third world countries where the availability, awareness and motivation towards early hypospadias repair is less than in the West for various reasons. These patients' outcomes are typically seen to be poorer than those of hypospadias operations in early infancy.[5] One reason for this being that skin type in one years old infants is Type 2, which is more pliable and recovers better with minimal scarring, while skin type in adults is Type 5, which heals relatively poorly and produces more scar tissue.[6] Such patients often have more post-operative complications as well.

Due to the rarity of this subset of patients in the developed world, no study has been done on the degree of emotional distress, self-esteem or overall quality of life among these patients. We expect that the frequency of emotional distress among this subset would be particularly high. Also, the stresses that hypospadias patients face in this part of the world may be different from those in Europe or America, as marriage and fertility are typically very important parts of life in this setup. Family pressure are high to get surgical correction done sooner.

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METHODOLOGY

This study design was a cross-sectional and it was conducted at Outpatient Department of Plastic Surgery Department of Sheikh Zayed Hospital Lahore in 2015. The cases were follow-up patients of hypospadias repair, who were contacted and called up for the purposes of the study. Data collection lasted throughout the month. Forty five patients who were known cases of hypospadias who had been diagnosed based upon physical examination at Plastic Surgery OPD were selected for this study. Sampling technique was convenience sampling.

Inclusion criteria:

- Patient of hypospadias who had had their first repair operation during adolescence or adulthood.
- Age between 12 and 60 years.

Exclusion criteria:

- Pre-existing depressive or anxiety disorder prior to repair surgery.
- Patient having any co-morbid major medical illness such as hepatitis, tuberculosis, diabetes etc.

The participants were selected according to above mentioned criteria. The nature of the study was explained to each subject, and written informed consent was obtained after ensuring them of total confidentiality. Permission for this cross sectional survey was sought from Hospital Ethics Committee. All subjects were assessed according to the following pattern: Socio-demographic details were obtained from each subject and were recorded on a self-devised proforma. Age of patient, urban or rural background, number of previous hypospadias surgeries, time since last surgery in months, type or classification of hypospadias, socio-economic status as denoted by patients household's monthly salary and educational level were taken as effect modifiers and also recorded in the proforma.

Emotional distress or clinically significant symptoms of anxiety and/or depression were assessed using Hospital Anxiety and Depression Scale (HADS) scale which is a standardized and validated instrument to measure anxiety and depressive symptoms in medical patients, in Urdu translated form.[7] The Urdu form has also been validated and used in many studies in Pakistan. HADS scale is a 14 item assessment scale, 7 items pertaining to depressive symptoms, and constituting a depression sub-scale, and 7 concerning symptoms of anxiety and constituting an anxiety sub-scale. Each item is measured on a 4 point rating scale. The maximum score for each sub-scale is 21, with a score of 8 to 10 is considered borderline abnormal and score of 11 and above is indicative of definite clinically significant emotional distress.[7]

All the patients were interviewed by the researcher himself. All the data collected during the study were analysed using statistical package for social studies (SPSS version 17.0). The quantitative data such as age and HADS score were presented as mean and standard deviation. The qualitative data like educational level and hypospadias classification were presented as frequency and percentages.

RESULTS

A total of 45 patients were interviewed for this study. The mean age of interviewed patients was 23.11 ±7.15 years, the youngest being 12 years old and oldest being 38 years old. Six (13.3%) patients were married, while 39 (86.7%) were single. Background-wise, 25 (55.6%) patients were urban, while 20 (44.4%) were rural. The mean number of previous hypospadias surgeries prior to interview was 4.177, with standard deviation of 1.23, the largest number of patients having had 4 surgeries (15 patients). The smallest number of surgeries was 2, while the highest was 7. The mean time in months since last surgery (at time of interview) was 18.9 months, with standard deviation of 9.96. The greatest interval was 48 months and lowest was 6 months. Of the interviewed patients, 12 (26.7%) had coronal hypospadias, 29 (64.4%) had penile or penoscrotal hypospadias, and 4 (8.9%) had perineal hypospadias. None had the glanular subtype. Patients were divided into socio-economic sub-groups based upon salary ranges. 18 (40%) patients' households subsisted on less than Rs. 10,000 per month, 18 (40%) patients' households on between Rs. 10,000 and Rs. 25,000 and 9 (20%) on between Rs. 25,000 and Rs. 40,000. Educational levels of the patients varied widely, with 6 (13.3%) patients being below primary level in education, 5 (11.1%) patients having passed primary (5^{th} class), 9 (20%) patients having cleared middle (8^{th} class), 11 (24.4%) patients having done matric, 4 (8.9%) completed F.A./F.Sc. and 10 (22.2%) having done bachelors.

With regards to the scores for emotional distress on HADS scale, the mean score on anxiety sub-scale was 11.46 ± 1.86. The most commonly attained score was 12 (14 patients had it), the lowest being 6 and highest being 16. Thus, on average, our patients had definite clinically significant anxiety symptoms. Another way to see the degree of anxiety would be to see the frequency of anxiety cases (score 11 and above). From this point of view, 32 patients, or 71.1% of them were definite cases of anxiety. The mean score on depression sub-scale was 10.1 ± 1.67. The highest score attained was 14 and the least was 7. The frequency of definite cases of clinically significant depression was 19 patients or 42.2%.

The total number of patients with any kind of emotional distress (either anxiety or depression) within this sample was 42 (93%), while the number of patients with both was 9 (20%) and the number with neither was only 3 patients.

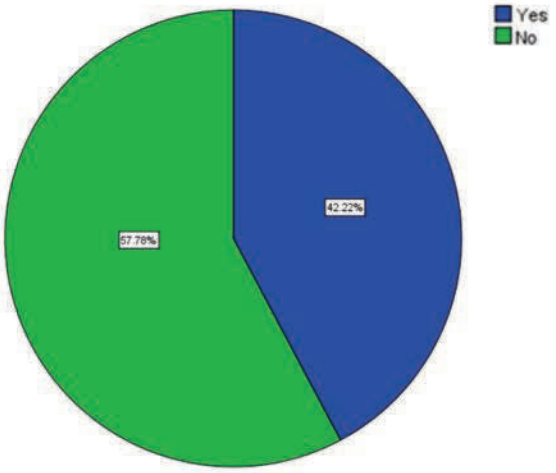

Figure 1: Frequency of Clinically Significant Depression among Hypospadias Repair Patients

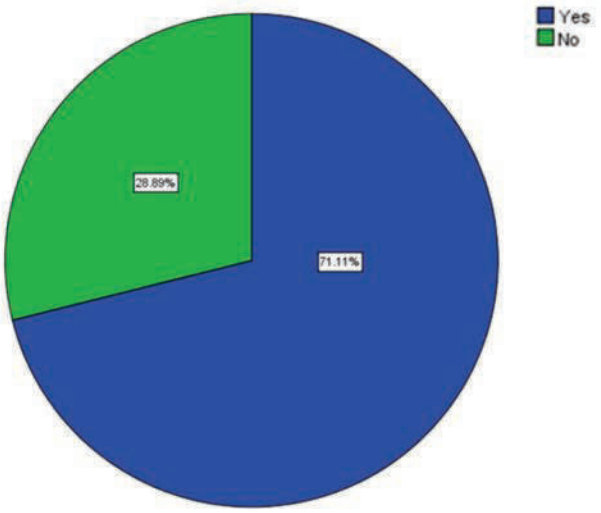

Figure 2: Frequency of Clinically Significant Anxiety among Hypospadias Repair Patients

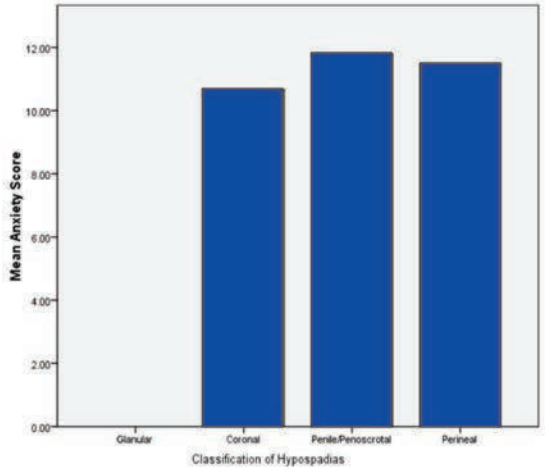

Figure 3: Mean Anxiety Score in Various Sub-Types of Hypospadias

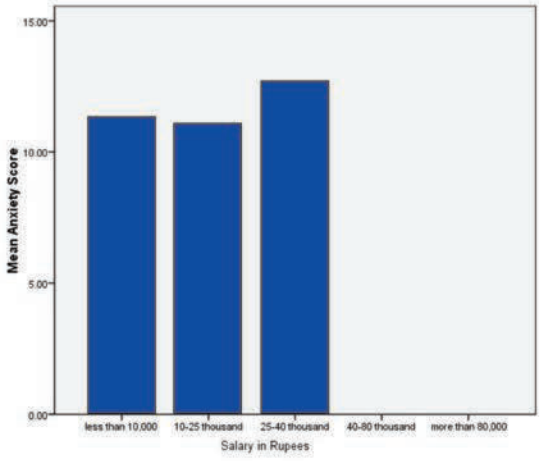

Figure 4: Mean Anxiety Scores in Various Socio-economic Brackets

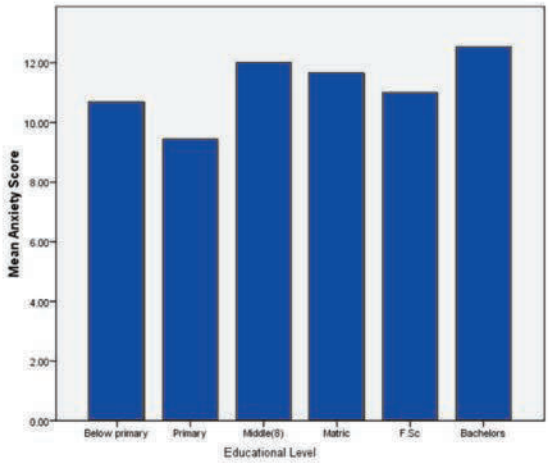

Figure 5: Mean Anxiety Score at Various Educational Levels

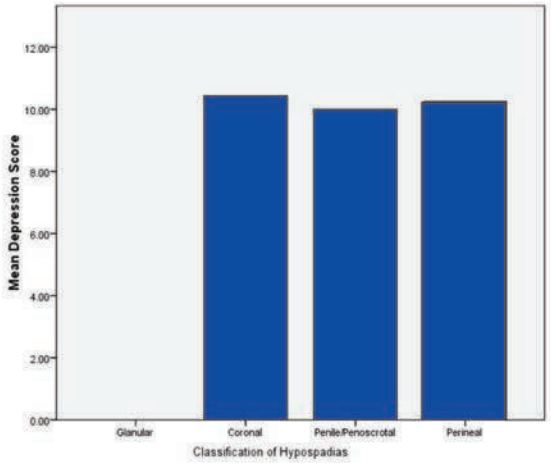

Figure 6: Mean depression Score in Various Hypospadias Types

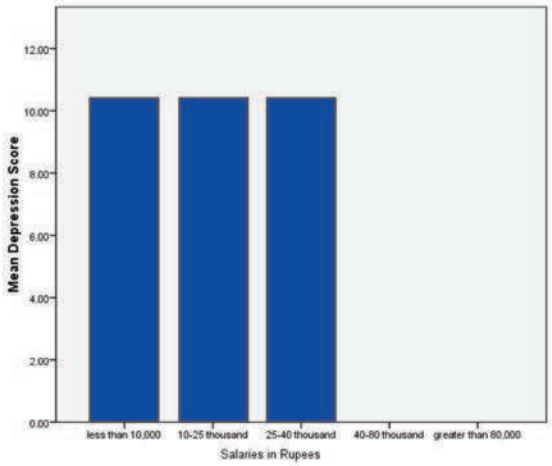

Figure 7: Mean Depression Score in Various Socio-economic Brackets

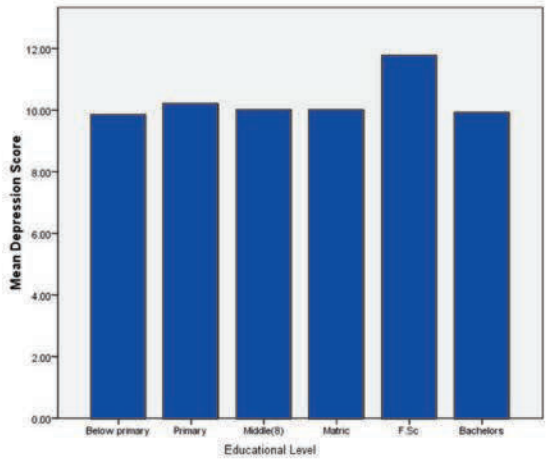

Figure 8: Mean Depression Score at Various Educational Levels

DISCUSSION

In this study, the authors interviewed 45 patients who had been operated upon for hypospadias for the first time during their adolescence or adulthood. This study was of particular interest, as in the west, hypospadias is detected and corrected early in infancy, when quality of skin and it's healing characteristics are much better. This also leads to prognosis of hypospadias repair being much better, with fewer going on to become "hypospadias cripples". A recent study conducted confirmed this, and found significantly poorer out comes in patients who had repair operations in adulthood or adolescence, and poorer outcomes when there was previous unsuccessful hypospadias surgery.[5] Thus, the above mentioned subset of patients who were recruited for our study, is relatively rare in the West.

In Pakistan, due to lack of awareness and availability of treatment, this subset is relatively abundant, and, it would be expected, more susceptible to a poor outcome. This, intuitively, would suggest higher rates of emotional distress and poor quality of life among these patients. It was to investigate this idea, and to assess the frequency of clinically significant emotional distress in these patients that this study was undertaken. As mentioned in the results above, the frequency of clinically significant emotional distress of any kind (either anxiety or depression) was found to be particularly high in these patients with 42 (93%) patients being positive in this regard. Only 3 patients out of 45 (6.6%) were free from significant emotional distress. This is definitely alarming and much higher than estimated prevalence of anxiety/depression among the general population. Similar results were seen in other studies.[8,9]

The breakdown of emotional distress in these patients is also interesting. Clinically significant anxiety according to HADS scale occurred among 71.1% of our patients and clinically significant depression among 42.2%, while the number of patients with an overlap

was 20% or 9 patients. It is interesting to note that anxiety was a much bigger problem among these patients than depression, with the average anxiety score being 11.46. The cutoff for definite clinically significant anxiety in HADS scale is 11 according to Zigmond & Snaith, with 8 to 10 being borderline abnormal.[7] But despite the lesser frequency of depression, it is still much higher than frequency of depression among males found in various community studies in Pakistan as quoted by Naqvi.[18]

These characteristics of emotional distress in these patients can be compared to "hypospadias cripples" in the west as well as patients suffering from other malformations requiring plastic surgery. Studies were conducted regarding the psycho-social aspects of patients of hypospadias repair surgery by Svensson in 1981, 1982 and 1983.[3,410] They found among the psycho-social effects, an increased frequency of depressive and anxiety symptoms, increased isolation and lower self-esteem. A second series of studies conducted found significant insecurity and anxiety with regards to genital perception.[11] Kiss et al. found that those patients who underwent successful ventral repair of severe penile hypospadias during childhood had better psycho-sexual development and better satisfaction with penile appearance than those whose repair was unsuccessful.[12] These studies found not only elevated levels of emotional distress, similar to ours, but also delved into the causation of that distress, such as insecurities about masculinity, sexual function and low self esteem. These factors may have been relevant to our patients as well but it was not within the scope of this study to investigate those. Further, the importance of successful functional and cosmetic outcome in ameliorating these feelings was emphasized by Kiss et al. and this may be the reason why 93% of our patients had some form of psychological distress. They are the victims of the poor outcomes associated with their late and repeated surgeries. An interesting comparison also exists with other conditions presenting to a plastic surgeon.[12] Versnel et al. conducted a cross-sectional study comparing the self esteem, quality of life and emotional distress among patients with congenital severe facial deformity, acquired severe facial deformity and a control group. With regards to emotional distress, which was also measured using HADS in that study, no statistically significant elevation in mean anxiety and depression scores was found. This may also have been due to insufficient sample size, but scores were generally low nevertheless.[13] This contrasts with elevated levels found in our study, particularly in anxiety sub-scale. The reasons for it may be that genital function and appearance has a particular importance from the point of view of masculine self-perception, concepts of "potency" and feelings of adequacy and in our particular cultural context, the importance of marital life and production of offspring.[3,4,10,11]

In another study, all patients received a formal psychiatric diagnosis as having Adjustment disorder, and all showed elevated levels of either anxiety symptoms, depressive symptoms or social phobia symptoms.[14] On the surface, their disfigurement seemed much less severe than facial disfigurement, but the results resembled those of this study much more. Again, it could be to do with issues of masculine body image, gender identity, feelings of insecurity, as has been prominent in patients of hypospadias repair. Social impediments and comments by peers as well as generally less psychologically mature approach to coping among adolescents may contribute. Our patients were also generally young with mean age of 23.11 years.

Overall, the present study sheds light upon the degree of emotional distress that patients of late hypospadias repair are undergoing and shows high rates of both anxiety and depression. It emphasises the importance of psychological support to them and in some cases, psychiatric help.

Our study had some limitations like sample size was relatively small, so statistically meaningful comparisons could not be made. Furthermore, there was no other study that investigated emotional distress among this particular group of patients using HADS, so statistical comparison with mean anxiety or depression score or frequency from another study could not be made. Also, studying self esteem, quality of life and a qualitative aspect in which patients could openly mention about the nature of the experience and what bothered them most would have been very interesting.

RECOMMENDATIONS

- Assessment of anxiety and depression in this group of patients, as a routine, appears to be a worthwhile strategy to identify those in need of further psychological or surgical help.
- Clinicians should, as a matter of habit, give due attention to the emotional needs and concerns of patients undergoing hypospadias repair, particularly those who have had repeated surgeries.

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Photo Essay

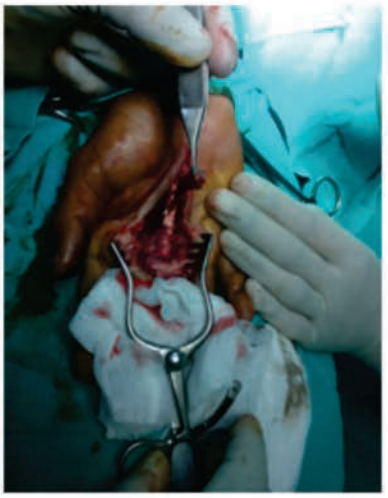
Giant Cell Tumor of Tendon Sheath

Farooq Azam Khan, Shafiq Hijazi, Zakria Tariq, Abbas Bajwa

INTRODUCTION

Giant cell tumor (GCT) of the tendon sheath is a benign nodular tumor of hands. It is the second most common tumor of hand.[1] It is a slow growing and painless tumor. The usual presentation is an enlarging painless mass.[2] This tumor usually affects middle aged female patients.[3] Radiograph may show bony erosion of the adjacent cortices. Histological examination shows histiocytes, fibrous tissue, giant cells and hemosiderin deposition. Common differential is pigmented villonodular synovitis. Although it is a benign tumor, local recurrence is common and is seen in upto 45% of cases.[4] There is no defined treatment protocol and local excision with or without radiotherapy is the treatment of choice currently.[1,5]

Thirty two years old female presented in outdoor patient department with painless swelling of her right hand middle finger for last 6 months. There was no history of trauma. On examination there was a diffuse fusiform swelling involving zone 2 and 3 of middle finger. It was painless swelling and the finger flexion was reduced. The range of movement was 0 to 40° in the proximal interphalangeal joint and 0 to 20° in distal interphanlangeal joint of middle finger. The neurovascular status was normal. Radiograph was normal however ultrasound of the involved digit showed tendon sheath thickness of long flexor tendons. Tentative diagnosis of GCT of tendon sheath was made and an excision biopsy was planned. Histopathology confirmed the diagnosis.



Demonstration of nodular swelling (GCT) in flexor tendon sheath

Exploration of flexor tendon sheath of right hand middle finger

Excision of the nodular swelling involving zone 2 and 3 of right hand middle finger

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Excised nodular swelling

Wound closure with prolene.

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