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**Editorial**

# Vitamin D and its Effects on Crohn's Disease - A Study

**Mohsin Masud Jan**

Editor

Vitamin D deficiency has been linked to a host of illnesses and conditions from heart disease and diabetes to certain types of cancer.

Vitamin D supplements may help those with Crohn's disease overcome the fatigue and decreased muscle strength associated with the inflammatory bowel disease, according to new research.

Extra vitamin D "was associated with significantly less physical, emotional and general fatigue, greater quality of life and the ability to perform activities of daily living," said Tara Raftery, a research dietitian and doctoral candidate at Trinity College Dublin. She is scheduled to present the findings Saturday at the Digestive Disease Week meeting in Orlando, Fla. Raftery and her colleagues evaluated 27 patients who had Crohn's in remission. (Even in remission, fatigue and quality of life can be problematic.) The patients were assigned to take either 2,000 IUs (international units) of vitamin D a day or a dummy vitamin for three months.

Before and after the study, the researchers measured hand-grip strength, fatigue, quality of life and blood levels of vitamin D. "Hand-grip strength is a proxy measure of muscle function," Raftery said. "Muscle function has been known to be reduced in Crohn's disease." Besides boosting bone growth and remodeling, vitamin D is thought to improve neuromuscular and immune function, reduce inflammation and help with other bodily tasks. Children and adults aged 1 year to 70 are advised to get 600 IUs a day; older adults, 800, according to the U.S. National Institutes of Health (NIH). Vitamin D is found in fatty fish such as salmon, in smaller amounts in cheese, egg yolks and beef liver, and in fortified foods such as milk. Sometimes called the sunshine vitamin, vitamin D is also produced when the sun's rays strike the skin.

Crohn's can affect any part of the gastrointestinal tract, but most commonly affects the end of the small bowel and the beginning of the colon. Symptoms vary, but may include persistent diarrhea, rectal bleeding, abdominal cramps, and pain and constipation. About 700,000 Americans are affected, according to the Crohn's & Colitis Foundation of America. Its cause is not well understood, but Crohn's is thought to involve heredity and environmental factors. Experts believe that

in those with Crohn's, the immune system attacks harmless intestinal bacteria, triggering chronic inflammation and, eventually, the disease symptoms.

The daily vitamin D supplement benefitted participants in many ways, Raftery found. "When levels of vitamin D peaked at 30 ng/mL (75 nmol/L) or more [a level considered healthy], muscle function in both the dominant and non-dominant hands were significantly higher than in those who had levels less than 30 ng/mL," she said. Quality of life improved more for the D-supplement group, too. Using a standard measure to evaluate quality of life, the researchers found those who achieved a healthy blood level of the vitamin scored 24 points higher than those not on supplements. A 20-point difference is considered meaningful from a "real-world" perspective, Raftery said.

Raftery now is testing vitamin D in a larger, year-long study of 150 Crohn's patients. The study results echo those of other researchers, including John White, professor of physiology at McGill University, Montreal. He said the research findings "show collectively that vitamin D acts in the intestine to stimulate the innate immune system to defend against pathogenic bacteria, and to enhance the barrier function of the intestinal epithelium [the lining of the intestine]."

Other researchers, including Raftery, have also shown vitamin D can help improve muscle strength, he said. Vitamin D is getting a lot of attention in inflammatory bowel disease treatments, said Dr. Neera Gupta, co-chair of the Crohn's & Colitis Foundation of America's pediatric affairs committee. More study is needed to determine the benefits of maintaining vitamin D levels higher than currently recommended, she said. Gupta cautioned those with Crohn's not to self-dose with vitamin D. "Discuss your vitamin D status with your primary gastroenterologist to determine whether or not vitamin D supplementation is indicated in your particular situation," she said. White said supplements are inexpensive and safer than too much sun exposure. A daily intake of 2,000 IUs is considered safe, he said. The safe upper limit for adults is 4,000 IUs, according to the NIH. The data and conclusions of research presented at medical meetings should be viewed as preliminary until published in a peer-reviewed journal.

# Hollow Abdominal Visceral Injuries following Minimally Invasive Gynecological Procedure: A 16 Year Experience

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## ABSTRACT

**Objective:** To study the pattern of hollow abdominal visceral injuries during minimally invasive gynecological procedures.

**Study Design:** Retrospective, Descriptive Study.

**Place and Duration of Study:** This study was conducted at Fauji Foundation Hospital Karachi, Gulshan General Hospital Karachi, Star General Hospital Karachi and Al-Tibri Medical College Hospital from July 1997 to December 2013.

**Materials and Methods:** All patients admitted to above mentioned hospitals for minimally invasive gynecological procedures electively or in emergency were included in the study.

**Results:** Total 3050 minimally invasive gynecological procedures were carried out in the above mentioned hospitals and 77 (2.5 %) patients had complications following the procedures. Mean age was 28 years ranged from 20-55 years. 40 % patients had history of previous gynaecological surgery. Abdominal visceral injuries included small bowel perforation 30 (38.96 %) patients, sigmoid colon perforation 20 (25.97%) patients. Both small bowel and sigmoid colonic perforation 08 (10.38%) patients, Caecal perforation 01(1.29 %) patient and Urinary Bladder 01 (1.29%) patient. 52 % cases were diagnosed within two days of primary surgery and rest within 10 days.

**Conclusion:** All gynecologists must be skilled, vigilant and careful while doing minimally invasive gynecological procedures that visceral injury should not happen or ready to deal if it happens accidentally.

**Key Words:** Bowel perforation. Illegally induce abortions, Dilatation and Curettage, Dilatation and Evacuation, and Hysteroscopy.

## INTRODUCTION

The visceral injury following minimally invasive gynecological procedures are not common but can happen and reported literature worldwide Incidences 0.3 % in premenopausal and 2.8% in post menopausal patients<sup>1</sup>. They are known to happen during minimally invasive gynecological procedures such as Dilatation & Curettage(D&C), Dilation & Evacuation(D&E)and Hysteroscopy. Although these procedures have very low risk of complications and can also be performed as inpatients and out patients<sup>2</sup>, but if complications occurs patient will require major invasive procedures like Laparoscopy and Laparotomy<sup>3</sup>. Common viscera injured are small bowel, large bowel, rectum and bladder<sup>4</sup>. Most of the patients who had these complications, the procedures were done by Mid Grade trained operators<sup>5</sup>, so complication rate is higher than normally reported. Approximately 1/3<sup>rd</sup> of the injuries can be diagnosed at the time of operation<sup>6</sup>. During Dilatation & Curettage (D&C), if cervical canal is narrow so chance of perforation is more. Canal should be dilated to avoid uterine perforation<sup>7</sup>, but gut perforation can be due to any instrumentation in the uterine cavity resulting in great morbidities and

mortalities<sup>8</sup>. In Pakistan, most of their illegal Dilatation & Curettage (D&C) are done by untrained mid wives so having chances of more complications<sup>9</sup>. Even in trained hands perforation to uterus and injury to viscera with Dilatation & Curettage (D&C), Dilatation & Evacuation(D&E) and hysteroscopy, can happen. Uterus and bowel injuries reported incidence is 3 % and Uterus and bladder injuries is 1 %<sup>10</sup>. So, in order to reduce the risk of uterine perforation different precautions should be taken, such as uterine cervix adequately dilated, severe uterine ante flexion or retro flexion noted, and intrauterine adhesions should be judged before procedures because if these rules are not followed, Can lead to uterine perforation<sup>11</sup> and other complications. Such group of patients is more prone for uterine perforation and other complications. Patient who are nulliparous, post menopausal with markedly retroverted uterus have more chances of perforation<sup>12</sup> than the patients who are adequately assessed before doing the procedure. Common complications during minimally invasive gynecological procedures are a) excessive bleeding per vagina i.e revealed or concealed b) Injury to abdominal viscera. c) prolapse of the bowel through vaginal orifice. d) Infection in the uterus or other pelvic organs. e) scarring of the uterus or cervix,



which may require further treatment.

## MATERIALS AND METHODS

All patients admitted in gynae ward of three (03) Hospitals of Karachi already mentioned, their history, examination, diagnosis, primary procedure and complications, hospital stay, treatment given & intervention done were reviewed.

Fauji Foundation Hospital is 200 bed general infirmaries. The catchment area of the hospital is a populous neighborhood i.e Shah Faisal Colony Karachi. The patient population belongs to retired & deceased family members of military services along with general population. It is fully equipped with all the latest diagnostic & management facilities. Star general & Gulshan hospitals are private concern facilities. They have bed strength of 30 & 25 respectively. These hospitals mostly deal with gynecological & obstetrical patients. Fauji Foundation hospital Karachi had 1440 minimally invasive gynecological procedures done and complication noted in 36 (2.5%) patients and Gulshan general Hospital Karachi out of 1500 cases of minimally invasive gynecological procedures 36 (2.5%) patients had complications. At Star General Hospital out of 180 cases of minimally invasive gynecological procedures, 05 (0.34%) patients had complications. Surgeons were involved once called by gynaecologist, most of the time on first post operative day but rarely at the time of surgery. All these patients were resuscitated & blood was made available. Those patients who had excessive bleeding P/V were managed by gynaecologist or surgeon conservatively and cavity was packed. Excessive Bleeding p/v patients had hysteroscopy if bleeding point found, cauterization was done. Patients with intraperitoneal bleed or with peritonitis had laparoscopy, followed with whatever procedure required. During laparoscopy, if no visceral injury found the rent in uterine wall was repaired laparoscopically and drain in the pelvis inserted after peritoneal lavage. If bowel injury found, laparotomy was done. Finding of laparoscopy was confirmed during the laparotomy. If patient had faecal peritonitis due to solitary small bowel perforation, exteriorization of bowel done as ileostomy followed by peritoneal lavage but, if sigmoid solitary perforation found, loop colostomy was done with exteriorization of the injured bowel followed by peritoneal lavage. If both small bowel as well as sigmoid colon were injured, perforation in small bowel brought out as ileostomy and colonic perforation was repaired. If caecal perforation found, tube ceacostomy was done left there for six weeks and followed by gastrograffin enema and the tube removed. All these patients had triple regime antibiotic therapy (3<sup>rd</sup> generation cephalosporins, metronidazole & gentacin). During the procedures surgeon made sure that blood and blood products are

available if needed. Most of the cases were done under general anesthesia.

## RESULTS

Mean age of the patient was 38 years but ages range between 20-55 years. Out of 77 patients 05 (6.49%) patients presented with excessive bleeding P/V, 04 (5.19%) patients with signs of shock because of intraperitoneal bleed and 03 (3.89%) patients with peritonism secondary to haemoperitonium, 60 (77.9 %) patients presented with peritonitis within 48 hours after primary procedure. 05 (6.5%) patients presented during primary procedure with prolapsed of bowel through the vaginal orifice. 30 (38.96%) patients had ileal perforation and 20 (25.97%) patients had sigmoid perforation and 08 (10.68%) patient had both ileal and colonic perforation, 01(1.3%) patient had caecal perforation and 01 had bladder perforation.

**Table No.1: Visceral injury following minimally invasive gynecological procedures.**

| Complications                                | No of patients | % age |
|----------------------------------------------|----------------|-------|
| Small bowel perforation                      | 30             | 38.96 |
| Sigmoid colon perforation                    | 20             | 25.97 |
| Both small bowel & sigmoid colon perforation | 8              | 10.38 |
| Cecal perforation                            | 1              | 1.29  |
| Bladder perforation                          | 1              | 1.29  |
| Prolapse of bowel through vagina             | 5              | 6.5   |
| Uterine Perforation                          | 12             | 15.58 |
| Total Complications                          | 77             | 100   |

**Table No.2: Distributions of patients according to clinical presentation**

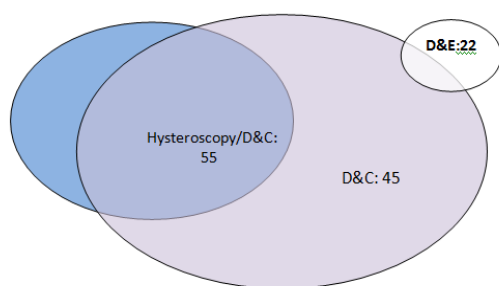
| Clinical presentations                | Frequency | % age |
|---------------------------------------|-----------|-------|
| Abdominal pain                        | 77        | 100%  |
| Fever                                 | 42        | 55%   |
| Excessive Vaginal bleeding            | 5         | 6%    |
| Abdominal distention                  | 23        | 30%   |
| Vomiting                              | 52        | 68%   |
| Passing feces through vagina          | 9         | 12%   |
| Visible loops of bowel through vagina | 5         | 6%    |
| Signs of peritonitis                  | 60        | 78%   |

In solitary ileal perforation 03 patients died because of septicemia. All of them had wound infection except one. Average stay was 03 weeks. 02 patients had burst abdomen in between 7-10 days requiring mass closure, and 05 patients developed incisional hernia within 06 months. Patients with colonic and ileal perforation 04 patients died within 03 days because of septicemia, 05 have a very stormy recovery running a high grade swinging temperature. Ultrasound revealed multiple intra-abdominal abscess but patients recovered after

repeated ultrasound drainage and antibiotics and left the hospital after six (06) weeks. Cecal perforation had tube ceacostomy done and removed without any untoward effect.

**Table No.3: Post Operative Complications**

| Postoperative complications | Frequency | Percentage |
|-----------------------------|-----------|------------|
| Surgical site infections    | 28        | 38%        |
| Postoperative pyrexia       | 14        | 19%        |
| Postoperative diarrhea      | 8         | 11%        |
| Wound dehiscence            | 2         | 3%         |
| Enterocutaneous fistula     | 4         | 5%         |
| Mortality due to Sepsis     | 7         | 10%        |
| Pelvic abscess              | 5         | 7%         |
| Inscisional Hernia          | 5         | 7%         |
| Total                       | 73        | 100%       |



**Figure No. 1: Total and different gynecological procedure showing 10 hysteroscopy, 45 dilation & curettage and 22 Dilation & evacuation cases.**

## DISCUSSION

Hollow visceral injury incident following to minimally invasive gynecological procedures is a rare event and lack of published information makes it difficult to compare and review the findings. Our findings showed that 2.52 % of all abdominal visceral injuries occurred in minimally invasive gynecological procedures. The other reported data showed variation ranging from 5-18 %<sup>13</sup>. The lower rate in our series is probably because of the handing of all procedures by consultants. As reported by many authors majority of patients were in very poor general condition at the time of operation<sup>14</sup>. But still surgery was carried out because surgical intervention is considered to be gold standard of treatment of any visceral injury following minimally invasive gynecological procedures<sup>15</sup>. These patients present late to the primary physician with the problem so intervention by primary Physician also resulted in complication and these complication when arises both the patient and family and physician fearing legal consequences do not seek help from specialist center. The few fortunate patients reaching health care facility represent only the tip of an ice berg<sup>9</sup>. The patients with perforation of uterus have a history of previous pelvic

or abdominal surgery<sup>16</sup>. In our series nearly 50% of patients have previous pelvic or lower abdominal surgery as reported also by Mesdaghinia E, et al.<sup>17</sup>. In our series perforation of uterus and complications following Dilation & Curettage is reported 58.44 % in 45 patients but generally reported in literature injuries to the viscera and the uterus in 20 % cases<sup>17</sup>. We had 10 patients of hysteroscopy and only 01 perforation noted but in literature reported 03 % complications following hysteroscopy in safe hands and only 01 % uterine perforation<sup>18</sup>. Bowel injuring may occur during variety of surgical procedures but smaller and substantial number occurs during less extensive procedures such as uterine curettage and laparoscopy<sup>6</sup>. The bowel may be injured with the curette, ovum forceps or uterine sound, or even the plastic cannula. Bowel perforation occurs when the posterior vaginal wall is violated, allowing the instrument to pierce the underlying structures. The management of cases with intestinal injuries following minimally invasive gynecological procedures poses some major challenges to general surgeons and gynecologists practicing in resource-limited countries. As in our study the most of complication occur during minor procedures such as Dilation & Curettage (D&C). The major problem during laparoscopy is to decide whether to close the rent in the bowel or do resection anastomosis. We made a rule to do resection anastomosis if more than 50 % diameter is involved and this is also reported same in literature<sup>19</sup>. Perforation of uterus and complications are more likely to happen if surgeon is not very experienced, as in our case maximum perforation occurred in Gulshan General Hospital because the operator was not experienced, as reported also by copper that 33 % of uterine perforation occurred during the surgeon's first procedure<sup>12</sup>. Minimally invasive gynecological procedures specially D&C for abortion is the commonest procedure and in countries where abortion is legalized, mortality and morbidity related with the procedure declined significantly.<sup>20</sup>

## CONCLUSION

It is recommended that minimally invasive gynecological procedures should be carried out by a trained & skilled operator to avoid complications. The operator should have an adequate knowledge regarding the size of uterus, wall thickness and the scaring on the uterus. Early recognition, aggressive resuscitation and early surgical management by institution are of paramount importance if morbidity and mortality associated with bowel perforation is to be avoided. The gynecologist should be competent to deal with the complications to reduce maternal morbidity and mortality in the circumstances where surgical help is not readily available.

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# Efficacy of Intracoronary Bolus administration of Tirofiban in Acute Coronary Syndrome Patients with No-reflow Phenomenon during Percutaneous Coronary intervention (PCI)

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## ABSTRACT

**Objective:** Currently in acute coronary syndrome, PCI is most common strategy. No-reflow phenomenon (NR) is one of serious complication. Aim of this study was to evaluate role of intracoronary bolus administration of tirofiban in acute coronary syndrome patients with no-reflow during PCI.

**Study Design:** It is prospective and observational study.

**Place and Duration of Study:** It is multicenter study, conducted in Karachi, Pakistan from August 2011 to July 2013.

**Patients and Methods:** Total of 62 patients of acute coronary syndrome underwent for PCI and developed no-reflow, received intracoronary bolus tirofiban were included. The angiographic definition of successful reperfusion should include both TIMI 3 flow as well as MBG 2 or 3. No-reflow, assessed by thrombolysis in myocardial infarction (TIMI) flow and myocardial blush grade (MBG) during treatment. Data were entered and analyzed using SPSS-16 software. Statistical significance was defined as p-value  $< 0.05$ .

**Results:** Out of 62 patients, 43 were males. The mean age was  $61 \pm 13$ , range from 37 to 70 years. TIMI flow 1 and 11 seen in 17, 37 patients while MBG 1 and 11 seen in 20 and 35 patients before intracoronary bolus administration of tirofiban. After bolus administration of tirofiban, TIMI flow 111 was seen in 61(98.387 %) out of 62 patients while MBG 11 and 111 was also noted in 61(98.387 %) out of 62 patients. It showed better Thrombolysis In Myocardial Infarction flow grades and TIMI myocardial perfusion grades (OR 0.22, 95% CI 0.12 - 0.39, p-value  $< 0.001$ ) immediately after intracoronary bolus administration of tirofiban in reflow phenomenon patients during PCI.

**Conclusion:** In patients with ACS, Intracoronary bolus administration of tirofiban is effective drug to improve no-reflow during percutaneous coronary intervention especially when patient blood pressure is at lower-side.

**Key Words:** Intracoronary, bolus tirofiban, Acute coronary syndrome, No-reflow, PCI.

## INTRODUCTION

No-reflow (NR) phenomenon could be defined as the persistence of reduced flow and regional myocardial dysfunction after the removal of an experimental epicardial coronary occlusion<sup>1</sup>. So far, the precise mechanisms of NR have not been fully clarified. The optimal therapy for NR is still being explored. Some studies<sup>2-4</sup> suggested that the dysfunction of coronary microcirculation perfusion was the central mechanism of NR. And it would not occur until the lesion of coronary micro-vascular endothelium to a certain extent exists. It was a dynamic and persistent procedure. Once the phenomenon occurred, the inflammation and lesion of coronary micro-vascular endothelium would be aggravated and the effect would sustain for weeks. Restoration of myocardial perfusion rapidly could be achieved by removing the micro-vascular obstruction and recovering the ante-grade coronary flow of occlusive vessel, and it has become a key of the treatment for NR<sup>5</sup>. For NR, the mechanism of

conventional drugs was mainly for expanding the coronary vessel, which might be beneficial to allowing the formed micro-thrombus to get through the micro-vascular network and removing the coronary occlusion. The conventional pharmacological treatment for NR is intracoronary (IC) administration of vasodilators (for example, adenosine, verapamil, nitroglycerin, sodium nitroprusside, etc.)<sup>6</sup>. On the basis of the mechanisms, conventional drugs could not inhibit the sustained thrombi caused by platelet aggregation when balloon was dilating, which limited the effect<sup>7-8</sup>. The effects of these vasodilators in patients with NR were contradictory and could not be sustained by large scale clinical evidence<sup>9-10</sup>. Platelet aggregation plays an important role in the formation of embolization. Glycoprotein inhibitors (GPI) block the final pathway of platelet aggregation, combine with the glycoprotein 11b/11a receptors selectively and inhibit the thrombinogen I competitively. And also, GPI could inhibit the activation, adhesion and aggregation of platelets. The pharmacological mechanisms of GPI

were contributed to the inhibition of formation of platelet thrombi, restoration of the ante-grade coronary flow of occlusive vessel and reducing the incidence of the ischemia event<sup>11-12</sup>. Tirofiban is one kind of GPI, which with high selectivity and short-acting pharmacological mechanism<sup>13</sup>. So far, there are some randomized controlled trials investigated the treatment of IC bolus administration of tirofiban for NR. Therefore, the aim of this study was to evaluated the efficacy of IC bolus administration of tirofiban for NR during PCI.

## MATERIALS AND METHODS

It is prospective, observational and multicentre study, conducted at Karachi, Pakistan between August 2011 to July 2013. Total of 62 patients of acute coronary syndrome underwent for PCI and developed no-reflow, received intracoronary bolus tirofiban were included. 38 patients had ST-elevation MI, 14 had non-ST elevation MI and 10 had a USA ( Table 1). All patients were given oral aspirin 300 mg, clopidogrel 150-300 mg and unfractionated heparin 5000 to 7500 units before PCI. Tirofiban was administered as an intracoronary bolus injection 10µg/kg over 01 min followed by maintenance intravenous infusion at 0.15µg·kg<sup>-1</sup>·min for 12 h. After PCI, all patients were managed in the cardiac care unit with once-daily dose of aspirin (150-300 mg) and clopidogrel (75 mg). A beta-blocker, statin and an angiotensin-converting enzyme inhibitor (ACEI) were also routinely prescribed to all patients. All coronary angiograms were evaluated by authors after PCI. Scores of thrombus in the PCI-targeted artery were assessed as following: 0: no thrombus; 1: possible thrombus; 2: the length of the thrombus is less than 50% of the vessel diameter; 3: the length of the thrombus is half to twice the vessel diameter; 4: the length of the thrombus is longer than twice the vessel diameter<sup>10</sup>. No-reflow in the PCI-targeted coronary arteries was assessed by Thrombolysis In Myocardial Infarction (TIMI) flow grade<sup>2</sup>. The TIMI myocardial perfusion grade (TMPG) was used to assess myocardial tissue-level perfusion<sup>3</sup>. TMPG was assessed only in the area supplied by the PCI-targeted vessel. The angiographic definition of successful reperfusion should include both TIMI 3 flow as well as MBG 2 or 3.

**Statistical Analysis:** Data were entered and analyzed using SPSS-16 software. Continuous data are expressed as mean values ± SD. Student's t-test was used to analyze continuous variables. Categorical variables were analyzed by chi-square test. P-value <0.05 was considered statistically significant.

## RESULTS

The baseline characteristics of the patients are shown in Table 1. Out of 62 patients, 43 were males .The mean age was 51 ±13, range from 37 to 70 years. As shown

in table. 11, TIMI flow1 and 11 was seen in 17, 37 patients while MBG (Table. 111) 1 and 11 seen in 20 and 33 patients before intracoronary bolus administration of tirofiban. After bolus administration of tirofiban TIMI flow 111 was found in 61(98.387 %) out of 62 patients while MBG 11 and 111 was also noted in 61(98.387 %) out of 62 patients. It was found significantly better Thrombolysis In Myocardial Infarction (TIMI) flow grades and TIMI myocardial perfusion grades (OR 0.22, 95% CI 0.12 -0.39, p-value <0.001) immediately after intracoronary bolus administration of tirofiban during PCI.

**Table No.1: Baseline Characteristics of patients.**

| Characteristics | No.(62) |
|-----------------|---------|
| Age (years )    | 51 ±13  |
| Sex ( male )    | 43      |
| Hypertension    | 50      |
| Diabetes        | 20      |
| Current smoker  | 23      |
| Prior MI        | 12      |
| STEMI           | 38      |
| NSTEMI          | 14      |
| USA             | 10      |
| Vessel.         |         |
| LAD.            | 31      |
| RCA.            | 19      |
| LCA.            | 12      |

**Table No.2: TIMI-Flow during PCI.**

| Timi-Flow | Before I/C Tirofiban | After I/C Tirofiban |
|-----------|----------------------|---------------------|
| 0         | 08                   | 00                  |
| 1         | 17                   | 01                  |
| 11        | 37                   | 00                  |
| 111       | 00                   | 61                  |

I/C =Intracoronary

**Table No.3: Myocardial Blush Grade during PCI.**

| Myocardial-blush grade. | Before I/C Tirofiban. | After I/C Tirofiban. |
|-------------------------|-----------------------|----------------------|
| 0                       | 07                    | 00                   |
| 1                       | 20                    | 01                   |
| 11                      | 33                    | 08                   |
| 111                     | 02                    | 53                   |

I/C= Intracoronary.

## DISCUSSION

The main findings of the present study are as follows. Intracoronary bolus administration of tirofiban is associated with an improved in no-reflow phenomenon in form of TIMI flow and TMPG during PCI like in other studies<sup>14-17</sup>. Though TIMI is a classical indicator of reperfusion during PCI,<sup>18-20</sup> it does not mean that TIMI 3 flow represents a normal myocardial perfusion.<sup>21</sup> In other words, myocardial blush grade (MBG) 01 might occur in the patients with TIMI 3 flow

during PCI. It had been found that MBG was an independent predictor of long-term mortality and could be used to describe the effectiveness of myocardial reperfusion.<sup>22</sup> Van Hof et al.<sup>23</sup> proposed that the angiographic definition of successful reperfusion should include both TIMI 3 flow as well as MBG 2 or 3. Moreover, Stone et al.,<sup>24</sup> suggested that MBG could be used to stratify prognosis of survival in high risk patients achieving TIMI 3 flow after intervention. Theoretically, MBG is superior to TIMI when assessing the myocardial perfusion during PCI. From the recent researches, GPI has its obvious advantages in inhibiting the formation of platelet thrombus, but bleeding event was the main complication. Tirofiban is one kind of GPI, which with high selectivity and short-acting pharmacological mechanism.<sup>25</sup> During PCI, IC bolus administration of tirofiban might increase the local drug concentration and improve the coronary flow. Considering the particular mechanism and short half life, IC tirofiban selectively blocks the final pathway of the platelet aggregation, which might contribute to the improving TIMI flow, MBG and reducing MACE.

In the present study 61.3% of patients had ST-elevation ACS. Intracoronary tirofiban was administered immediately after no-reflow phenomenon during PCI because we hypothesized that local administration of IIb/IIIa antagonist would have a faster and more efficient action on the coronary thrombus and vascular endothelium than the conventional intravenous bolus injection.

Study Limitations: It was small sample data, the bias should not be ignored. Also, the condition of patients, the time and dosage of drugs might have influenced the outcomes. Therefore, needs further powerful studies.

## CONCLUSION

The treatment of IC bolus administration of tirofiban was significantly effective to improve no-reflow phenomenon during PCI in acute coronary syndrome patients.

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# Clinical Profile, Conventional Surgical Approaches and the Outcome of the Surgery in Juvenile Nasopharyngeal Angiofibroma

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## ABSTRACT

**Objective:** To study the clinical profile of angiofibroma, various conventional surgical approaches and the outcome of surgery.

**Design:** Prospective, analytical study.

**Place and Duration of Study:** This study was conducted at the Department of Otorhinolaryngology and Head & Neck Surgery, Bolan Medical Complex Hospital, Quetta from January 2008 to December 2012.

**Materials and Methods:** This study included 31 patients of juvenile nasopharyngeal angiofibroma over a period of 5 years. All patients were treated by conventional surgical approaches following Fisch staging system. Twenty one (21) patients were operated by lateral rhinotomy approach, Three (3) patients by transpalatal approach, five (5) patients by Weber-Fergusson approach and two (2) by Mid-facial degloving approach. The patients were followed up for a period of three (3) years for any recurrence.

**Results:** All patients were male with mean age  $15.61 \pm 2.64$  years. The patients presented with recurrent epistaxis, nasal obstruction and nasopharyngeal mass apart from other symptoms and signs. Majority of the patients (80.64%) came with stage II and IIIA disease. Lateral rhinotomy approach was used in majority of cases (67.74%). Recurrence was observed in 5 cases (16.12%). Recurrence rate was less (one out of 21 cases) with lateral rhinotomy approach in comparison with other approaches. In transpalatal route recurrence was observed in two (2) cases out of three (3) cases, while in Weber-Fergusson approach it was one out of five (5) and in Mid-facial degloving it was one out of two (2) cases.

**Conclusion:** Juvenile nasopharyngeal angiofibroma is a disease of male adolescents. The patient most commonly presents with recurrent epistaxis and nasal blockage with nasopharyngeal mass. Surgery is the treatment of choice. Lateral rhinotomy approach gives an excellent exposure for most of these tumours with less chance of recurrence.

**Key Words:** Juvenile nasopharyngeal angiofibroma, Clinical profile, surgical approaches, Recurrence.

## INTRODUCTION

Juvenile nasal angiofibroma (JNA) is a rare, highly vascular, locally aggressive tumour that primarily affects male adolescents.<sup>1</sup> It accounts for approximately 0.5% of all head and neck tumours.<sup>2</sup> It originates from sphenopalatine foramen<sup>3</sup> and invades nasopharynx. From here it may spread to the nose, paranasal sinuses, pterygopalatine fossa, infratemporal fossa, orbit or skull base and intracranial. Grossly, the tumour is pale red to blue smooth mass often lobulated, noncapsulated, sessile or pedunculated and covered by nasopharyngeal mucosa.

The patient presents with recurrent epistaxis and nasal blockage with intranasal mass.<sup>4</sup> Cheek swelling, visual changes, hearing impairment and neurological deficits may be present sometimes. Diagnosis is made mainly by history, clinical examination and imaging studies. Preoperative biopsy is at best avoided for fear of massive lethal bleeding. There are a variety of staging criteria developed when evaluating juvenile angiofibromas which include those developed by Sessions, Chandler, Fisch, and Radkowski.<sup>5-9</sup> The Fisch staging is the most robust and practical.<sup>10</sup> Treatment

options for juvenile nasopharyngeal angiofibroma include surgery, radiation therapy, chemotherapy and hormonal therapy.<sup>11</sup> Surgery is the treatment of choice for nasopharyngeal angiofibroma.<sup>4</sup> Preoperative angiography and embolization minimizes the intraoperative blood loss.<sup>12</sup> In surgical treatment of juvenile nasopharyngeal angiofibroma the possibility of recurrences and residual tumours is always there. The present study focuses on the clinical profile of Juvenile nasopharyngeal angiofibroma, various conventional surgical approaches for this tumour and their outcome.

## MATERIALS AND METHODS

The study was conducted in ENT and Head & Neck Surgery Department of Bolan Medical Complex Hospital, Quetta over a period of 5 years from January 2008 to December 2012. Total patients were 31. All patients underwent a complete workup and contrast enhanced CT scan. Magnetic resonance imaging (MRI) was performed in 2 cases. Since the facility of Angiography and preoperative embolization were not available, therefore, our patients received blood transfusion during surgery and postoperatively.

## RESULTS

Fisch staging system was followed to stage the disease. The patients with extensive intracranial involvement and those with recurrent disease were excluded from the study. All the patients were treated surgically using various conventional surgical approaches like Transpalatal, Lateral rhinotomy, Weber-Fergusson and Mid-facial degloving approach. Lateral rhinotomy approach was employed in majority of the patients as most frequent approach. Postoperative specimens were sent for histopathological examination to confirm the diagnosis and all of them were reported as angiofibroma. The Patients were followed-up postoperatively for a period of 3years. During follow-up, the symptomatic patients underwent a new contrast enhanced CT scan to assess the presence and extent of the recurrence.

The common presenting symptoms were recurrent epistaxis (100%), nasal obstruction (100%) and nasal discharge (87.09%). Nasal mass (83.87%), snoring (80.64%), headache (45.16%), voice change (38.70%), hyposmia (38.70%), and hearing impairment (29.03%), swelling of cheek (16.12%) and diplopia (16.12%) were also present in some patients. On clinical examination a pinkish or bluish mass was found in nasopharynx of all the patients, while anaemia, nasal mass, mucopurulent nasal discharge, palatal bulge, nasal deformity, serous otitis media, conductive deafness, facial asymmetry and proptosis were other

signs (Table 1). Four patients had stage I disease, 13 patients stage II tumour, 12 patients stage IIIA and 2 patients stage IIIB tumour (Table 2). Intracranial extension was present in two patients but it was extradural. Majority of the patients had stage II and stage IIIA tumour as shown in Table2. In 17 (54.84%) cases the tumour was right side and in 14 (45.16%) cases tumour was on left side. Lateral rhinotomy approach was employed in 21 patients. Three patients underwent Transpalatal approach. Weber-Fergusson approach was used in 5 cases and Mid-facial degloving approach employed in 2 cases (Figure2). Complete resection was possible in 29 cases (93.54%). In two cases there was residual disease, and they were treated by radiotherapy. Recurrence was observed in 5 cases(16.12%), 2 of them were operated by transpalatal route , one by lateral rhinotomy, one by Weber-Fergusson approach and one by Mid-facial degloving approach. All of the recurrences were observed within 2years after surgery. Over all cure rate was 77.42% (n-24). No mortality occurred in this series (Table3). No major postoperative complication occurred except in one case there was massive postoperative nasal bleeding, which was managed by ipsilateral external carotid artery ligation. Minor postoperative complications were observed in some patients, who included epiphora (6.45%), facial bruising (6.45%), wound infection (9.67%), nasal crusts (12.90%), facial numbness (9.67%) and palatal fistula (6.45%).

**Table No1: Clinical features of angiofibroma.**

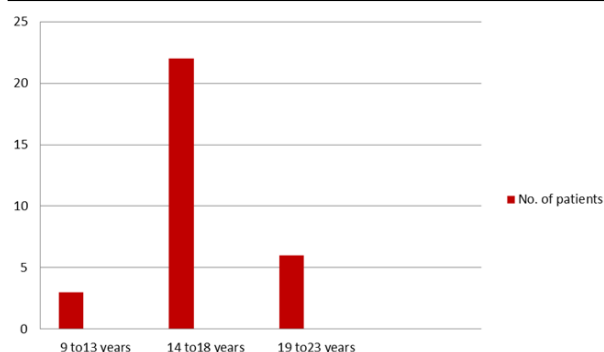
| Symptoms           | No. of cases | Percentage | Signs                        | No. of cases | Percentage |
|--------------------|--------------|------------|------------------------------|--------------|------------|
| Epistaxis          | 31           | 100%       | Nasopharyngeal mass          | 31           | 100%       |
| Nasal obstruction  | 31           | 100%       | Anaemia                      | 28           | 90.32%     |
| Nasal discharge    | 27           | 87.09%     | Mucopurulent nasal discharge | 27           | 87.09%     |
| Nasal mass         | 26           | 83.87%     | Nasal mass                   | 26           | 83.87%     |
| Snoring            | 25           | 80.64%     | Palatal bulge                | 25           | 80.64%     |
| Headache           | 14           | 45.16%     | Nasal deformity              | 18           | 58.06%     |
| Voice change       | 12           | 38.70%     | Serous otitis media          | 9            | 29.03%     |
| hyposmia           | 12           | 38.70%     | Conductive hearing loss      | 9            | 29.03%     |
| Hearing impairment | 9            | 29.03%     | Facial asymmetry             | 5            | 16.12%     |
| Swelling of cheek  | 5            | 16.12%     | Proptosis                    | 5            | 16.12%     |
| Diplopia           | 5            | 16.12%     |                              |              |            |

**Table No.2: Staging of the cases (According to Fisch staging system).**

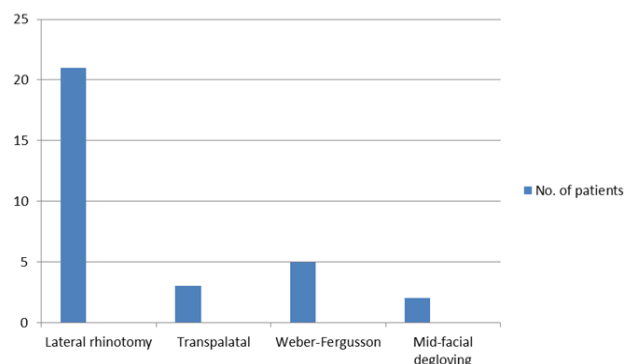
|      |    |        |
|------|----|--------|
| I    | 4  | 12.91% |
| II   | 13 | 41.93% |
| IIIA | 12 | 38.71% |
| IIIB | 2  | 6.45%  |
| IVA  | 0  | 0      |
| IVB  | 0  | 0      |

**Table No.3: Outcome of the Surgery**

| Outcome          | No. of patients | Percentage |
|------------------|-----------------|------------|
| Completely cured | 24              | 77.42%     |
| Recurrence       | 5               | 16.12%     |
| Residual disease | 2               | 6.46%      |
| Died             | 0               | 0          |
| Total            | 31              | 100        |



**Figure No.1: Age Distribution**



**Figure No.2: Surgical approaches for angiofibroma**

## DISCUSSION

A young male presenting with symptoms epistaxis, nasal obstruction and a nasopharyngeal mass is strongly diagnostic of juvenile nasopharyngeal angiofibroma. In present study all the patients were male and no female case was reported. The mean age of the patients was 14.6 years. For juvenile nasopharyngeal angiofibroma the most common age group is the second decade of life.<sup>13, 14</sup> As reported earlier, the incidence of epistaxis and nasal obstruction is more than 90% in patients with angiofibroma.<sup>15</sup> In this study all patients presented with epistaxis, nasal obstruction and nasopharyngeal mass. Other clinical features depend on size and extent of the tumor. Expansion and extension of the tumor may lead to facial deformity, proptosis, palatal bulge, headache, deafness, nasal mass, voice change, snoring and nasal deformity. Most of these clinical features were observed (Table 1). Diagnosis is made mainly by clinical features, however, modern imaging techniques allow accurate diagnosis and staging of juvenile nasopharyngeal angiofibroma.<sup>6</sup> Various management options for control of juvenile nasopharyngeal angiofibroma include radiotherapy, chemotherapy, hormonal therapy and surgery.

Surgery is the treatment of choice for juvenile nasopharyngeal angiofibroma.<sup>17</sup> Surgical approaches for angiofibroma range from extensive mid-facial degloving to minimally invasive transnasal endoscopic excision. An endoscopic approach is feasible for early stage lesions (Fisch I and II) and conservative external

approaches are still useful in advanced stages (Fisch III and IV). The open approaches proved helpful with respect to exposure, safety, cosmetic outcome and low morbidity. Preoperative angiography and embolization minimize intraoperative blood loss<sup>12</sup>, which was not available at our center. So we used blood transfusion during surgery. The conventional open approaches for angiofibroma include transpalatal, lateral rhinotomy, transmaxillary via mid-facial degloving, Weber-Fergusson, LeFort 1 osteotomy and Maxillary swing approach. We have used lateral rhinotomy approach in majority of our patients and recurrence was observed in one patient. Lateral rhinotomy approach is effective for the exposure of the nasopharynx paranasal sinuses, pterygopalatine fossa, and medial parts of the infratemporal fossa. Lateral rhinotomy approach with or without extension of incision can be used to remove juvenile angiofibromas in majority of patients.<sup>18</sup> Lateral rhinotomy approach to nose and nasopharynx gives an adequate exposure in almost all the cases of juvenile nasopharyngeal angiofibroma.<sup>19</sup> Surgical treatment, specially the lateral rhinotomy approach and its extensions, is recommended as the best method of managing angiofibroma in most patients.<sup>20</sup> Transpalatal approach provides access to the nasopharynx, sphenoid, sphenoplatine foramen and posterior nares. According to Hosseini SM et al. the lowest recurrence rate is seen either in the transpalatal approach when the tumor is limited to the nasopharynx with extension to the nasal cavity or Para nasal sinuses or with LeFort 1 approach when skull base invasion is present.<sup>20</sup> However, poor results were observed by us with the transpalatal approach. This approach was used in 3 cases of juvenile nasopharyngeal angiofibroma. In one patient there was residual disease and 2 patients came with recurrence. Mid-facial degloving approach provides good exposure to the maxillary antrum, nose, pterygopalatine fossa and infra temporal fossa. When an open approach is used, a midface degloving technique affords excellent exposure even for advanced disease.<sup>21</sup> Mid-facial degloving approach was used in 2 patients. In one case there was residual disease and in other case recurrence was observed. Weber-Fergusson approach was employed in 5 patients and only in one patient recurrence was observed. The main outcome measure was regular follow-up for a period of 3 years. Recurrence of the tumor was observed in 5 cases (16.12%) within two years of surgery. Recurrence was less in patients with lateral rhinotomy approach as compare to other surgical approaches. The incidence of recurrence is in range of 6 to 16.66%.<sup>22,23</sup> Age of the patient and stage of the juvenile nasopharyngeal angiofibroma at presentation are the two most important factors in predicting the recurrence.<sup>24</sup> As younger the age of the patient and later the stage of angiofibroma, are the higher the chances of recurrence. Hence, early diagnosis not only



helps in better management but also prevents recurrence of juvenile nasopharyngeal angiofibroma.

## CONCLUSION

Juvenile nasopharyngeal angiofibroma is an uncommon disease of male adolescents. It presents most commonly with recurrent episodes of epistaxis, nasal obstruction and a nasopharyngeal mass. Surgery is the treatment of choice for Juvenile nasopharyngeal angiofibroma. Lateral rhinotomy approach is effective for most of the juvenile nasopharyngeal angiofibromas with less chance of recurrence. Recurrence of juvenile nasopharyngeal angiofibroma is observed within 2 years of surgery.

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# Histological Study of Muscle Injuries to Observe the Effects of Environmental Pollutants on its Recovery and Regeneration

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## ABSTRACT

**Objective:** Humans are exposed to environmental pollution, food contamination and Cigarette smoking. Environmental pollution in addition to its effects on different systems of body, it also effect on recovery and regeneration of muscular injuries. In this study under different environments the recovery period and regeneration of muscular injuries will be studied on the basis of muscle histology.

**Study Design:** Experimental study.

**place and Duration of Study:** This study was conducted in Animal room of Anatomy Department, Postgraduate Medical Institute, Lahore from May 2011 to December 2011.

**Materials and Methods:** Study was carried out on total "100" animals. Control group comprises 28 animals exposed to (i) "Blunt trauma ", (ii) Incisional injury., (iii) thermal injury and (iv) chemical injury. Whereas other nine groups of animals following initiation of injury were exposed to heavy metal pollutants and non-heavy metal pollutants by orally, parentally or inhalation. Delayed wound healing was observed, because major factors limiting the ability of skeletal muscles to regenerate after trauma or diseases were a viable population of satellites cells, re-innervation and re-vascularization.

**Results:** The experimental group animals became more lethargic, inactive, death rate was more. Death occurred earlier in group " 6" & 8 as compared to rest of groups (  $P < 0.01$ ). Injured muscle initially showed increase in circumference and then followed by resuming its normal size in two weeks. time interval.

**Conclusion:** In control group wound healing occurred in normal time whereas those exposed to metallic and non-metallic environmental pollutants showed weight reduction and delayed wound healing.

**Key Words:** Muscle, Injury, environment, pollutants, recovery, regeneration

## INTRODUCTION

The word muscle is derived from Latin word. *Mus*. which means a mouse. The tail of mouse representing the tendon of the muscle skeletal muscles take part in, locomotion, speech, mastication etc. The Muscles have property of contractibility<sup>1</sup>.

The muscles tissue is composed of excitable and contractile elongated cells called muscle cells. They are long cylindrical structure range 10---100Hm in diameter and form millimeters to many centimeters in length. The cell membrane is sarcolemma on its outer surface. In each fiber nuclei are 35 per mm of length. Nuclei are ovoid and situated peripherally those to sarcolemma cytoplasm is occupied by parallel filamentous elements 1-3 um in diameter called Myofibrils. Section of skeletal muscle fibers show cross striations composed of light and dark bands. Myofibrils is further composed of actin and Myosin filaments. There is special smooth endoplasmic reticulum exist in the form of network of cisternal or membranous tubules which course between and around the myofibrils. These are longitudinal and transversally arranged tubules muscles are mesodermal in origin<sup>2</sup>. Skeletal muscles are voluntary muscles and under control of somatic nervous system. These muscles are situated and present at axial skeleton and appendicular skeleton. The skeletal muscles are red and white depending upon quantity of myoglobin. Red muscles are highly vascular as

compared to white muscles<sup>3</sup>.

A skeletal muscle capillary supply is very rich. Several capillaries have contact with each other muscle fiber. Each muscle fiber receives at least one motor nerve ending form the somatic nerves. One nerve fiber may innervate a single muscle fiber or many muscle fibers. A motor nerve fiber and muscle fiber together is motor unit (Richard S-snell-2005). A very peculiar property of skeletal muscle fibers is their power to regenerate following various kinds of degeneration causing injuries<sup>4</sup>.

**Regeneration:** It is a process whereby lost specialized tissue is replaced by proliferation of surrounding undamaged specialized cells. There is no residual trace of previous injury. The causes of tissue loss or destruction are:

1. Traumatic excision, whether accidental or surgical

- Physical agents like trauma, extremes of temperature ( Burns & deep cold)
- Chemical agents poisons Arsenic, cyanide mercuric Salt etc.

2. Physical, Chemical and microbial agents

- Physical agents
- Chemical agents
- Microbial agents i.e virus, Bacteria and parasites

3. Ischemid leads to infraction.

Repair is the replacement of lost tissue by granulation tissue which matures to form scar tissue. Wound healing involved e.g movements of cells, division of

cells, rearrangement of tissues and biochemical changes. In wound healing following steps are important (i) wound contraction by which wound undergo reduction in size up to 80 %. So that only one-quarter to one-third of destroyed tissue has to be replaced. Contracting mechanism resides in granulation tissue at margins of wound i.e myofibroblast contract which form granulation tissue<sup>5</sup>.

#### Wound healing occur by two phenomena's

**(a) Healing by first intention** means wounds with opposed edges. It is healing of clean, uninfected, surgical incision approximated by surgical sutures so called primary union or healing by first intension.

**(b) Healing by second intention:** When there is more extensive loss of cells and tissue occur in infarction, inflammatory ulceration and surface wounds. There is large tissue defect that must be filled. The original architecture cannot be restored. Abundant granulation tissue grows in from the margins to complete the repair. This healing called secondary union or healing by secondary intention. Extensive wound associated with ischemia. Factor influence wound healing are<sup>6</sup>.

- (i) Nutrition e.g low protein intake
- (ii) Metabolic status e.g diabetes mellitus
- (iii) Circulatory system i.e poor circulation
- (iv) Harmon such as Glucocorticoids
- (v) Infection
- (vi) Movement

**Environmental pollutants** include Metallic and non metallic. Metallic environment pollutants are lead, mercury, Arsenic and Cadmium lead paints and lead pipes to deliver water to homes, packed juices are the great source of lead pollution. Average daily intake of lead is 0.2mg. Lead effect on neuromuscular function and causes lead palsy i.e muscle weakness or palsy can occur. Mercury has a number of important industrial uses and poisoning from occupational exposure and environmental pollution by mercury vapors, which is 0,024 per days found in air. Lethal dose in blood is 4-5 ug/ml<sup>7</sup>.

Arsenic is found in soil, water and air as a common environmental toxicant. It is also in high concentration in water. It is also found in fruit, vegetables (due to pesticide spray) and fish. Arsenic effects on skin causes necrosis, sloughing and hyper keratoris. Thus causes atrophy and degeneration. Cadmium is one of the major environmental pollutants. It is cumulative poison found in plastic and house hold utensils, shell fish, animal liver, kidneys, in cigarettes etc. Cadmium do constriction of large arterioles in skeletal muscles<sup>8</sup>.

Peoples are exposed to non metallic environmental pollutants like air pollutants, solvents vapors and pesticides enter the body through inhalation. Five pollutants account for 98% of air pollution these are (i) Carbon Monoxide (52 %) (ii) Sulfur oxides (18 %) (iii) Hydrocarbons 121 (iv) particulate Matter (10 %) v. Nitrogen oxides (6 %). Solvent vapors such as gasoline, light fluids, Aerosol, Sprays floor and tile cleaners etc. Pesticides includes insecticides, rodenticides,

fungicides etc. These compound are manufactured for the sole purpose of destroying some form of life<sup>9</sup>.

## MATERIALS AND METHODS

This research was carried out on "100" Sprague dawly strain albino rats housed in cages and fed on chicken diet No 4 and water ad libilum. All rats were divided into nine (9) groups. Control groups was comprised of "28" animals and was divided into 4-sahgroups subject to different injuries it include:-

Group-I Blunt injury

Group-II incisional injury

Group-III Thermal injury

Group-IV Chemical injury like application of acids

Other eight groups of animals were administered two different doses of a specific pollutant for "one week" ; two weeks, three weeks and four weeks and so were further subdivided into 4-sub groups according to nature of injury applied to gastrocnemius muscle of lower limb under anaesthesia as that control group. Each group was sacrificed after " one, two, three and four weeks. Research was done according to following experimental design:

| Sr.No. | Group                                 | Dose                                                                                      | Sub groups as that of control                                                          |
|--------|---------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1      | Control group                         |                                                                                           | i. Blunt trauma<br>ii. Incisional injury<br>iii. Thermal injury<br>iv. Chemical injury |
| 2.     | Lead group                            | i. 2.5 mg/kg body wt. orally<br>ii. 4mg body wt. orally                                   | i. ii iii, iv.<br>As control sp                                                        |
| 3.     | Cadmium Chloride group                | i. 0.1 mg/kg body weight orally<br>ii. 1 mg/kg body weight                                | i, ii, iii, iv                                                                         |
| 4.     | Arsenic group                         | i. 1.5 mg/kg body weight<br>ii. 30 mg/kg body weight                                      | i, ii, iii, iv                                                                         |
| 5.     | Mercury group                         | 1 mg /kg weight orally<br>3 mg/kg body weight orally                                      | i, ii, iii, iv                                                                         |
| 6.     | Carbon monoxide                       | i. 1000 PPM (Parts per million)/ 30 minute /day<br>ii. 3000 PPM/30 minutes/day inhalation | i, ii, iii, iv                                                                         |
| 7.     | Gasoline group                        | i. 10 mg /kg<br>ii. 100 mg/kg                                                             | i, ii, iii, iv                                                                         |
| 8.     | Sulfur oxide group                    | i. 1 PPM/10 minutes/ day<br>ii. 3 PPM/10 minutes/ day                                     | i, ii, iii, iv                                                                         |
| 9.     | Organophosphorus (pyrethramine group) | i. 25 mg/kg body weight orally<br>ii. 50 mg/kg body weight                                | i, ii, iii, iv                                                                         |

Injured muscle tissue was obtained “ First week (day 1-7 days), second third and fourth week interval post injury than this tissue was studied for following:

- (1) cytology (2) Connective tissue
  - (3) Ratio of necrotic tissue and original surviving muscle fibers (4) Nucleoli
- stain used was Mallory (PTAH) schofield's, silver impregnation method, haemotoxyline and eosin stain, van gerson's stain.

## RESULTS

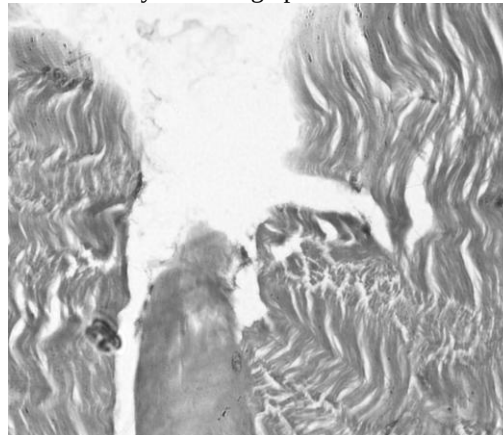
**Macroscopic:** The experimental group animals became more lethargic inactive, death rate was more, death occurred earlier in group 6 & 8 as compared to rest of groups. There was gradual decrease in mean animals weight ( $P < 0.01$ ) injured muscle showed initially increase in girth to (12-14mm) to and then following by resuming its normal size (8 mm) in two weeks time interval.

**Microscopic:** In control group 4-types of injuries induced caused haemorrhage inflammation, non-necrotic degeneration and later regeneration were observed. In short time following blunt trauma, the damaged segments showed gross tearing and degeneration. A large number of mononuclear cells was seen in intercellular connective tissue and within damaged muscle cells. By 24-48 hour there was an increase in the number of sarcolemmal nuclei. Some of which were likely of satellite cell origin. By day 3 regenerating muscle cells displayed central nuclei. By day 6<sup>th</sup> further progression of regeneration was seen. On days 14, 21 and 30 after trauma, the muscle appeared to have healed and no abnormalities could be found at the site of injury. In incisional injury healing occurred by contraction by which wound undergo reduction in size up to 80%. Contracting mechanism resides in granulation tissue at margins of wound that is, myofibroblast. Which form granulation tissue. The only one quarter to one third of destroyed tissue was replaced by granulation tissue. Chemical and thermal injuries caused inflammatory ulceration and surface wounds with large tissue defect. Original architecture could not be restored even after 3<sup>rd</sup> weeks. Abundant granulation tissue growth was seen. Extensive wound ischemic was noted.

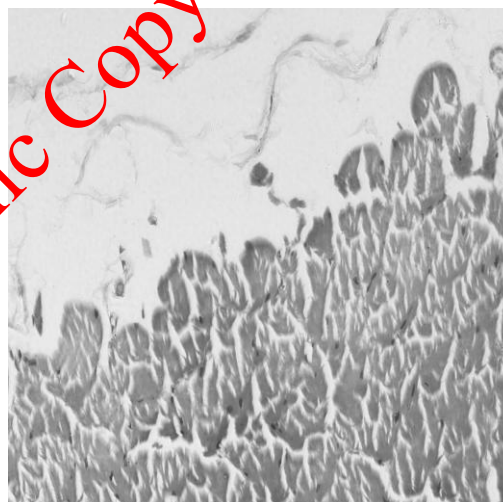


Group 1: Control

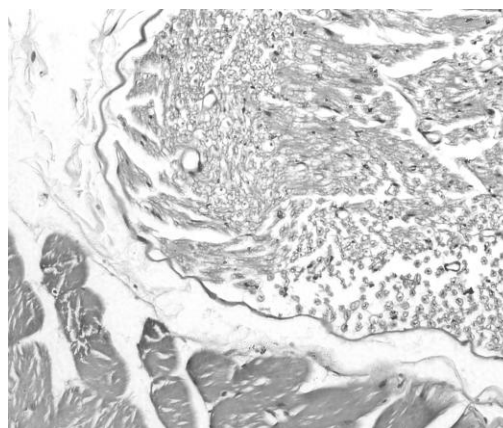
In groups 2 to 9 exposed to environmental pollutant incisional injury in all groups showed initial contraction to maximum reduction in size of wound, but one quarter of wound showed delayed appearance of granulation tissue up to 3<sup>rd</sup> week and ultimately healed in 4<sup>th</sup> week. Blunt trauma haemorrhage followed by non necrotic regeneration phenomena was noted and showed delayed healing up to 3<sup>rd</sup> weeks.



Group 1 Control (i.) Blunt trauma.

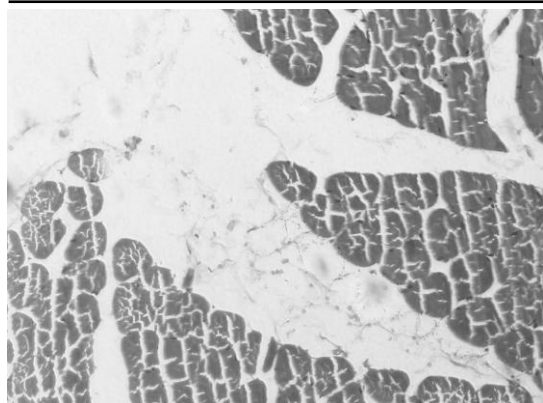


Group 1 control (i) Healing after blunt trauma.



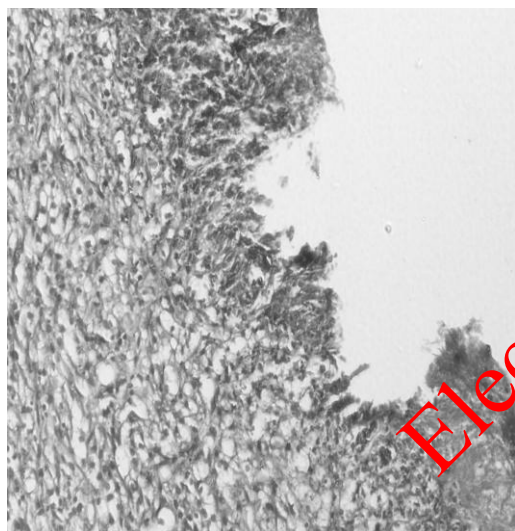
Group 2 control (ii) Incisional injury.



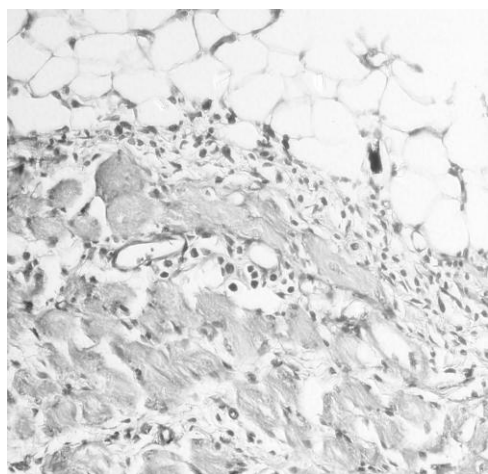


**Group 2 Control (ii) Healing after incisional injury.**

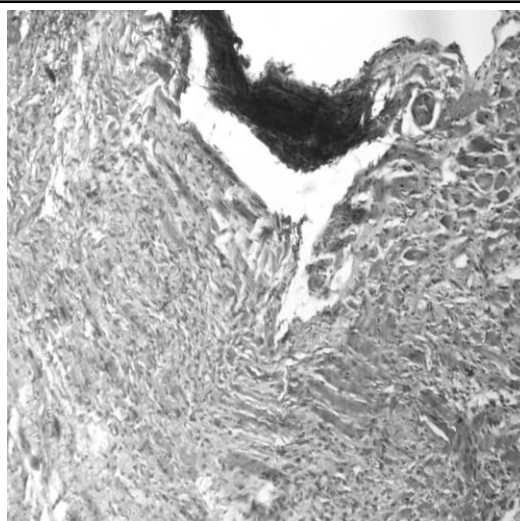
In chemical and thermal injuries there was extensive tissue loss, showed very much delayed healing phenomena, due to inhibition to muscle cells proliferation microangicopathy and nerve atrophy as caused by pollutants. Wound healing occurred with abundant evenly developed collagen tissue up to 4<sup>th</sup> week time.



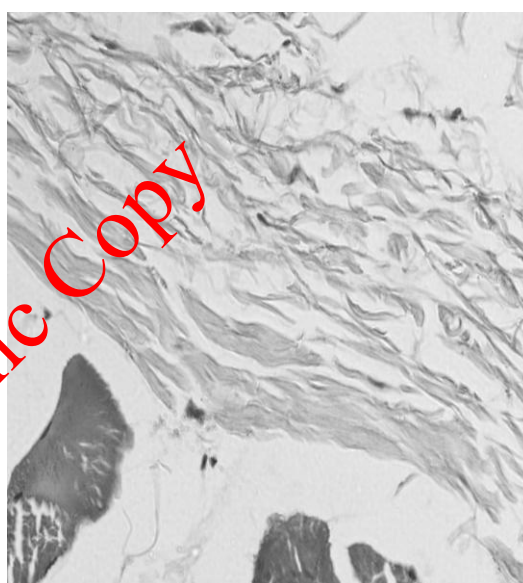
**Group 3 Control (iii) Thermal injury.**



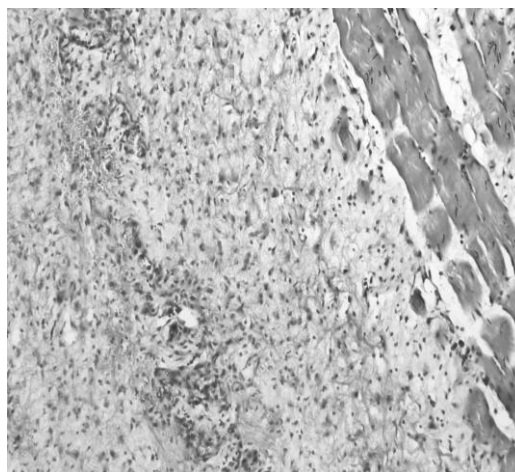
**Group 3 Control (iii) Healing after thermal injury.**



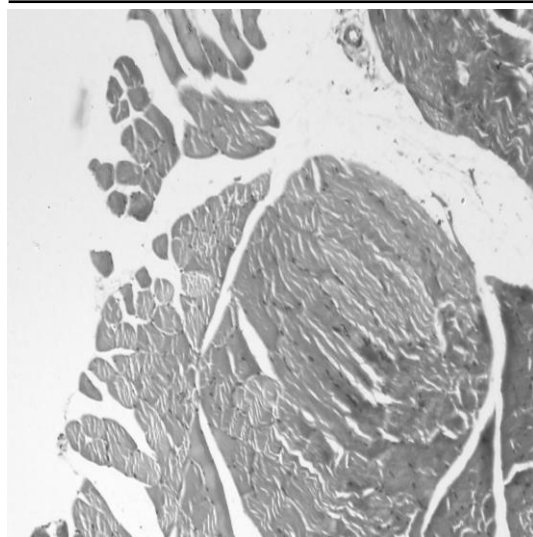
**Group 4 Control (iv) Chemical injury.**



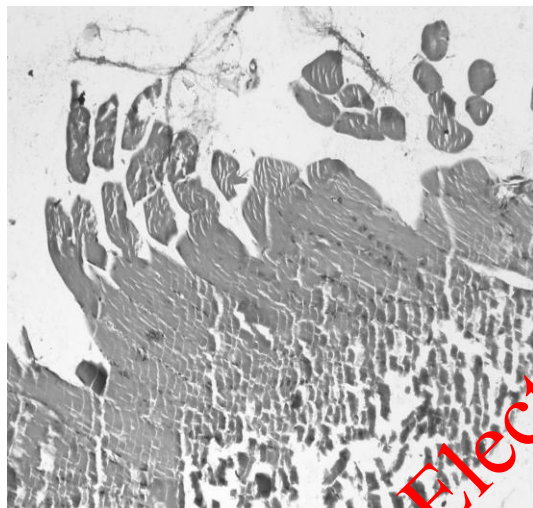
**Group 4 Control (iv) Healing after chemical injury.**



**Group 5 Mercury group. Mercury exposed wound healing.**



**Group 8 sulphur oxide group. Wound healing after sulphur oxide exposure.**



**Group 9. Organophosphorus group. Wound healing after organophosphorus exposure.**

## DISCUSSION

This study highlighted the effect of environmental pollution on regeneration of muscle injury. In control group 4-types of injuries were induced and their normal healing process is almost completed in “ 2 “ weeks. Weight of animals remained constant during the period. In groups “2 to 9” exposed to various pollutants resulted in marked and gradual reduction in mean weight of animals ( $P < 0.01$ ) and frequent death especially group 6 to 9. Each group after administration of pollutants incisional and Blunt wound healed in two weeks time, whereas other wounds which were chemically and thermal induced were wider wounds and showed damaged muscle cells and microangiopathy as indicated by black margins of wound. The wound healing delayed up to 4<sup>th</sup> week the group “ 2” & “3” wounds undergo regeneration in mid of 3<sup>rd</sup> week whereas group “ 4” to “9” resulted in much delayed

healing up to end of 4<sup>th</sup> week.

It is correlated with GOODMAN and GILMAN'S<sup>10</sup> pharmacological statements of arsenic causes skin necrosis, sloughing and hyper keratosis. This causes atrophy and degeneration. Gutierrez JM,<sup>11</sup> in his study chemical injury induced by snake venom caused disruption of the integrity of plasma membrane. Plasma membrane was interrupted in many portions. The good regeneration response may be explained by observation that chemical injury does not affect blood vessels nerves or basal lamina. Regeneration was completed at the end of 4<sup>th</sup> week. Bornemann et al proved that vimentin is a useful marker for regenerated muscle fibers. Zacharias LS.<sup>12</sup> Snyder R studied muscle regeneration is better in younger than older mice after imposed injury due to more satellite cells observed in younger muscle. Bichoff suggested that satellite cells are myogenic stem cells that can be induced to enter the cell cycle by an extract of crushed muscle. Wattig B,<sup>13</sup> proved the acceleration of muscle regeneration by nucleotide administration. Fisher BD, et al<sup>14</sup> studied that following acute blunt trauma, hemorrhage inflammation, non-necrotic regeneration was observed. Regeneration progressed at 6<sup>th</sup> day and completed upto 2<sup>nd</sup> week. Fisher concluded by its study of blunt injury the regeneration progressed at “ 6<sup>th</sup> “ day and completed up to 2<sup>nd</sup> week. Volodine<sup>15</sup> in its study the causes of incomplete restoration of extensive skeletal muscle injury are accumulation of collagen, progressive secondary neurogenic atrophy, microangiopathy disorder of tissue nutrition resulted in chronicity of pathological process in the muscle. Hurme Timo et al<sup>16</sup> proved that proliferation of satellite cells was extensive in regenerating zone. Bodine –Fowler, Sue,<sup>17</sup> suggested direct injury caused by crushing puncturing, cutting, ischemia the major limiting factor is viable population of satellite cells, reinnervation and revascularization. Caldwell et al,<sup>18</sup> result of this study suggested that presence of empty basement membrane tubes is not essential for orientation of regenerating myoblast in skeletal muscle.

## CONCLUSION

The environmental metallic pollutant are of greatest concern are lead, mercury, Arsenic, and cadmium. In the past lead paint was available for use in home and lead pipes to deliver water to homes. As a result, people were exposed to lead on daily basis. Mercury is a contaminant of our environment. Arsenic is found naturally in high concentration in drinking water. Cadmium has been classified as known human carcinogen. Non metallic environmental pollutants like carbon dioxide sulfur Oxide gases also affect human health. Wound healing is delayed in those exposed to these pollutants.

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# Assessment of Antihyperlipidemic Properties of Aqueous Extract of Cassia Fistula Leaves

Antihyperlipidemic  
effect of Cassia  
Fistula

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## ABSTRACT

**Objective:** To study antihyperlipidemic properties of aqueous extract of *Cassia fistula* leaves in mice.

**Study Design:** Experimental study.

**Place and Duration of Study:** This study was conducted at Pharmacology Laboratory of Islamic International Medical College, Rawalpindi, and National Institute of Health, Islamabad from February to April 2011.

**Materials and Method:** 40 male Balb/c mice were used which were randomly divided into 4 groups i.e. Group A, B, C and D, each group containing 10 mice. Duration of study was 8 weeks after acclimatization (1 week). Group A served as control group (received standard mice diet), Group B as disease control (received 2% cholesterol diet) and Group C & D as *Cassia fistula* groups (received 2% cholesterol diet + aqueous extract of *Cassia fistula* leaves 250 and 500 mg/kg respectively).

**Results:** At the end of 8 weeks, blood samples of all the mice were analyzed. In disease Group B, there was significant rise in the levels of serum total cholesterol, triglycerides and LDL-C and decline in HDL-C. In Group C and D (*Cassia fistula* groups), there was much less rise in cholesterol, triglycerides and LDL-C especially in Group D. Also, there was significant increase in HDL-C level in group D.

**Conclusion:** The results demonstrate that administration of aqueous extract of *Cassia fistula* leaves, along with cholesterol diet, not only prevented the rise in serum cholesterol, triglycerides and LDL-C levels but also increased the HDL-C level, demonstrating antihyperlipidemic properties of the extract.

**Key Words:** *Cassia fistula*, total cholesterol, serum triglycerides, HDL-C (high density lipoprotein cholesterol), LDL-C (low density lipoprotein cholesterol).

## INTRODUCTION

Hyperlipidemia is the condition in which lipid or lipoprotein levels are elevated in the plasma. There is a related term "dyslipidemia" which also includes any decreased lipid levels.<sup>1</sup> Hyperlipidemia is the major underlying pathology of atherosclerosis, which is the leading cause of death.<sup>2</sup> Elevated LDL-C and reduced HDL-C are major risk factors for ischemic heart diseases.<sup>2</sup> HDL-C serve as a good lipid and recruits cholesterol from the vessels and inhibit the lipoproteins oxidation, so has antiatherogenic effects.<sup>3</sup>

Drugs derived from the natural resources are found to be less harmful to the human body due to biological friendliness, in contrast to the synthetic drugs.<sup>4</sup> *Cassia fistula* is one such plant, which is called as 'Amaltas' in Pakistan and in English it is known as 'Golden shower'. Numerous parts of *Cassia fistula* have been verified to possess several medicine properties such as hypoglycemic, hepatoprotective, antibacterial, antifungal, antifertility, antitumor, wound healing, hypolipidemic, antipyretic, analgesic, immunomodulator, laxative and purgative properties.<sup>5-13</sup> This study was conducted to find out antihyperlipidemic properties of aqueous extract of *Cassia fistula* leaves.

## MATERIALS AND METHODS

**Chemicals/Instruments:** 2g Cholesterol, extra pure (Applichem, Germany), coconut oil, commercially available kits (Randox) for biochemical analysis of serum lipids, pre-coated TLC (Thin Layer Chromatography) plate, silica gel GF254, toluene, ethyl acetate, formic acid and methanol as solvent system. The standard compounds used are ellagic acid, gallic acid and protocatechuic acid. The instruments used were incubator and centrifuge (Germany), TLC scanner III (Camag, Switzerland) with win CATS software.

**Preparation of 2% Cholesterol Diet:** 2% cholesterol diet was prepared at animal house of NIH. 2 grams cholesterol powder along with coconut oil, was mixed and mashed with 98 grams of standard mice diet and the prepared diet was given pellet form.<sup>14, 15</sup>

**Plant Materials and Preparation of the Extract:** The leaves of the *Cassia fistula* were collected from Amaltas road, Wah Cantt. The plant was identified with the help of a botanist at National Agriculture Research Council (NARC), Islamabad. The leaves were dried in shade for 7 days and then crushed to form coarse powder.<sup>14, 15</sup> Three beakers (1000ml each) were taken and 500ml distilled water was put in each beaker, with proper labeling. 100 grams of dried *Cassia fistula* leave powder was soaked in 500 ml of distilled water in each



beaker, with periodic stirring for 76 hours, and filtered using Whatmann filter paper no. 1 and rota sucker. The filtrate was evaporated at 55° C in hot air oven. The extract was stored in air tight bottles, protected from light and kept in refrigerator at 2-8 °C.<sup>16, 17</sup> The yield of aqueous extract of Cassia fistula with respect to original dry plant material was about 25% (75g was obtained from 300g).

**Standardization & Phytochemical testing of the Extract:** The Cassia fistula leaves extract was tested for phytochemicals by performing thin layer chromatography and standard biochemical tests as demonstrated by Goodwill et al.<sup>18</sup> It was found that the extract contains alkaloids, flavanols, and glycosides including flavonoids, saponins, anthraquinones and triterpenoids. In addition to these some carbohydrates, proteins and amino acids were also present.

**Animals:** 40 male Balb/c mice (weighing 20–40g, age 7–8 weeks) were procured for this study. They were kept in the experimental research laboratory of NIH, Islamabad.. Prior to the commencement of the experiments, all animals were kept for one week (week zero) under the same laboratory conditions, at a temperature of 22 ± 2 °C, relative humidity of 70 ± 4% and 12 hour light/day cycle. They received nutritionally standard diet and tap water. The care and handling of rats were in accordance with the internationally accepted standard guidelines.

**Experimental Procedure:** At the start of week 1, the mice were randomly divided into 4 groups i.e. Group A, B, C and D, each group containing 10 mice. Group A served as control group (received standard mice diet). Group B as disease control (received 2% cholesterol diet) and Group C & D as Cassia fistula groups (received 2% cholesterol diet + aqueous extract of Cassia fistula leaves, 250 & 500 mg/kg respectively).

**Sample collection:** At the end of week 8, blood sampling of all the mice was done. 24 hours after

administration of the last dose of extract and after overnight fasting, the animals were weighed and anaesthetized under ether vapours. A sample of 1-2ml blood was drawn through cardiac puncture from all animals. Blood was transferred to the sterile vacuotainers with gel and allowed to clot at room temperature for one hour. It was then centrifuged for 10 mins at a speed of 3000 rpm. Serum was separated and stored in sterile Eppendorf tubes at -20°C for analysis of biochemical parameters.

**Biochemical Analysis:** The blood drawn was assessed to measure serum total cholesterol, triglycerides, LDL-C and HDL-C, using commercially available kit (Randox, UK).

**Statistical Analysis:** The data obtained was analyzed using SPSS 20. All data are shown as mean ± S.E.M. One way ANOVA (Analysis of Variance) was applied to observe group mean differences. Post Hoc Tukey test was applied to observe mean differences among the groups. P-value of <0.05 was considered as statistically significant.

## RESULTS

The results indicate that as compared to Group A, in Group B there was significant rise in total cholesterol, triglycerides and LDL-C, but the HDL-C levels fall. In Groups C & D, in contrast to Group B, the Cassia fistula leaves extract not only prevents the rise in serum total cholesterol, LDL-C and triglyceride levels but also causes increase in HDL-C level in dose dependent manner. At the dose of 500mg/kg body weight, there was no significant difference in the serum total cholesterol, triglycerides and LDL-C of Groups D and control Group A, also the HDL-C levels were significantly higher in group D as compared to Group A.

**Table 01: Fasting lipid profile of all groups at the end of week 8**

| Groups         |                                     | Cholesterol (mg/dl) | Triglycerides (mg/dl) | LDL-C (mg/dl)  | HDL-C (mg/dl)  |
|----------------|-------------------------------------|---------------------|-----------------------|----------------|----------------|
| Group A (N=10) | Control                             | 91.30 ± 2.43        | 73.00 ± 2.39          | 39.00 ± 1.57   | 32.10 ± 1.47   |
| Group B (N=10) | 2 % Cholesterol diet                | 170.90 ± 2.60*      | 124.20 ± 2.34*        | 102.40 ± 1.89* | 23.00 ± 1.12*  |
| Group C (N=10) | 2 % Cholesterol Diet + 250 mg/kg CF | 122.20 ± 2.76**     | 91.90 ± 2.18**        | 61.10 ± 2.79** | 38.10 ± 1.23** |
| Group D (N=10) | 2 % Cholesterol Diet + 500 mg/kg CF | 95.60 ± 2.78**      | 78.00 ± 2.00**        | 43.70 ± 1.48** | 44.80 ± 2.17** |

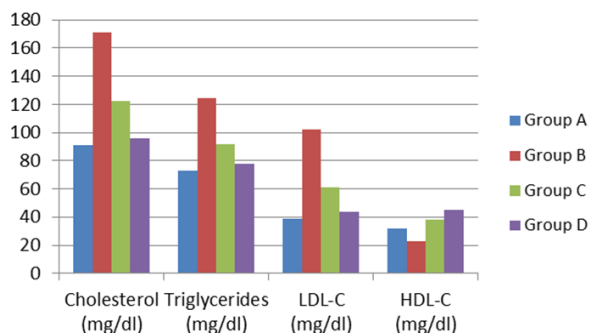
\*p<0.05 when compared with group A (control), \*\*p<0.05 when compared with group B

## DISCUSSION

The Cassia fistula leaves extract contains alkaloids, flavanols (tannins & proanthocyanidins) and glycosides including flavonoids, saponins, anthraquinones & triterpenoids. These findings are also consistent with the findings of Panda SK et al.<sup>19</sup> The anthraquinones have

stimulatory effect on gastrointestinal wall increasing peristalsis and decreasing the contact time between food and gut wall, decreasing cholesterol absorption. Similarly, the high fiber contents in Cassia fistula leaves might be involved in decreasing cholesterol absorption from the gut.

The tannins present in the extract might potentially inhibit the activity of lipases found in mice, inhibiting fat absorption. Previous studies using tannins from grape seed extract showed their antihypercholesteromic effects.<sup>20</sup> Furthermore, antihyperlipidemic activity of flavonoids and proanthocyanidins has been demonstrated in different studies.<sup>21, 22</sup>



**Figure No.1: Comparison of fasting lipid profile of all groups at the end of week 8**

The results of this study correlate with a study done in 2009 by Gupta and Jain, in which they have demonstrated the antihyperlipidemic role of ethanolic extract of *Cassia fistula* legumes in diet induced hyperlipidemia.<sup>23</sup> The results of present study are also parallel with the finding of el-Saadany et al. who also observed a decrease in cholesterol and triglyceride concentrations in blood and liver of cholesterol fed rats after administration of *Cassia fistula* legume extract.<sup>24</sup> Another study performed by Christine et al. in 2011, has demonstrated weight lowering effect of methanol extract of *Cassia fistula* leaves and its possible role to be used as a hypolipidemic drug.<sup>25</sup> Some constituents of *Cassia fistula* leaves, especially flavonoids, anthraquinones and proanthocyanidins have strong antioxidant activity, which may account for its inhibitory effects on lipid peroxidation.<sup>7</sup>

The dose, of the *Cassia fistula* extract, used was quite high. To reduce the dose, active principles of the extract are needed to be separated and tested for antihyperlipidemic activity, individually & comparatively, and the component with maximum activity should be selected.

## CONCLUSION

The results of present study have demonstrated antihyperlipidemic properties of aqueous extract of *Cassia fistula* leaves, in dose dependent manner.

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# Cut Throat Injury: One Year Study

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## ABSTRACT

**Objective:** To evaluate the cause and pattern of cut throat injury.

**Study Design:** Prospective study

**Place and Duration of Study:** This study was conducted in Abbasi Shaheed Hospital and Karachi Medical and Dental College from 01.09.2012 to 31.08.2013.

**Materials and Methods:** Total number of patients with cut throat were 42 patients, in which 33 were selected in this study. During this period, those patients who came in emergency room in Abbasi Shaheed Hospital with cut throat injury were included in this study.

**Results:** In this study male were 24 patients (72.72%) and female were 9 (27.27%). Male female ratio was 2.66:1. Maximum incidence of age was between 21-30-years 9 cases (27.27%). Accidental cause was the main cause of cut throat with 19 patients 57.57%. In 9 (27.27%) cases of suicidal, 7 (77.77%) patients was history of psychiatric illness. Zone II was the commonest site which was 20 cases (60.60%) Skin and soft tissue is the commonest structure involved which was 20 cases (60.60%). 26 patients (78.78%) were discharge from ward after treatment.

**Conclusion:** Proper assessment the cause and accurate treatment may prevent complication

**Key Words:** Cut throat injury, Neck injury, Neck trauma, Penetrating neck injury.

## INTRODUCTION

Cut throat injuries and associated death are very common in our society<sup>1</sup>. Cut throat may define as an "injury inflicted by cutting or stabbing with a sharp instrument"<sup>2</sup>. The injuries may be open or incised or incised looking injury in the neck due to sharp objects which may be superficial or penetrating in nature may be described by the term cut throat injuries<sup>3,4</sup>. Basic knowledge of the anatomy of neck is essential to understand for the assessment of injury and management<sup>5</sup>. Neck is divided into three zones. Zone I extend from thoracic outlet and clavicle to cricoid cartilage, with in this zone lie great vessels, trachea, esophagus, upper mediastinum, lung apices and thoracic duct. Zone II extend from cricoid to angle of the mandible and structures are carotid and vertebral arteries, jugular veins, pharynx, larynx, esophagus and trachea. Zone III from angle of mandible to skull base and structures include distal extracranial carotid and vertebral arteries and segment of the jugular veins. Zone I and Zone III are protected by bone while Zone II are not protected by bone, so risk of injury is different in three zone<sup>4,6</sup>.

Cut throat injury requires multidisciplinary approach for effective management. Cut throat injury may be homicidal, suicidal and accidental<sup>7</sup>. This requires the close collaboration of otorhinolaryngologist, anesthetic and psychiatrist<sup>8</sup>. Anesthetic secures compromised airway. Otorhinolaryngologist assesses the injuries and repairs the injury. All the cases of cut throat patients are attempted to suicide should have a psychiatric consultation<sup>9</sup>, because there is a possibility of a second attempt. Similarly, victims of homicidal cut throat need

psychological support to overcome the trauma<sup>10</sup>. Globally trauma currently account 10% of all disability adjusted life years lost and this is expected to increase to 20% by 2020<sup>11</sup>. In our country, there is no wide scale study done. A retrospective study on cut throat injury was done in a limited way<sup>1</sup>.

## MATERIALS AND METHODS

This prospective study was conducted in Abbasi Shaheed Hospital and Karachi Medical and Dental College during the period of 1/9/2012 to 31/08/2013. During this period, total number of patients with cut throat was 42 patients, in which 33 were selected in this study. Patients who came in emergency room in Abbasi Shaheed Hospital and Karachi Medical and Dental college with cut throat injury were included in this study. All the patients were properly assessed and properly examination done. Opinion was taken from anesthetic for compromised airway. After assessment of the injury repair the wound. Detail Performa prepared for the study, in which detail history was taken and examination findings were noted after taking consent from patients and attendant. Psychiatrist opinion was taken in homicidal, suicidal and accidental cases to prevent second attempt and to overcome the trauma. Relevant investigations were done where needed.

**Inclusion Criteria:** All patients who came with cut throat included in this study.

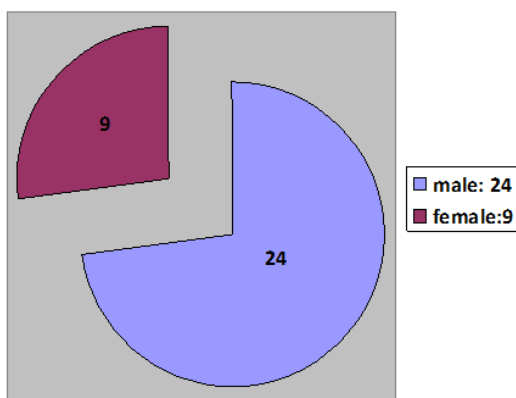
**Exclusion Criteria:** Patients were excluded from this study who

- Refer from other hospital after repair the wound.
- Received superficial abrasion or cut in throat.

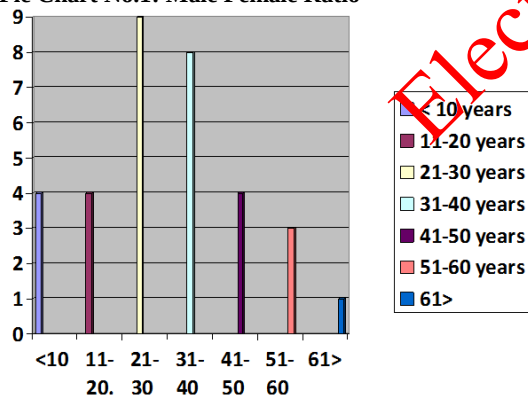


## RESULTS

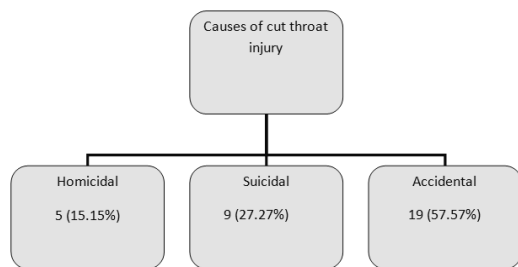
Pie chart 01 shows male and female comparison, male were 24 (72.72%) and female were 9 (27.27%). Male female ratio was 2.66:1. Bar chart shows age incidence, maximum incidence of age was between 21-30-years 9 patients (27.27%) followed by 31-40-years of age 8 (24.24%). Diagram shows that accidental injury was the main cause of cut throat, 19 patients (57.57%). In table 01, out of 9 (27.27%) cases of suicidal cause, 7 (77.77%) patients were the history of psychiatric illness. In pie chart 02, Zone II was the commonest site which was 20 cases (60.60%) followed by Zone III, 11 cases (33.33%). In table 02, Skin and soft tissue is the commonest structure involved which was in 20 patients (60.60%). 26 patients (78.78%) were discharge from ward after treatment and only 2 (2.06%) patients expired during treatment shows in table 03.



**Pie Chart No.1: Male Female Ratio**



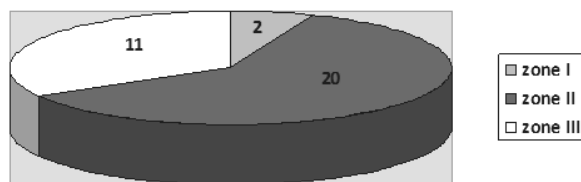
**Bar Chart: Age Incidence**



**Diagram: Causes of cut throat injury**

**Table No. 01: Psychiatric illness**

| Psychiatric illness |            | No psychiatric illness |
|---------------------|------------|------------------------|
| 7 (77.77%)          |            | 2 (22.22%)             |
| Male                | Female     |                        |
| 5 (71.42%)          | 2 (28.57%) |                        |



**Pie Chart No.2: Zone Involvement**

**Table No. 02: Structure involved**

|                                 |             |
|---------------------------------|-------------|
| Skin                            | 02 (6.06%)  |
| Skin and soft tissue            | 20 (60.60%) |
| Skin, soft tissue and cartilage | 11(33.33%)  |

**Table No.3: Outcome**

|                          |            |
|--------------------------|------------|
| Discharge                | 26(78.78%) |
| Expired during treatment | 2(6.06%)   |
| Brought dead             | 5 (15.15%) |

## DISCUSSION

Cut throat injury is a major health problem. WHO study shows, each year 5 million people around the world die as a result of this injury. As per WHO, it is estimated that for a every death 10-20 gets hospitalized and 50-100 receives emergency care<sup>12, 13</sup>. Unfortunately, few medical literatures are available. We should know the cause behind the incidence, for proper assessment, management and rehabilitation; it can be accidental, homicidal or suicidal. Every case should take opinion from Psychiatrist to prevent second attempt in case of suicidal and overcome the trauma in accidental cases. So, in this study evaluate the cause of cut throat injury and pattern of injury.

In this study, total number of patients were 33 in which 24 (72.22%) were male and 9 (27.27%) were female. Male female ratio was 2.66:1. Ozdemir B study showed male predominates with 60% cases female were 40%<sup>14</sup>. Most of the victims between the age group of 21-30 years of age (27.27%) followed by 31-40 years of age (24.24%). One study showed maximum number of victims was between the age group of 21-30 years of age. The reason is that between this age group tolerance level is less. Only one case (3.03%) found above the age of 61 above. Common causes of cut throat injury was accidental (57.57%) followed by suicidal (27.27%). Out of 9 cases of suicidal, 7 (77.77%) cases had a history of psychiatrist illness. One study showed, more than 90 percent people who kill themselves have a diagnosable mental disorder, most commonly a depressive disorder or a substance abuse disorder<sup>15</sup>. Psychiatrist opinion is very important part to prevent

second attempt. In suicidal cut throat, male were more as compared to female (77.77%). According to Kochanek KD four time as many men as women die by suicide<sup>16</sup>. Accidental and homicidal cases also need psychiatric opinion. Because, Post traumatic disorder can develop at any age, including childhood, but median age of onset is 23 years<sup>17</sup>. One study showed, about 19% of Vietnam veterans experienced Post traumatic disorder at some point after the war<sup>18</sup>. A study reported 25 % of patients having made a second attempt of suicide<sup>10</sup>. Zone II is the most common area involved (60.60%). Manilal Aich, et al. found commonest site was zone II which was (74.62%)<sup>9</sup>. Most of the patients came with skin and soft tissue injury 60.60% followed by skin, soft tissue cartilage involvement was 33.33%. 78.72% patients were discharge well after treatment. Only 2 (6.06%) cases were expired during treatment. Prompt assessment and early management not only prevent death but also prevent complication.<sup>19</sup>

## CONCLUSION

Incidence of cut throat injury is increasing now days. Incidence of complications and death may be decreased by early recognition, prompt treatment to the patients. Every patients should take psychiatric opinion to prevent second attempt and overcome the trauma.

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# Cholesteatoma Clinical Outcome and Complications: A Study on Patients with Chronic Ear Disease

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## ABSTRACT

**Objectives:** To identify the clinical behaviour and consequences of cholesteatoma and to formulate a strategy for achieving early diagnosis, appropriate management and avoidance of all the grave complications.

**Study Design:** Hospital based descriptive type of study

**Place and Duration of Study:** This study was conducted in Shahina Jamil Hospital from April 2011 to Dec 2012.

**Materials and Methods:** 40 patients of any age and gender were included in the study. The age, gender, socio-economic status and complications like hearing loss, facial nerve paralysis, intracranial spread, labyrinthitis, mastoid fistula and ossicular chain status were recorded and analyzed.

**Results:** We found that 62.5% were male and 37.5% were female. 75% of the patients belong to rural areas and 25% belong to urban areas. All the patients (100%) presented with ear discharge and hearing loss. Ossicles were found intact in all patients. Labyrinthitis was the most common complication (37.5%).

**Conclusion:** It was found that cholesteatoma was frequent among poor, male and young patients leading to necrosis of the ossicles in all patients. Labyrinthitis, mastoid fistula and intracranial spread were common complication.

**Key Words:** Cholesteatoma, Clinical outcome, Complications.

## INTRODUCTION

Normally skin does not present in the middle ear or mastoid. When keratinizing squamous epithelium gets into these air spaces, it can form a progressively enlarging and destructive cystic lesion called a cholesteatoma<sup>1</sup>. Papillary cholesteatoma represents the presence of non neoplastic accumulation of keratinizing stratified Squamous epithelium along with desquamated keratin debris in the tympanic cavity and/or mastoid. Once the squamous epithelium reaches these areas from its origin in the external auditory canal or tympanic membrane, a locally invasive and destructive process typically ensues. The cholesteatoma of the middle ear is a chronic otitis described as dangerous because of the evolutionary risks and the potentially serious complications<sup>2</sup>. Cholesteatoma is locally destructive and erode bone. A number of mechanisms have been proposed to account for this behavior, including secretion of osteolytic enzymes, pressure necrosis, osteitis and surrounding chronic granulation tissue<sup>3, 4</sup>. The rate of progression of the disease is usually insidious. Surgery is the treatment. The goals of surgical management include the eradication of disease, restoration of hearing, and to the extent possible, maintenance or restoration of normal anatomic configuration<sup>5</sup>.

There is no single surgical treatment of choice for aural cholesteatoma. The extent of cholesteatoma, the amount of preoperative destruction, mastoid pneumatization guide the surgeon in choosing the type of operation for a particular ear, which may range from simple

extraction of cholesteatoma to radical mastoidectomy<sup>6</sup>. Large erosive lesions that arise in the middle ear can extend through the roof of the temporal bone to compress the brain, and associated infection may cause intracranial abscesses<sup>7</sup>.

## MATERIALS AND METHODS

This study was a hospital based descriptive type of study conducted in department of Otorhinolaryngology, Shahina Jamil Hospital Abbottabad from 1<sup>st</sup> April 2011 to 31<sup>st</sup> Dec 2012, after approval from hospital ethical committee. 40 patients of any age and gender were included in the study.

The inclusion criteria included those patients of any age and sex with chronic ear disease in which cholesteatoma was found and confirmed postoperatively by histopathology. The exclusion criteria included all those patients who required mastoid exploration for the second time due to the diagnosis of cholesteatoma.

A detailed history of the patient was taken pre-operatively with special regard to clinical features of complications i.e. facial weakness, vertigo, Nystagmus, headache, pain or swelling behind the ear. A thorough examination of the patients was done with otoscope and microscope. Findings were noted in questionnaire.

Tuning fork tests were done pre-operatively and post operatively to document qualitative status of hearing and result were confirmed by doing pure tone audiometry. Fundoscopy was performed to see any papilodema indicative of some intracranial lesions. Routine investigations and CT scan was done in those

patients in which intracranial complications were suspected.

All patients underwent surgery and during surgery all the complications which were suspected pre-operatively were confirmed and cholesteatoma taken out during surgery was sent for histopathology to pathology department for confirmation of the diagnosis. All the patient were discharged within 7-days, after the removal of stitches and aural packs and were advised to report back for follow up after 1 week, and after 1 month, till the ear become dry. At the completion of the study all individual data was entered in questionnaire.

## RESULTS

The study on patient with cholesteatoma was carried out. Forty (40) patients were included in this study. Patient selected for study were divided in 3 age groups (Child, adult and old age) for convenience.

**Table No.1: Demographic variable of the patients.**

| Age Group                           | No of patients (40) | % age  |
|-------------------------------------|---------------------|--------|
| Children (5-14 years)               | 5                   | 12.5 % |
| Adults (15-40 years)                | 25                  | 62.5 % |
| Old (41- Onward)                    | 10                  | 25 %   |
| <b>Sex</b>                          |                     |        |
| Male                                | 25                  | 62.5 % |
| Female                              | 15                  | 37.5 % |
| <b>Income Group</b>                 |                     |        |
| Upper Class                         | Nil                 | -      |
| Middle Class                        | 8                   | 20 %   |
| Lower Class                         | 32                  | 80 %   |
| <b>Area Distribution</b>            |                     |        |
| Urban                               | 10                  | 25 %   |
| Rural                               | 30                  | 75 %   |
| <b>Duration of disease in Years</b> |                     |        |
| 1-5                                 | 25                  | 62.5 % |
| 6- 10                               | 10                  | 25 %   |
| 11- 15                              | 5                   | 12.5 % |

Among 40 patients with cholesteatoma, 25 patients (62.5%) were male and 15 patients (37.5%) were female. Thirty two (32) patients (80%) belonged to lower class while 8 patients (20%) belonged to middle class and non belonged to upper class. In our study 30 patient (75%) were from rural area and 10 patients (25%) were from urban areas, when duration of symptoms of disease was recorded it was found that 25 patients (62.5%) had their duration between 1-5 years, 10 patients (25%) had duration of 6-10 years and only 5 patients (12.5%) had duration of 11-15 years.

During the study it was seen that most common presenting features were discharge from the ear and hearing loss i.e. 100%. Out of 40 patients with ear discharge, 30 patients (75%), complaint of foul smelling discharge and 25 patients (62.5%) complaint

of bleeding from the ear. 37.5% of patient complaint of vertigo, 25% patient complaint of tinnitus, 25% Complaint of headache, 20% complaint of neck rigidity, 12.5% complaint of Otagia and 12.5% were having severe degree of hearing loss. In 15 patients (37.5%) there was moderate degree hearing loss and none of them had mild degree hearing loss.

**Table No.2: Variables of clinical features and complications of the patients.**

| Clinical Features          | No. of Patients (40) | % age  |
|----------------------------|----------------------|--------|
| Ear Discharge              | 40                   | 100%   |
| Hearing Loss               | 40                   | 100%   |
| Otagia                     | 5                    | 12.5%  |
| Bleeding from the Ear      | 25                   | 62.5%  |
| Headache                   | 10                   | 25%    |
| Tinnitus                   | 10                   | 25%    |
| Vertigo                    | 15                   | 37.5%  |
| Neck Rigidity              | 8                    | 20%    |
| Fever                      | 5                    | 12.5%  |
| Foul Smelling Discharge    | 30                   | 75%    |
| <b>Hearing Loss Degree</b> |                      |        |
| Mild                       | 0                    | -      |
| Moderate                   | 15                   | 37.5 % |
| Severe                     | 25                   | 62.5 % |
| <b>Type of H/L</b>         |                      |        |
| Mixed                      | 8                    | 20 %   |
| Conductive                 | 30                   | 75 %   |
| Sensorineural              | 2                    | 5 %    |
| <b>Status of ossicles</b>  |                      |        |
| Intact                     | 0                    | 0%     |
| Necrosed                   | 40                   | 100 %  |
| <b>Complications</b>       |                      |        |
| Facial Palsy               | 2                    | 5 %    |
| Intracranial Spread        | 10                   | 25 %   |
| Mastoid Fistula            | 10                   | 25 %   |
| Labyrinthitis              | 15                   | 37.5 % |

Out of 40 patients 30 (75%) were having conductive hearing loss. 8 patients (20%) were having mixed hearing loss and only 5% were having sensorineural hearing loss. During mastoid exploration for cholesteatoma the Ossicular chain was seen under microscope and it was found that all the patients were having intact ossicles. Regarding complications out of 40, 15 patients (37.5%) were having labyrinthitis, 10 patients (25%) had mastoid fistula, 10 patients (25%) had intracranial complications and only 2 (5%) had facial nerve paralysis.

## DISCUSSION

Chronic suppurative otitis media with cholesteatoma is persistent diseases which can cause even life threatening complications if left untreated.



Male to female ratio of our study was 5:3. In contrary to this ratio, Hanne H Owen, Jorn Rosborg and Michael Gaihede showed female to male ratio as 13:12<sup>8</sup>. Kikuchi M & Yamamoto E in 2002 concluded that the male to female ratio was 4:1 in their study, which also showed male preponderance<sup>9</sup>.

In our study, disease was found more common in adults with peak age incidence in 15-40 years (62.5%), and only 5 patients (12.5%) were seen in the age group of 5-14 years. Compareable to our study, a study by Arunabha Sengupta showed peak age incidence of disease in 11-30 years<sup>10</sup>. A study at Karachi by Udipurwala et al in (1994)<sup>11</sup> showed the mean age 24 years. Majority of the patient in our study belonged to rural area (75%) and out of these 40 patients 32 (80%) were from poor socio-economic setup. A similar study was carried out at Mayo hospital Lahore, showed 88% patients belonging to low income group<sup>12</sup>. Arunabha Sengupta also showed that majority (60%) of the people are from poor socio-economic setup<sup>10</sup>. The reason for higher incidence in poor socio-economic setup was probably poor hygienic environment, malnutrition and low immunity.

It was found that 62.5% of patients had the disease from the last 1-5 years while 25% had disease for last 6-10 years. This study was comparable to Grewel, who in 2003 noted otorrhoea of long duration with an average of 8 years<sup>13</sup>.

The clinical presentations of CSOM in my study were discharging ear and hearing loss in all patients (100%) while 12.5% suffered from otalgia, 25% presented with headache. This is comparable to a study by David Moffat in which the most common presenting complaint was hearing loss (60%)<sup>14</sup>.

In our study vertigo was present in 37.5% of the cases, while in Grewel study it was only 18%<sup>13</sup>. Tinnitus in our study was 25%, while it was 38% by Grewel<sup>13</sup>.

In my study majority of patients (75%) had conductive type of hearing loss but few patients (5%) showed sensorineural hearing loss.

In my study pre-operative hearing loss was of severe type in majority of the patients (62.5%). It was in contrast to the study of Sakagami M & Seo T in 1999 who concluded that preoperative hearing level was mild (34.2 +/-18.4 dB)<sup>15</sup>. The difference was probably due to the reason that patient presentations in our setup was late, due to prolonged duration of disease and long period of topical antibiotic use.

In our study 25% of the patients had intracranial complications which

Included meningitis, extradural abscess and cerebellar abscess, which is

Comparable to the percentage of taken M & Osma U i.e. 28%<sup>16</sup>. Different studies have noticed the common intracranial complication as brain abscess followed by meningitis and lateral sinus thrombus<sup>17, 18</sup>. In these studies the most common extra cranial complications

were sensorineural hearing loss followed by facial paralysis and mastoid abscess<sup>18</sup>.

Facial nerve paralysis was also seen in 5% of patients. Sade and Fuchs (1994)<sup>19</sup> noticed facial nerve paralysis was more in adults than in children. Labyrinthitis developed in 37.5% of patients, which is very high percentage in contrary to Grewel percentage which was only 11.46%<sup>13</sup>. This high percentage was again due to the reason that most of our patients presented late, due to ignorance and illiteracy.

Limitation of our study was that it was a hospital based study which was not applicable to whole society and number of patients under this study was less due to poor referral by GPs and quacks.

## CONCLUSION

In my study of 40 patients, cholesteatoma was found to be the disease of poor class, more prevalent among young age group and male persons and lead to necrosis of the ossicles in all the patients. Among complications labyrinthitis, mastoid fistula and intracranial spread was seen in most of the patients, which should be prevented with early diagnosis and prompt treatment of chronic middle ear disease. However, there is need to conduct such type of study in large number of patients of our society.

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# Hypertension as Independent Risk Factors for Acute Stroke

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## ABSTRACT

**Objective:** The stroke is leading cause of death in world and many patients die of an acute stroke. This study was conducted to determine whether the hypertension is independent risk factor for acute stroke.

**Study Design:** Prospective cross sectional

**Place and Duration of study:** This study was carried out at AK CMH/SKBZ Muzaffarabad from May 2012 to May 2013.

**Materials and Methods:** In this study 220 patients having first ever acute stroke. Many clinical variables have been investigated as risks factors for stroke. The hypertension was investigated as a risk factor for stroke. The evaluation of patients included structured questionnaire, clinical, neurological examinations, laboratory tests, and computed tomogram scan (CT) brain. The follow-up at 14 days was done for all patients.

**Results:** Out of 220 cases of acute stroke, 171 (77.73%) were hypertensive, and 49(22.27) % were normotensive. The statistical significant risk factors for stroke were: hypertension ( $p=0.04$ ) and Hypercholesterolemia ( $p=0.05$ ); for cerebral infarction (CI): ( $p<0.001$ ) and hypertension ( $p = 0.05$ ) and Hypercholesterolemia ( $p=0.001$ ); for intracerebral hemorrhagic (ICH) stroke ( $p = <0.001$ ). The low Glasgow coma scale (GCS) score ( $p=0.05$ ) on admission was associated with high mortality and worst outcome in hypertensive patients. Thus hypertension has statistical significant association for both CI and ICH stroke patients.

**Conclusion:** This study confirms the statistical significant association of hypertension with acute stroke and emphasizes the need in preventing and controlling of hypertension in order to avoid stroke and its mortality.

**Key Words:** acute stroke; hypertension, outcome

## INTRODUCTION

The stroke is third leading cause of death worldwide and 10% of patients with an acute ischemic stroke die within 30 day<sup>1-3</sup> It has major impact on mortality and morbidity . Various risk factors have been associated with stroke. The hypertension has important association with stroke. The identification of hypertension and other risk factors have therapeutic implications.<sup>4</sup> Various studies show hypertension as major risk factor for hemorrhagic stroke.<sup>4-6</sup>

## MATERIALS AND METHODS

The patients who presented with a first-ever acute stroke were prospectively studied. The WHO definition was used to define stroke.<sup>7</sup>The ethics committee approved this study. The stroke was diagnosed when neurological deficits were confirmed on CT scan brain. Patients with transient ischemic attack (TIAs) and subarachnoid hemorrhage (SAH) were excluded. A 12-lead ECG and echocardiography were done. Stroke severity on admission was assessed with Glasgow coma scale (GCS) <sup>8</sup>The history of preexisting stroke risk factors specifically hypertension were assessed. The hypertension was defined as history of hypertension or if the patient had antihypertensive treatment or had two measurement of blood pressure BP >160/95 mm Hg or single measurement of BP>180/110 Hg during admission<sup>9</sup>, diabetes mellitus was defined as by

preadmission history of diabetes mellitus and venous plasma glucose concentration of 7.0mmol/l after an overnight fast on at least two separate measurement and or 11.1 mmol/l two hour post prandially<sup>10</sup>, current cigarette smoking was defined as who smoked at least one cigarette/tobacco per day for preceding three months or more, Hypercholesterolemia defined as by preadmission history with cholesterol >5 mmol/l, and LDL-cholesterol >3 mmol/l<sup>11</sup> and history of coronary artery disease. The death due to stroke was measured as outcome in all hypertensive patients. Our approach to assess hypertension as independent factors in stroke patients were consistent with international studies.<sup>12</sup> Data based on structured questionnaires was prepared and neurological examinations were performed. Blood pressure levels were recorded on admission and after hospitalization. The data entry and analyses were done on software statistical package SPSS 20. Chi square test was used to get p value. Hypertension was cross tabulated as independent variable to stroke as dependent variables to get p value. P value <0.05 was considered significant.

## RESULTS

During the May 2012 to May 2013, 220 patients (mean age  $\pm$  SD, 63.82 $\pm$  9.87) range 45 to 85 years were admitted with acute stroke. There were 119 males and 101 women (54.1% vs. 45.9%). The maximum frequency of stroke was seen between ages 55-74.

Mean systolic blood pressure was  $163.85 \pm 28.53$  and mean diastolic blood pressure  $102.46 \pm 18.8$ . The GCS was shown in table. Out of 171 hypertensive patients 119(54.1%) had cerebral infarctions (CI) and 50(22.9%) had hemorrhagic stroke.

Table shows the characteristics of the 220 patients with acute stroke. Hypertension was the most common risk factor for stroke 171(77.72) followed by hypercholesterolemia 145 (70.7 %). Others risk factors are

also shown in table. The mean fasting blood sugar was  $6.49 \pm 1.31$  mmol/l, mean random blood sugar  $8.43 \pm 4.74$  and mean cholesterol was  $6.49 \pm 1.16$  mmol/l. Out of 220 patients with acute stroke 35(15.9%) died. Mortality was common between ages 55-74 years. GCS score <1-8 significant association with mortality. Our analysis revealed hypertension ( $p = <0.001$ ) is major and independent risk factor for both systolic blood pressure (SBP) and diastolic blood pressure (DBP).

**Table No.1: Characteristics of stroke according to hypertension and other risk factors, demographics and GCS score**

|                              | Total      | Hypertensive     | P-value | Normotensive       | P-Value |
|------------------------------|------------|------------------|---------|--------------------|---------|
| N (%)                        | 220        | 171(77.72)       |         | 49(22.7)           |         |
| Age (year) mean age $\pm$ SD |            | 64.21 $\pm$ 9.61 | .941    | 62.29 $\pm$ 110.75 | .278    |
| Age category 45-54           | 43 (19.5)  |                  |         |                    |         |
| 55-64                        | 66 (30.0)  |                  |         |                    |         |
| 65-74                        | 72 (32.7)  |                  | .272    |                    | .488    |
| 75-84                        | 36 (16.4)  |                  |         |                    |         |
| >85                          | 03 (1.4)   |                  |         |                    |         |
| Male                         | 119(54.1)  | 87 (73.1)        | .062    | 30 (25.2)          | <0.001  |
| Female                       | 101 (45.9) | 86 (67.3)        |         | 15 (14.9)          |         |
| <i>Stroke subtype</i>        |            |                  |         |                    |         |
| Ischemic Infarct Brain       |            | 119(54.1)        | .041    | 40(18.1)           | <0.001  |
| Hemorrhagic Stroke           |            | 50(22.9)         | .052    | 11(5)              | <0.001  |
| <b>Risk factors</b>          |            |                  |         |                    |         |
| SBP                          |            | 171 (77.72)      | <0.001  | 49 (22.27)         | .056    |
| DBP                          |            |                  | <0.001  |                    | <0.001  |
| Hypercholesterolemia         | 159(72.3)  | 130 (81.8)       | .053    | 29 (18.2)          | .180    |
| Smoking                      | 132 (60.0) | 104 (78.8)       | .949    | 28 (21.2)          | .964    |
| Cardiac Disease              | 99 (45.0)  | 82 (82.8)        | .412    | 17 (17.2)          | .001    |
| Diabetes                     | 36 (16.3)  | 26 (72.2)        | .963    | 10 (27.8)          | .033    |
| Atrial Fibrillation          | 23 (10.5)  | 15 (65.2)        | .159    | 08 (34.8)          | .001    |
| <b>Outcome</b>               |            |                  |         |                    |         |
| GCS 1-8                      | 64 (29.1)  |                  | .059    |                    | .962    |
| 9-12                         | 103 (46.8) |                  |         |                    |         |
| 13-15                        | 53 (24.1)  |                  |         |                    |         |
| Died in Hospital             | 35(15.9)   | 30(13.6)         | .003    | 5(2.27)            |         |

P-value asym. 2-sided

## DISCUSSION

Out of 220 patients of stroke 171(77.72%) were hypertensive. Our results showed that hypertension is

commonest risk factor for both ischemic and intracerebral hemorrhagic stroke. The statistical significant association of hypertension for stroke subtype was: hypertension (CI;  $p = 0.041$  vs. ICH;  $p =$



0.052) followed by Hypercholesterolemia (CI;  $p = 0.002$  vs. ICH;  $p = 0.002$ ). The low GCS score ( $p < 0.001$ ) on admission in hypertensive was associated with worst outcome. Hypertension and hypercholesterolemia have statistical significant association with stroke in our study and are interrelated each other as reported earlier.

<sup>4 6 12</sup> Both SBP and DBP has significant association with stroke and its subtypes. The other risks factors like ischemic heart disease (IHD), smoking, diabetes mellitus, are common modifiable vascular risk factors for stroke as shown in previous epidemiological studies<sup>13-15</sup>

Our study showed that hypertension and its level was the most important independent potential risk factor for all stroke subtype, particularly for intracerebral hemorrhagic stroke as observed previously<sup>16</sup>. Although hypertension is statistical significant in stroke in our study but the hypertension is underestimated as risk factor for stroke, because we used high cutoff point for blood pressure of 160/90 mm Hg. Estimated actual blood pressure is also problematic during study as it might be raised in acute stroke phase. Subsequently blood pressure might be lowered than usual because of use of antihypertensive drugs and poor food and salts intake. We used two means reading in order to avoid these biases to minimum levels. Smoking has significant association with ischemic stroke<sup>17</sup> but was insignificant in our study. The cholesterol has significant association with stroke in our study as have been shown in another study.<sup>18</sup>

Limitation of our study is using high cutoff point for blood pressure estimation. In order to avoid bias in our study for hypertension, history that relied on past medical history was substantiated on examination and investigations to establish its relationship to stroke. In our study 16% died of stroke which is consistent with previous studies in Pakistan<sup>19-20</sup> and developed countries.<sup>21</sup> Our study confirms that hypertension is statistical significant risk factor for acute stroke as shown in previous studies.<sup>22-24</sup>

## CONCLUSION

Stroke causes great morbidity and mortality. We reports 16 % mortality rate after acute stroke. Our findings suggest that hypertension was statistical significant and independent risk factor of ischemic and intracerebral hemorrhagic stroke. The modifications of hypertension as modifiable risk factor for primary prevention and interventions that reduce blood pressure optimally can play a beneficial role in secondary prevention of stroke.

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# Role of Oral and Topical Nasal Steroids in Prevention of Ethmoidal Nasal Polyp Recurrence after Intranasal Polypectomy: A Comparative Study of 64 Cases

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## ABSTRACT

**Objective:** To study the effect of oral and intranasal topical corticosteroids on nasal polyp recurrence after intranasal polypectomy.

**Study Design:** Perspective, comparative.

**Place and Duration of Study:** This study was conducted out in ENT and Head & Neck Surgery Department, Bolan Medical Complex Hospital, Quetta, from March 2010 to March 2013.

**Materials and Methods:** Sixty four patients of both sexes with diagnosis of ethmoidal nasal polyp underwent intranasal polypectomy. Then patients were divided into two groups, Group-A and Group-B. There were 32 patients in each group. In group-A the patients received oral and intranasal topical steroids postoperatively while in group-B patients did not receive oral and intranasal topical steroids. Both groups were followed-up for any recurrence of polyps at interval of 3, 6 and 12 months.

**Results:** Recurrence rates in group-A were 6.25%, 12.5% and 21.87%, while the recurrence rates in group-B were 12.5%, 28.12% and 43.75% at interval of 3, 6 and 12 months.

**Conclusion:** A postoperative short course of oral steroids followed by topical nasal steroid spray after intranasal polypectomy can reduce the recurrence rate of ethmoidal nasal polyps significantly.

**Key Words:** Nasal polyps, Intranasal polypectomy, Oral steroids, Topical nasal steroids, Recurrence.

## INTRODUCTION

Nasal polyps are a common pathology of unknown aetiology with a high rate of recurrence after surgery. The prevalence of nasal polyposis in general population is between 1% and 4%.<sup>1</sup> It increases with age, reaching a peak in those aged 50 years and older. The male to female ratio is about 2:1.<sup>2</sup> The patient presents with symptoms of nasal obstruction, hyposmia and postnasal drip. The polyps are visible on anterior rhinoscopy as pearly white, multiple grape like masses. In some cases, there is proptosis or hypertelorism. CT Scan and in some cases MRI of nose and paranasal sinuses are routine investigations for ethmoidal polyps. Biopsy of the postoperative specimen is necessary for confirmation of diagnosis. Treatment of ethmoidal polyps comprises of medical and surgical modalities. The mainstay of medical management is intranasal and oral systemic corticosteroids.<sup>3</sup> The surgical treatment comprises of intranasal polypectomy, intranasal polypectomy with intranasal ethmoidectomy<sup>4</sup>, transantral ethmoidectomy, external ethmoidectomy and Functional endoscopic sinus surgery (FESS).<sup>5</sup> Functional endoscopic sinus surgery (FESS) is now widely accepted for treatment of nasal polyps, however, it is not available in most of the centers. In such centers, intranasal polypectomy still remains the practiced option.<sup>6</sup> Even after endoscopic sinus surgery higher

recurrence rates have been observed. Recurrence is one of the problems facing every otolaryngologist in management of cases. The rate of recurrence is variable and different studies show that just over 40% present for the first time and 5% had five or more polypectomies.<sup>7</sup> There is evidence that administration of systemic steroids in the postoperative period for patients who have polyps may have a significant impact on their postoperative course.<sup>8</sup> The use of intranasal topical steroids is the best treatment for the prevention of recurrence of nasal ethmoidal polyps.<sup>9</sup> The purpose of this study is to evaluate the effect of oral and intranasal steroids on nasal ethmoidal polyps recurrence after intranasal polypectomy.

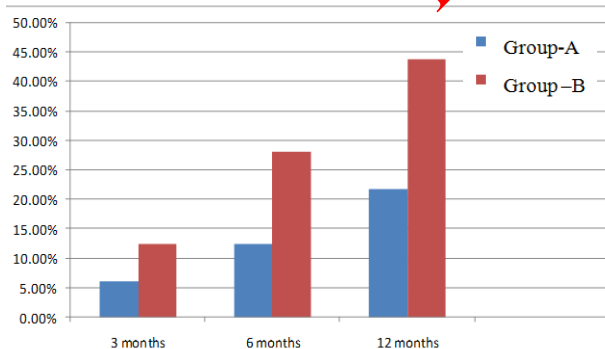
## MATERIALS AND METHODS

The study was conducted in ENT and Head & Neck Surgery Department, Bolan Medical Complex Hospital, Quetta, between March 2010 to March 2013. Sixty four patients of both genders with diagnosis of ethmoidal nasal polyps were included. Patients with history of diabetes mellitus, hypertension, peptic ulcer, herpes keratitis, glaucoma, osteoporosis, tuberculosis, psychiatric disorders, fungal allergic sinusitis, cystic fibrosis, aspirin sensitivity were excluded from this study. The age range of the patients was from 17 to 65 years. After complete workup all patients underwent intranasal polypectomy under general anesthesia. The

postoperative specimens were sent for histopathological examination to confirm the diagnosis. Then patients were divided into two groups, group-A and group-B. There were 32 patients in each group. The patients in group-A received 60mg of prednisolone for one week tapered over 3 weeks. This was followed by nasal steroid spray. Beclomethasone dipropionate two sprays, each containing 50µg delivered in each nostril twice a day for three months, while patients in group-B did not receive oral and nasal topical steroids postoperatively. All other treatment protocol was same for both groups. All patients were followed at interval of 3, 6 and 12 months for recurrence. Statistical analysis was performed using t-test. A probability value of  $p < 0.05$  was taken as the level of significance.

## RESULTS

The study included 64 patients of the age 17 to 65 years with a mean age of 43.76 years. There were 43 male patients and 21 female patients and male to female ratio was 2:1. The mean age for group-A patients was 44.75 years and the mean age for group-B patients was 42.78 years. In group-A who received oral and nasal topical steroids in their postoperative period, the recurrence rate was 6.25% after three months of surgery. While in group-B who did not receive oral and nasal topical steroids recurrence was 12.5% after 3 months of surgery. After six months of surgery the total recurrence in group-A was 12.5% and in group-B total recurrence was 28.12%. After one year of follow-up the total recurrence in group-A of patients was 21.87% and in group-B of patients it was 43.75% as depicted in figure 1. Table 1 and 2 show the recurrence rates during follow-up period. These results show a significant reduction in the recurrence of ethmoidal nasal polyps after one year in group-A in comparison with the group-B ( $p < 0.02$ ), which shows statistically significant difference.



**Fig No. 1: Recurrence rate in group-A and group-B of patients.**

**Table No.1: Recurrence rate in group-A of patients**

| Duration  | No. of patients | Percentage |
|-----------|-----------------|------------|
| 3 months  | 2               | 6.25%      |
| 6 months  | 4               | 12.5%      |
| 12 months | 7               | 21.87%     |

**Table No.2: Recurrence rate in group-B of patients**

| Duration  | No. of patients | Percentage |
|-----------|-----------------|------------|
| 3 months  | 4               | 12.5%      |
| 6 months  | 9               | 28.12%     |
| 12 months | 14              | 43.75%     |

## DISCUSSION

Several controlled studies have shown that topical steroids can delay the recurrence of polyps after surgery and with that postpone the need for new surgery.<sup>10,11,12</sup>

Recurrence rate in group-B of patients Systemic steroids are more potent, and have shown to be more effective at decreasing polyp eosinophilia when compared with steroid sprays.<sup>13</sup> A short course of systemic steroid is equally effective as simple polypectomy with a snare and it may serve as a medical polypectomy.<sup>14</sup> Bross- Soriano et al, reported that the use of nasal topical steroids (fluticasone propionate) after endoscopic surgery of polyps is effective in reducing recurrence of nasal polyps (14% compared to 44% in control group).<sup>15</sup> Kang et al, found that high dose nasal topical corticosteroid therapy is more effective than low dose topical therapy in preventing recurrence of nasal polyps (7.1% opposed to 44%).<sup>16</sup> According to a study by Al-Husban et al, preoperative short course of oral steroids followed by postoperative topical nasal steroid sprays show significant reduction in recurrence rate of nasal polyps after endoscopic nasal polypectomy.<sup>17</sup> Whichever technique of surgery is used, there is quite a high incidence of recurrence of nasal polypi after the operation, so surgery should be followed by corticosteroid nasal spray.<sup>18</sup> The rate of recurrence is higher in patients with asthma, eczema and aspirin hyper sensitivity.<sup>19</sup> Medical therapy after surgery is essential for preventing recurrence.<sup>20</sup>

In our study patients who received a short course of oral steroids followed by topical nasal steroid sprays after intranasal polypectomy had a low rate of recurrence as compared to those who did not receive steroids postoperatively. The observation of many international studies are comparative with our this study.

## CONCLUSION

A postoperative short course of oral corticosteroids followed by topical nasal steroid sprays significantly can reduce the recurrence rate of the ethmoidal nasal polyps after intranasal polypectomy.

**Recommendation:** Further studies are required to investigate the recurrence of polyps in postoperative polypectomy steroid therapy.

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# Age and Sex Distribution and Types of Foreign Body Esophagus - Mode of Presentation, risk Factors involved, Management and Complications

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## ABSTRACT

**Objective:** To find out the age and sex distribution, type of foreign bodies, their mode of presentation, site of impaction, risk factors involved.

**Study Design:** Experimental study.

**Place and Duration of Study:** This study was carried out in the ENT Department, Nishtar Hospital, Multan from January 2012 to December 2012.

**Materials and Methods:** A total of 100 cases presented with history of FB ingestion were included.

**Results:** Male patients with FB ingestion were 67% and female were 33%. Male to female ratio was 2:1. Patient's age ranges from 6 months to 70 years. Most of the patients were below the age of 10 years. Majority of the patients belonged to lower socio-economic group and also from the rural areas. In total review of nature of foreign body, regardless of age, coin was the commonest F.B (76%). In the present study rigid oesophagoscopy was done for removal of all F.B.

**Conclusion:** When diagnosis is delayed, or presentation is late, complication rate increases. Do not let foreign body to pass down spontaneously after 24 hour, after that it should be urgently removed under GA without further delay.

**Key Words:** Rigid endoscopy, Impaction, Esophagoscopy.

## INTRODUCTION

Foreign bodies of the digestive tract make a common but serious problem dealt by the oto-laryngologist. FB in the oesophagus are clinically important entities because of potential risk of oesophageal perforation either spontaneously or iatrogenic during removal. Most of the FBs pass on uneventfully in to the lower gastrointestinal tract, excreted with feces and do not require any intervention. About 10-20% of the FB get impacted in upper gastrointestinal tract and require removal<sup>2</sup>.

Common sufferers are children, peak incidence 6 months to 6 years,<sup>3</sup> followed by edentulous adults<sup>4</sup>, prisoners and psychiatric patients. Most frequent encountered FBs are coins, meat bolus, fish bones, safety pins and dentures<sup>4</sup>. Impaction occurs either because of the size and nature of the ingested material or due to oesophageal narrowing and most of the FB get stuck at the level of cricopharynx<sup>5</sup>.

The time honoured method for removal of oesophageal FB is rigid endoscopy under general anaesthesia<sup>6</sup>. Alternative method of extraction of smooth FB includes flexible oesophagoscopy, FB advancement with bouginage and balloon extraction under fluoroscopy<sup>2,7,8</sup>. Jackson says that poor children who are not given individual attention and who are left to feed themselves at an early age are more liable to swallow a foreign

body<sup>9</sup> and this is very vital point in our society where people tend to have many kids. Kids remain neglected and unsupervised due to poor family planning.

Wearing of dentures is commonly associated with FB ingestion in adults because a person is unable to detect fish or meat bone in the mouth as early as a person with normal palate. Tough meat if improperly chewed may become impacted. Dentures themselves are dislodged and get stuck in the esophagus while the patient is drunk or asleep. This dental prosthesis with wires is one of the most difficult FB encountered and has a high incidence of complications<sup>10</sup> (JCPS).

Local conditions (Angulations or narrowings) of the oesophagus may determine the impaction of FB<sup>11</sup>. Meat bolus impaction may be because of benign strictures as primary cause. In present series 4 cases are reported to have benign strictures along with FB.

Rigid endoscopy has been the standard practice for removing FB from the esophagus. Flexible endoscopy as an alternative method is favoured by some endoscopists but we do not have any such experience. The success rate of FB removal by rigid endoscopy is 99%<sup>1</sup>. In our series it is 98%. No oesophagostomy was done in present study. It is said to be 0.5% according to Stewart<sup>12</sup>. Oesophageal perforation is a horrible experience for any ENT surgeon. Incidence of perforation during oesophagoscopy is 0.25% according

to Palmar<sup>13</sup>. But fortunately we did not encounter such complication.

The factor that consistently correlated with major complication is the presence of FB in the oesophagus for more than 24 hours<sup>14</sup> and its sharp edge nature, sharp FB dentures, safety pins can pose serious problems for the surgeons. That is why FB could be removed as early as possible and with great care.

The purpose of this study was to find out the age and sex distribution, type of foreign bodies, their mode of presentation, site of impaction, risk factors involved. The role of rigid endoscopic removal of FB and the problem associated with it are also discussed. Risk factors involved in the impaction of FB are also addressed.

## MATERIALS AND METHODS

This study was carried out in the ENT Department, Nishtar Hospital, Multan from Jan 2011 to Dec 2012. A total of 100 cases presented with history of FB ingestion were included.

## RESULTS

Male patients with FB ingestion were 67% and female were 33%. Male to female ratio was 2:1. Majority of the patients belonged to lower socio-economic group and also from the rural areas.

Patient's age ranges from 6 months to 70 years. Most of the patients were below the age of 10 years. (Table-1)

In total review of nature of foreign body regardless of age, coin was commonest FB (76%) as shown in Table-2.

Types of foreign body in age groups are shown in table-3.

In present study diagnostic oesophagoscopy was done for removal of FB (Table-4).

Table-5 shows the types of foreign body in male and female patients.

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

| Age group | No. of cases | Percentage |
|-----------|--------------|------------|
| I         | 78           | 78.0       |
| II        | 16           | 16.0       |
| III       | 06           | 06.0       |

**Table No.2: Types of foreign body (n=100)**

| Type            | No. of cases | Percentage |
|-----------------|--------------|------------|
| Coin            | 76           | 76.0       |
| Meat bolus      | 07           | 07.0       |
| Bone chip       | 05           | 05.0       |
| Seed            | 04           | 04.0       |
| Denture         | 03           | 03.0       |
| Bunta           | 02           | 02.0       |
| Magnet          | 01           | 01.0       |
| Metallic washer | 01           | 01.0       |
| Fish bone       | 01           | 01.0       |

**Table No.3: Types of FB (n=100)**

| Type         | Group-I (n=78) | Group-II (n=16) | Group-III (n=6) |
|--------------|----------------|-----------------|-----------------|
| Coins        | 74 (94.8%)     | 02 (12.5%)      | -               |
| Bunta        | 02 (02.5%)     | -               | -               |
| Magnet       | 01 (01.2%)     | -               | -               |
| Steel washer | 01 (01.2%)     | -               | -               |
| Bone chip    | -              | 05 (31.2%)      | -               |
| Meat bolus   | -              | 05 (31.2%)      | 02 (33.3%)      |
| Seed         | -              | 03 (18.7%)      | 01 (16.7%)      |
| Fish bone    | -              | 01 (06.3%)      | -               |
| Denture      | -              | -               | 03 (16.7%)      |

**Table No.4: Types of FB in male and female patients**

| Type of FB      | Male (n=67) | Female (n=33) |
|-----------------|-------------|---------------|
| Coin            | 55 (82.0%)  | 21 (63.6%)    |
| Bunta           | 02 (02.9%)  | -             |
| Bone chip       | 03 (04.8%)  | 02 (06.1%)    |
| Denture         | 02 (02.9%)  | 01 (03.0%)    |
| Meat bolus      | 02 (02.9%)  | 05 (15.2%)    |
| Seed            | 02 (02.9%)  | 02 (06.1%)    |
| Fish bone       | 01 (01.5%)  | -             |
| Metallic washer | -           | 01 (03.0%)    |

**Table No.5: Results of x-rays (n=100)**

| Result         | No. of cases | %age |
|----------------|--------------|------|
| FB visible     | 89           | 89.0 |
| FB not visible | 11           | 11.0 |

## DISCUSSION

From the last 60 years there have been many accounts in the literature concerning the swallowed foreign bodies. This reflects fairly high incidence of the cases world wide.

Most of the FBs in the oesophagus are seen in children. In the study carried out by Maroof<sup>1</sup>, and Zeba Ahmad<sup>15</sup> the incidence of the FB in children below 10 years was 62% which is comparable with the results in present study. Other researches like Erbes and Babbitt<sup>16</sup> reported an incidence of 80% and according to Khan MA<sup>1</sup> report it was 66%. This high incidence is because of social status where people in the society are illiterate having many children, so kids are not properly looked after.

A second peak incidence of FB in oesophagus is seen older age group. Which is shown in table 1 of study by Hussain<sup>17</sup>. Whereas this study shows an incidence of 18%. This high incidence in old age group due to edentulous persons or people with ill fitted dentures. Old people are less preceptive to presence of bone and other inedible in there food.

In present study male to female ratio is 2:1, which is consistent with other studies reported by Hussain G, et al.<sup>18</sup>

Commonly encountered oesophageal FB are coins, meat bolus, bone chip, fish bones and dentures. But a number of unusual FB included wire pieces, ear rings, safety pins, lockets are also cited in the literature. The cardinal symptoms are persistent FB sensation and dysphagia due to size of FB or inflammatory reaction and spasm caused by its presence. As compared to adults, children are more vague and some times present with no symptoms.<sup>19</sup>

This study comparable with the others reports cited in the literature concerning to clinical presentation. Dysphagia was the commonest presenting symptom. If proximal 1/3<sup>rd</sup> of oesophageal is obstructed then increased salivation and regurgitation may occur.<sup>2-6</sup>

In children respiratory symptoms like cough, choking may be the presenting complaints due to overflow of oesophageal contents. Polling of saliva on indirect laryngoscopy has been reported to be an accurate sign of retained objects. But this sign is difficult to elicit in most of the children. Tenderness on pressing the cricoid region is reliable sign in majority of the cases of impacted FB.

X-ray is the main stay to confirm presence of radio-opaque FB. If no FB is seen on X-ray like plastic, wood pieces, seeds and patient is symptomatic, endoscopy is still performed. Air trapment in upper end of oesophagus on X-ray soft tissue neck lateral view indicated presence of non-opaque FB. Morbidity rate of 0.34 to 2% has been reported with rigid oesophgscopy and mortality rate of 0.05%.<sup>20</sup>

## CONCLUSION

Late presentation and delay in diagnosis are main causes of complications and mortality. Early diagnosis and safe retrieval is key to avoid complications.

Keep toys, coins and edibles away from reach of children. Endoscopy remains mainstay of diagnostic as well as therapeutic tool and safe and effective method of removal.

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# Comparison on Hepatotoxicity Profile of Diclofenac Sodium & Diclofenac Potassium on Rabbits

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## ABSTRACT

**Objective:** Aim of this study was to determine the clinical hepatotoxicity of diclofenac sodium and of diclofenac potassium, further to evaluate whether these drugs could elicit liver cell destruction and anemia, and which drug is comparatively safer for prolong use.

**Study Design:** Experimental study.

**Place and Duration of Study:** This study was conducted in the Department of Pharmacology; Faculty of Pharmacy, University of Karachi, Duration of study was 30 days.

**Materials and Methods:** Male 50 rabbits were equally divided into 5 groups, group A was served as control and the group B & C were diclofenac sodium (0.8mg/kg/day and 1.5mg/kg/day), and group D & E were of diclofenac potassium (0.8mg/kg/day and 1.5mg/kg/day), treated. All the animals were caged in pair in an iron caged with free access to grass and hay of standard diet and tap water for a period of 30 days. At the end of 30 days blood was collected through cardiac puncture from each rabbit and was analyzed to determine the levels of SGOT, SGPT, Bilirubin, ESR and Erythrocyte count.

**Results:** The experimental results suggest that SGOT and SGPT levels were significantly increased in diclofenac sodium treated rabbits after 10 and 30 days ( $P < 0.01$ ), while diclofenac potassium treated rabbits showed significant result, ( $P < 0.05$ ) only after 30 days of treatment.

The level of bilirubin was significantly increased in diclofenac sodium treated rabbits after 10 days and 30 days ( $P < 0.01$ ) and diclofenac potassium also showed significant result ( $P < 0.05$ ) after 30 days treatment. Erythrocyte count decreased in both control and treated rabbits after 10 days but control results are not significant. After 30 days diclofenac sodium showed highly significant decreased count of erythrocytes ( $P < 0.01$ ) but diclofenac potassium showed only significant results ( $P < 0.05$ ). E.S.R values significantly increased in diclofenac sodium and diclofenac potassium treated rabbits after 10 days and 30 days.

**Conclusion:** Our study concluded that as compared to sodium, potassium salt of diclofenac is safer for prolong pain management as the incidence of adverse effects were comparably lower in potassium salt.

**Key Words:** Diclofenac Sodium, Diclofenac Potassium, Hepatotoxicity, serum aminotransferases, Bilirubin.

## INTRODUCTION

Drugs are an important cause of liver injury. More than 900 drugs, toxins, and herbs have been reported to cause liver injury, and drugs account for 20-40% of all instances of fulminant hepatic failure. The incidence of drug-induced liver disease appears to be increasing, reflecting the increasing number of new agents that have been introduced into clinical use over the past several decades. Thus, monitoring hepatic enzymes is considered appropriate, especially with the drugs that are reported to overt injury<sup>1</sup>. The nonsteroidal anti-inflammatory drug diclofenac is used to treat pain, inflammatory disorders and dysmenorrhea, and commonly formulated in two different salts, diclofenac sodium and potassium. To provide rapid pain relief, diclofenac potassium was launched as an immediate-release tablet<sup>2</sup>. In contrast to delayed release preparations of the sodium salt, diclofenac-K is formulated to dissolve under the acid conditions of the stomach<sup>3</sup>.

Diclofenac causes rare but significant cases of serious liver toxicity. The apoptotic effect of the drug has been evaluated in humans after exposure to sub-cytotoxic concentration of the drug<sup>4</sup>.

An elevation of ALT or AST was observed in patients receiving diclofenac when compared to other NSAIDs. Transaminase elevations were seen more frequently in patients with osteoarthritis than in those with rheumatoid arthritis. In addition to enzyme elevations seen in clinical trials, post marketing surveillance has found rare cases of severe hepatic reactions, including liver necrosis, jaundice, and fulminant fatal hepatitis with or without jaundice. Some of these rare reported cases underwent liver transplantation.<sup>5</sup> Diclofenac was found to generate protein adducts in the livers of treated mice as well as in rat hepatocytes via protein acylation by the drug glucuronide. In vitro experiments with cultured rat hepatocytes have shown, however, that the covalent binding of diclofenac is neither the only nor the major cause of acute cytotoxicity. Moreover, it is also suggested that diclofenac is cytotoxic to rat

hepatocytes due to cytochrome P-450 (CYP)-mediated metabolism, by the formation of reactive metabolite(s) by drug oxidation, which could be related to drug toxicity, has been reported.<sup>6</sup>

To the best of our knowledge there are few studies regarding drug-induced hepatotoxicity in Pakistan, so this study was designed to analyze the drug-induced hepatotoxicity among two different salts of diclofenac sodium & potassium, and to find the comparatively safer drug for prolonged use.

## MATERIALS AND METHODS

Locally bred 50 male rabbits weighing range 1.03 to 1.7kg were used for the experiment. They were caged in pairs in an iron cage with free access to grass and hay of standard diet and tap water. Food intake was monitored weekly by giving weighed amount of food and weighing the remaining food in the iron cage. Body weight, food intake, water intake, skin color and posture of all rabbits were monitored in pre-experimental period.

**Drug Administration:** Diclofenac sodium & diclofenac potassium both in 2 different doses according to Paget & Barnes<sup>7</sup> dissolved in drinking water and was given orally. Control rabbits were given tap water. In the beginning of the experiment 40 rabbits were divided into 5 groups, and labeled as:

1. Water treated (control).
2. Diclofenac sodium 0.8mg/kg/day treated.
3. Diclofenac sodium 1.5mg/kg/day treated.
4. Diclofenac potassium 0.8mg/kg/day treated.
5. Diclofenac potassium 1.5mg/kg/day treated.

Blood was collected through cardiac puncture from each control rabbit in sodium citrate containing test tubes. Centrifugation method was used to obtain plasma. Plasma samples were stored at 2-8°C for the estimation of SGOT, SGPT, Bilirubin, ESR and Erythrocyte count.

The dosing started from day 1 till day 30<sup>th</sup>. At 10<sup>th</sup> day after the dosing, body weight, food intake, water intake, behavioral monitoring and blood samples were collected in 3.8% sodium citrate containing test tubes by cardiac puncture. Centrifugation gave plasma, which was used for the different tests.

On 30<sup>th</sup> day of the dosing, body weight, food intake, water intake was observed and then rabbits were sacrificed and blood was collected in 3.8% sodium citrate (anti-coagulant) containing test tubes. Blood was centrifuged and plasma was collected to perform the tests.

After separation of serum, liver enzymes SGOT, SGPT & Bilirubin were estimated by Spectrophotometer by using standard kit method. E.S.R is estimated by Westergren's tube method & RBC's count by Haug method.

**Statistical analysis:** Comparison of difference of mean

between diclofenac sodium in two different doses, control group & diclofenac potassium was made by using student's t-test. Rabbits liver enzymes like SGPT, SGOT and Bilirubin and blood parameters like E.S.R and Erythrocyte count, after 10 days and 30 days were statistically analyzed by two way ANOVA using a software "Minitab-15". p value less than 0.05 were considered statistically significant and p value less than 0.005 were considered highly significant.

## RESULTS

**Figure No.1:** Data analyzed by two-way ANOVA (df = 1, 36), fig 1a & 1b shows that SGOT and SGPT were significantly increased ( $P < 0.05$ ) in diclofenac sodium 0.8 and 1.5mg/Kg/day treated rabbits after 10 days and highly significant ( $P < 0.01$ ) results obtained in rabbits after 30 days. But diclofenac potassium 0.8 and 1.5mg/Kg/day treated rabbits show ( $P < 0.01$ ) significant effects only after 30 days of treatment.

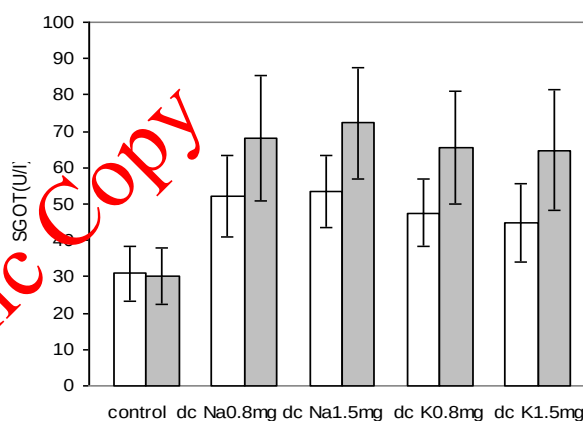


Fig: 1a

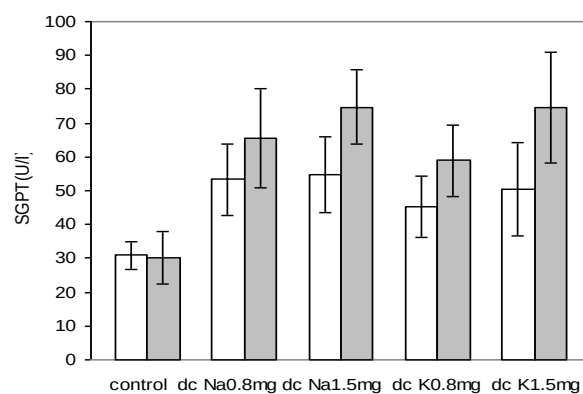


Fig: 1b

**Figure No.1: Effect of Diclofenac Sodium 0.8mg/Kg , 1.5mg/Kg & Diclofenac Potassium 0.8mg/Kg , 1.5mg/Kg on Rabbit Liver Enzyme SGOT & SGPT (U/I)**

Fig 1a: Shows effect of 0.8mg/Kg/day & 1.5mg/Kg/day diclofenac sodium and potassium on rabbit liver SGOT after 10 and 30 days, while Fig 1b: Shows effect of diclofenac sodium & potassium 0.8mg and 1.5mg/kg/day on rabbit liver SGPT after 10 and 30 days,

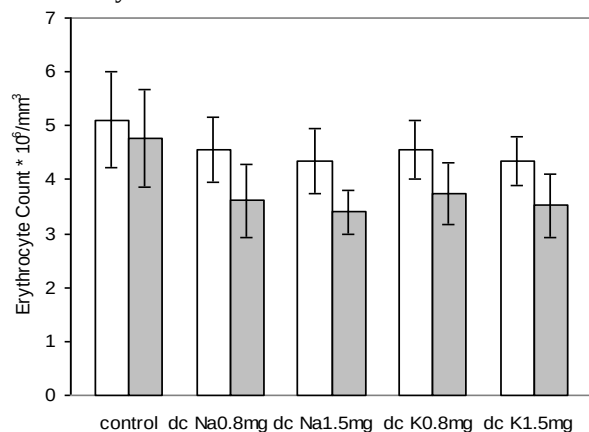
**Table 1:** Show the effect of diclofenac sodium and diclofenac potassium at the dose of 0.8 and 1.5 mg/Kg/day on rabbit Bilirubin (mg/dl). Data analyzed by two-way ANOVA (df = 1, 36), shows that Bilirubin significantly increases ( $P<0.05$ ) in diclofenac sodium 0.8 and 1.5mg/Kg/day treated rabbits after 10 days and highly significant ( $P<0.01$ ) results obtained in rabbits after 30 days. diclofenac potassium 0.8 and 1.5mg/Kg/day treated rabbits show ( $P>0.05$ ) insignificant effects after 10 days but highly significant effect ( $P<0.01$ ) after 30 days treatment.

**Table No.1: Effect of Diclofenac Sodium and Potassium 0.8mg/Kg/day and 1.5mg/Kg /day on Rabbit Bilirubin (mg/dl)**

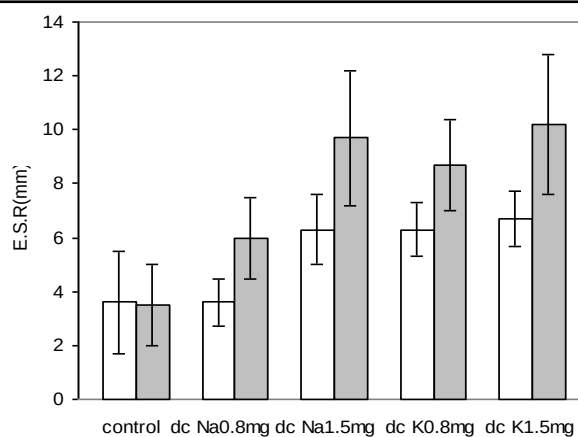
|                            | on Day 10          | on Day 30         | two-way ANOVA (df = 1, 36)     |
|----------------------------|--------------------|-------------------|--------------------------------|
| control                    | 0.4059<br>± 0.129  | 0.478<br>± 0.111  |                                |
| Diclofenac Na 0.8mg/Kg/day | 0.5496*<br>± 0.094 | 0.761*<br>± 0.09  |                                |
| Diclofenac Na1.5mg/Kg/day  | 0.913**<br>± 0.16  | 1.147*<br>± 0.162 |                                |
| Diclofenac K 0.8mg/Kg/day  | 0.568*<br>± 0.139  | 0.829*<br>± 0.189 |                                |
| Diclofenac K1.5mg/Kg/day   | 0.829**<br>± 0.138 | 1.09**<br>± 0.195 | F-Interaction = 4.15, $P<0.05$ |

Values are mean + S.D. (n=10). Significant differences by Newman-Keuls test \* $p<0.05$ , \*\* $p<0.01$ , as compared to control rabbits, following data analyzed by Two Way ANOVA df (1,36).

**Figure No. 2.** Fig 2a Shows, effect of 0.8mg/Kg/day & 1.5mg/Kg/day diclofenac sodium and potassium on rabbit Erythrocyte count. Result shows Erythrocyte count significantly decreases after 10 days in diclofenac sodium 0.8 & 1.5mg/Kg/day treated rabbits, and highly significant ( $P<0.01$ ) results obtained in rabbits after 30 days. But diclofenac potassium 0.8 and 1.5mg/Kg/day treated rabbits show ( $P<0.01$ ) significant effects only after 30 days of treatment.



**Fig: 2a**



**Fig: 2b**

**Figure No.2: Effect of Diclofenac Sodium & Potassium 0.8mg/Kg & 1.5mg/Kg on Rabbit Erythrocyte Count /mm<sup>3</sup> & ESR(mm)**

Fig 2a Shows, effect of 0.8mg/Kg/day & 1.5mg/kg/day diclofenac sodium & potassium on rabbit Erythrocyte count after 10 and 30 days while fig 2b shows effect of 0.8mg/Kg/day & 1.5mg/Kg/day diclofenac sodium & potassium on rabbit ESR after 10 and 30 days.

Fig 2b shows effect of 0.8mg/Kg/day & 1.5mg/Kg/day diclofenac sodium and potassium on rabbit E.S.R after 10 and 30 days. diclofenac sodium 1.5mg/Kg/day treated rabbits show significant result ( $P<0.05$ ) after 10 days and highly significant ( $P<0.01$ ) results obtained after 30 days while diclofenac sodium 0.8mg/Kg/day shows insignificant results after 10 days but significant ( $P<0.05$ ) after 30 days of treatment.. Diclofenac potassium 0.8mg/Kg/day & 1.5mg/Kg/day show ( $P>0.05$ ) insignificant effects after 10 days but highly significant effect ( $P<0.01$ ) obtained after 30 days treatment.

## DISCUSSION

Diclofenac sodium and Diclofenac potassium belongs to the arylalkanoic acid class of NSAID's. They are indicated in arthritic conditions and are also moderately analgesic drugs since they can be used for a certain period of time; the hepatotoxicity of diclofenac can occur within 6-12 weeks of therapy. The possible mechanism of diclofenac induced liver injury is due to hypersensitivity and metabolic aberration.<sup>8</sup> As reported earlier<sup>6</sup> diclofenac can impair ATP synthesis by mitochondrion which is in accordance to our result indicating that they can cause hepatotoxicity over long period of administration of these drugs. When we administered diclofenac in the dose of 0.8mg/kg and 1.5mg/kg both profile show that the level of SGOT and SGPT were significantly elevated. The toxicity may be related to the impairment of ATP synthesis and also by impairing NADPH which are required to reduce the toxicity of hepatocytes.

This toxicity is also related to a fact that diclofenac sodium and potassium can form a toxic metabolite, and can also cause binding of drug to hepatic proteins.<sup>9</sup> The toxic metabolite formed is 4'-hydroxy diclofenac by the action of CYP2CP<sup>10</sup>. The results also showed that the toxicity profile of diclofenac sodium and potassium changed when the duration of therapy was increased. So the levels of SGOT and SGPT were further increased significantly after the period of 30 days dosing, thus indicating that the hepatotoxicity is not only dose dependent but is also duration dependent. The increase in the liver enzymes i.e. transaminases were not only significant but also the level of bilirubin was found to be elevated after the administration of these drugs.<sup>11</sup> The increase level of bilirubin indicates that the hepatotoxicity may be progressed towards liver necrosis. The toxic effects of diclofenac and its metabolites, along with hypersensitivity reactions may be the suggested molecular mechanism of liver injury.

The reason of marked elevated transaminases in the rabbits liver may be attributed to the fact that the metabolic pathways of diclofenac results in the formation of a metabolite that leads to acute lethal cell injury.<sup>12</sup>

The increased level of bilirubin may also leads to certain renal dysfunctions as increased clearance and precipitation of bilirubin could lead to the renal nephritis syndromes. This finding may also be related to the study by Revai, Harmos<sup>13</sup>, who has reported that there may be renal complications due to the use of NSAID's, particularly diclofenac partially due to the development of secondary membranous nephropathy. This was also supported by the study that the renal complications were reversed after the withdrawal of diclofenac and showed response if treatment with prednisolone was initiated.

The significant rise in the level of bilirubin could also be related to the findings that the total erythrocyte count and Hb was significantly reduced after the administration of diclofenac. The increased hemolysis of the R.B.C's can also lead to the increased level of bilirubin which could further be exaggerated by the liver toxicity, as liver could not decreases the concentration of bilirubin of serum through the clearance mechanism. William<sup>14</sup> reported that there may be revised forms of hepatic injury induced by diclofenac. In this type of injury there is a combined failure of canalicular pumps and other intracellular processes also that allow toxic bile acids to accumulate, causing secondary injury to hepatocytes.

The reason of decreased count of erythrocytes with the elevation in the levels of serum transaminases and bilirubin could also be due to the development of acute immune hemolytic anemia<sup>15</sup>. The drug antibody can react with the R.B.C's leading to hemolysis. Another finding shows that there may be the development of IgM antibody that react strongly with the R.B.C's. This

antibody was developed by the metabolite of diclofenac metabolism i.e. 4-hydroxy diclofenac.<sup>16</sup> This could also support our finding that possibly the formation of hydroxyl diclofenac has lead to the agglutination of R.B.C's, in the blood of the rabbit, leading to elevated level of bilirubin and was the major cause of decline in R.B.C's count.

The hepatotoxic drug reactions involve moderate to severe injury to hepatocyte and is indicated by a clinical picture that resembles viral hepatitis. This is characterized by a rapid onset of malaise and jaundice in association with elevated aminotranferase level which may be at least 5 times as high as normal. This is consistent with our findings indicating the rise in the level of transaminases was very significant and was indicative of liver toxicity. The rise in liver transaminases is so high that probably if the drug was not stopped that death could have been reported. This is also true because in the previous reports and investigations on diclofenac clearly indicate that the drug should be discontinued if the symptoms are to be reversed otherwise the toxicity may be further enhanced, and become fatal.<sup>17</sup>

The finding also show that diclofenac sodium is more toxic as compared to diclofenac potassium, since the level of transaminases were increased by diclofenac sodium even after 10 days of treatment, whereas diclofenac potassium produces significant toxicity after 80 days of treatment. This could be due to slight change in the structure and because of the presence of potassium instead of sodium, in ICF and the impairment of ATP synthesis can leads to the swelling of the cell which may be higher if structure has sodium, as sodium is involved in the resting membrane potential and in the generation of the action potential. This may be due to increased solubility and permeability of diclofenac potassium in blood than sodium salt. The higher concentration of diclofenac potassium at the site of action may sometimes be beneficial and well within the therapeutic window.<sup>18</sup>

These results suggest that diclofenac produces hepatic injury but due to pharmacokinetic difference among sodium and potassium salt of diclofenac the ratio of producing toxicity is slightly lower with diclofenac potassium. This work could be further expanded to check the effect of diclofenac sodium and potassium salts on cardiovascular system and on metabolic pathways like carbohydrates and lipid metabolism for further investigation.

## CONCLUSION

Diclofenac is used commonly to treat mild to moderate pain particularly when inflammation is present so liver function should be monitored regularly during long term treatment. Our study concluded that as compared to sodium, potassium salt of diclofenac is safer for



prolong pain management as there was low evidence of hepatic injury.

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# Outcome of Trial of Labour with Previous One Cesarean Section

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## ABSTRACT

**Objective:** To determine fetomaternal outcome of trial of labour in patients with Previous One Cesarean Section.

**Study Design:** Descriptive Case Series based on hospital data.

**Place and Duration of Study:** This study was conducted at the Obstetrics and Gynaecology Department, Shahina Jamil Teaching Hospital Abbottabad, from February 2013 to August 2013.

**Materials and Methods:** Total 100 cases were selected. During trial of labour, patients were closely monitored by vital signs, fetal cardiac activity, lower abdominal pain and tenderness, fetal distress.

Data was collected on proforma and written informed consent was taken on consent form. The permission was taken for hospital committee and the data was analyzed for results.

**Results:** 61 cases (61 %) had successful vaginal delivery while 39 (39 %) patients ended up with repeat emergency caesarean section after failed trial of labour. Out of 61 vaginal deliveries, 53 cases (86.88%) belong to age group 20-30 yrs, while 8 cases (13.12%) were between 31-40 years. Out of 39 cases, 36 cases (92.30 %) belonged to age group of 20-30 years while 3 cases (7.7 %) had age between 31 to 40 years. Distribution of cases, according to fetal distress in patients with emergency caesarean section shows that out of 39 cases, 12 cases (30.70 %) developed fetal distress and 27 cases (69.23 %) were without fetal distress.

**Conclusion:** This study shows that patients with Previous one caesarean section for non-recurrent indication can be successfully delivered vaginally.

**Key Words:** Emergency Cesarean Section, Vaginal delivery Trial of scar

## INTRODUCTION

Caesarean Section rate has been increasing both in developing and developed worlds. It carries 3/4<sup>th</sup> risk of mortality compared with vaginal deliveries<sup>1</sup>. Caesarean Section rate has increased to alarming extent in the last three decades the world over and fear of rupture of uterus in subsequent pregnancy and labour has lead to high rate of repeat Caesarean Section. More than 75 % of patients with Previous One Caesarean Section for non-recurrent cause can be successfully delivered vaginally<sup>2</sup>. Well monitored trial of scar leads to increased percentage of vaginal deliveries, which is a contribution to bringing down the rising rate of Caesarean Section<sup>3</sup>. The success rate of vaginal birth after Caesarean delivery after trial of labour was 54.4 % in the present study. Several caesarean deliveries could be avoided by the vaginal birth after caesarean delivery policy<sup>4</sup>. Overall, neonatal and maternal outcomes compared favourably among women undergoing a trial of labour versus elective repeat caesarean delivery. The majority of morbidity was associated with a failed trial of labour. Better selection of women likely to have a successful vaginal birth after a prior caesarean delivery would be expected to decrease the risk of trial of labour<sup>5</sup>. Patients who had once Previous Caesarean Section but had previously delivered vaginally, have more chances of successful vaginal delivery than others<sup>6</sup>. If the indications for previous caesarean deliveries were bad obstetric history, little can be achieved from trial of scar<sup>7</sup>. Iqbal-et-all 2004 reported

successful vaginal delivery achieved in 72 % and fetal distress was observed in 28.5 %<sup>8</sup>. Trial of labour was associated with the shorter hospital stay. A successful trial of labour after one Caesarean Section associated with the best outcome underscoring the importance of patient selection for a trial of labour<sup>9</sup>.

Overall Caesarean Section rate was 57.6% and vaginal birth after Caesarean Section rate was 42.4%, it was thus concluded that repeat Caesarean Section rate could be avoided in well selected patients with low morbidity<sup>10</sup>. This study is designed to observe the outcome of trial of labour with Previous One Caesarean Section in Jinnah Hospital Lahore.

## MATERIALS AND METHODS

Study was carried out at Obstetrics and Gynaecology Department, Shahina Jamil Teaching Hospital Abbottabad, from February 2013 to August 2013. Calculated sample was 100 cases with 9 % margin of error, 95 % confidence level taking percentage of fetal distress in trial of labour with Previous One Caesarean Section i.e. 28.5 %. Sampling technique was non-probability purposive sampling. Patients included were 20-40 years of age with gestational age 37-40 weeks with spontaneous onset of labour (determined by dating scan), cephalic fetus confirmed on ultrasound, primipara with Previous One Caesarean Section done for non-recurrent cause. Patients with previous classical Caesarean Section, diagnosed cases of hypertension, diabetes and with any contra-indication to vaginal delivery in current pregnancy like Placenta Previa, mal-

presentation and good size baby determined on ultra sound were excluded. 100 pregnant patients, fulfilling inclusion and exclusion criteria who were subsequent to a previous delivery by caesarean and had regular antenatal check up reporting obstetric OPD were taken. An informed consent was taken. Demographic variables like name, age, address was noted. At 37 weeks of gestation decision was taken regarding trial of labour intravenous line was maintained and blood group and cross matching was done pre-hand. Patients were allowed to go in spontaneous labour. Patients were closely monitored during trial of labour by vital signs, fetal cardiac activity, lower abdominal pain and tenderness, fetal distress. Facilities were made available during whole trial of labour for emergency Caesarean Section. Fetal and maternal outcome was vaginal delivery and fetal distress. All this information is noted on proforma. Data was analysed using SPSS version 12. Parity, maternal outcome in form of normal vaginal delivery and fetal distress was presented by frequency and percentage and gestational age was presented by calculating mean + SD.

## RESULTS

Total 100 patients were included in this study carried out over a period of 6 months at obstetrics and Gynaecology Department, Shahina Jamil Teaching Hospital Abbottabad, from February 2013 to August 2013. Sample size of current study was 100 cases.

**Table No 1: Distribution of cases by age having successful vaginal delivery after previous one caesarean section**

| Age (years) | Cases    | Percentage |
|-------------|----------|------------|
| 20-30       | 53       | 86.88      |
| 31-40       | 08       | 13.12      |
| TOTAL       | 61       | 100.0      |
| Mean + S.D  | 29.3+1.4 |            |

Out of 61 vaginal deliveries, 53 cases (86.88 %) belong to age group of 20-30 years while 8 cases (13.12%) were between 31-40 years.

**Table No 2: Distribution of cases by age having failed vaginal delivery (emergency caesarean section) after previous one caesarean section**

| Age (year) | Cases    | Percentage |
|------------|----------|------------|
| 20-30      | 36       | 92.30      |
| 31-40      | 03       | 07.70      |
| Total      | 39       | 100.0      |
| Mean+S.D   | 26.5+1.9 |            |

Out of 39 cases 36 cases (92.30%) belong to age group of 20-30 years while 3 cases (7.7 %) had age between 31 – 40 years.

**Table No. 3: Distribution of cases by gestational age in cases of successful vaginal deliveries in previous one caesarean section n=61**

| Gestational age (weeks) | Cases     | Percentage |
|-------------------------|-----------|------------|
| 37-38                   | 21        | 34.42      |
| 38+1-39                 | 25        | 40.99      |
| 39+1-40                 | 15        | 24.59      |
| Total                   | 61        | 100.0      |
| Mean+s.d                | 39.3+ 1.2 |            |

Out of 61 cases of successful vaginal birth 21 cases (34.42%) were between 37-38 weeks of gestation, 25 cases (40.99%) were between 38+1-39 weeks and 15 cases (24.59%) were between 39+1-40 weeks of gestation.

**Table No. 4: Distribution of cases by mode of delivery following trial of labour in previous one caesarean section**

| Mode of delivery            | Cases | Percentage |
|-----------------------------|-------|------------|
| Vaginal delivery            | 61    | 61.0       |
| Emergency Caesarean section | 39    | 39.0       |
| Total                       | 100   | 100.0      |

Concerning the mode of delivery following trial of labour, out of 100 cases 61 cases (61%) had successful vaginal delivery while 39 (39%) patients ended up with repeat emergency Caesarean Section after failed trial of labour.

**Table No. 5: Distribution of cases by fetal outcome in terms of fetal distress in cases of vaginal delivery n=61**

| Fetal distress | Cases | Percentage |
|----------------|-------|------------|
| Yes            | 03    | 04.92      |
| No             | 58    | 95.08      |
| Total          | 61    | 100.0      |

Table 5 shows out of 61 cases, 3 cases (4.9 %) developed fetal distress while 58 cases (95.08 %) had no sign of fetal distress.

**Table No. 6: Distribution of cases by fetal outcome in terms of fetal distress in cases of emergency caesarean section**

| Fetal distress | Cases | Percentage |
|----------------|-------|------------|
| Yes            | 12    | 30.7       |
| No             | 27    | 69.3       |
| Total          | 39    | 100.0      |

Table 6 shows distribution of cases according to fetal distress in patients with emergency Caesarean Section. Out of 39 cases, 12 cases (30.70 %) developed fetal distress and 27 cases (69.23%) had no fetal distress.

## DISCUSSION

Caesarean Section has been increasing in both developed and developing countries, it causes 3/4<sup>th</sup> increased risk of mortality as compared to vaginal

deliveries. High Caesarean Section rate has negative impact on maternal health and obstetric care cost, so there is a need to reduce it<sup>11,12</sup>. Caesarean Section rate can be reduced either by reducing primary Caesarean rate or reducing repeat Caesarean rate by subjecting those with previous one Caesarean to trial of labour after thorough assessment and counselling. In current study objective was to determine feto-maternal outcome after trial of labour in patients with previous one Caesarean Section. Successful vaginal births achieved mostly in early ages than in later age. Another study by Bujold et al concluded that successful vaginal delivery is inversely related to maternal age<sup>13,14</sup>.

In present study successful vaginal births occurred between gestational age 37-39 weeks. Rate of successful vaginal birth decreases with increasing gestational age. Another study by Smith et al in Cambridge University UK concluded that risk of emergency Caesarean Section increased with increasing gestational age<sup>15</sup>. In this study, out of 100 cases 61 (61%) achieved successful vaginal delivery while 39 (39%) ended up with emergency Caesarean Section. Another study conducted by Birgisdottir et al concluded similar results<sup>16,17</sup>.

Another study by Butt and Akhtar concluded that 62.8% had successful vaginal delivery while 34.7% had emergency Caesarean Section<sup>18,19</sup>. With successful VBAC 3 babies (4.92%) were found to have meconium stained liquor but all babies were healthy and had spontaneous cry while babies who were delivered through emergency Caesarean Section 12 (30.7%) developed fetal distress out of 39. All survived and discharged without any neurological deficit or complication. In a study conducted by Homer concluded babies whose mother attempted VBAC were significantly less likely to require admission in neonatal Intensive Care Unit<sup>20,21,22</sup>. No maternal and perinatal mortality seen.

## CONCLUSION

This study showed that patients with Previous One Caesarean Section for non-recurrent indication can be successfully delivered vaginally. Antenatal booking and follow up, careful case selection for trial of scar and close observations during labour will achieve successful maternal and perinatal outcome. VBAC also saves any future Caesarean Section, as currently Previous Two Caesarean Sections is an indication for elective Caesarean Section in our setup.

**Suggestions:** To reduced the caesarean section rate VBAC should be encouraged. Early booking, regular antenatal visits and confinement in hospital should be encouraged.

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# Study to Estimate the Prevalence of Malaria Infection in Sukkur

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## ABSTRACT

**Objective:** The aim of the study to estimate the prevalence of malaria amongst the population with fever or history of fever at sukkur.

**Study Design:** Cross sectional study

**Place and Duration of Study:** This study conducted at laboratory Ghulam Mohammad Mahar Medical College Hospital Sukkur from January 2011 to December 2012.

**Materials and Methods:** Total 1746 clinical suspected case of malaria were included in the study. Patients presenting with fever were screened, thick and thin blood films prepared on microscopic glass slide, stained with 5% Giemsa's stain.

**Results:** There were 344 cases below 11 years, 590 cases between 11 to 20 years. 812 cases above 20 years. They were 960 males and 786 females, with male to female ratio 1.2:1. The prevalence of plasmodium slide positivity was 7.9% (138/1746). Among plasmodium slide positive, 60.5% (83/138) were positive for *P. vivax* and 39.5% (55/138) were positive for *P. falciparum*.

**Conclusion:** Identification of malaria cases in early acute phase of disease is significant for proper curative treatment. Anti mosquito eradication measures should be taken for breeding places of vector with personal protection measures and awareness program for malaria should be initiated.

**Key Words:** Anopheles mosquito, *P. falciparum*, *P. vivax*.

## INTRODUCTION

Malaria infection is a global public health problem. The name malaria is derived from the Italian mal aria meaning bad air.<sup>1</sup> The disease was also known as paludism from the Latin palus (marsh).<sup>2</sup> Both names reflect that in ancient times, disease was believed that disease was spreading from marshy and swampy places.<sup>3</sup>

Grassi, Feletti and Welch (1890 - 1897) proved that malaria is transmitted by one human to another by bite of infected Anopheles mosquito. The disease affects 109 countries in the World.<sup>4</sup>

WHO estimates that 216 million cases each year.<sup>5</sup> Approximately over half of million people die from malaria, mostly children younger than 5 years old.<sup>6</sup> Estimated number of Annual malaria cases in Pakistan is 1.5 millions.<sup>6,7</sup> The development cycle of vector requires hatching of eggs in standing water, in temperature between 16 °C to 38 °C. Rice crop cultivation provides breeding sites for parasite and influence incidence and prevalence of disease.<sup>8,9</sup> The most common region of malaria reported by C.D.C was Africa (58%), Asia (18%) and South America (16%). Malaria is transmitted to man by intracellular plasmodium protozoa, *P. falciparum*, *P. malaria*, *P. ovale* and *P. vivax*. The predominant species in Pakistan is *P. falciparum* and *P. vivax*.<sup>10</sup>

Children and adults are asymptomatic during initial phase of malaria infection. The usual incubation period for *P. falciparum* is 9-14 days and *P. vivax* is 12-17 days. The incubation period can be as long as 6-12 months for *P. vivax*. The disease is characterized by

fever, chills, sweats, fatigue, anemia, thrombocytopenia, headache and anorexia.<sup>11,12</sup>

*P. falciparum* is most severe form of malaria and associated with more parasitemia. Fatality rate is up to 2.5% in adults and 30% in infants, if treatment is not started promptly. *P. vivax* results in parasitemia up to 2%. *P. falciparum* infects both Immature and mature erythrocytes. *P. vivax* infects primarily immature erythrocytes.<sup>13,14</sup>

Hozhabri et al (2000) studies the prevalence of plasmodium slide positivity among the children treated for malaria at R.H.C Jhangara Sindh, Pakistan. They observed the prevalence of plasmodium slide positivity was 5.9%.<sup>15</sup>

The prevalence of community based study done in rural Sindh by Covell and Lieut (1934) epidemic of malaria. They found 40% malaria positivity at that time. Malaria diagnosis was based on splenic rate (percentage of children between 2-10 years of age showing enlargement of spleen).<sup>16</sup>

The prevalence for malarial infection studies has been conducted in many parts of the Pakistan, but still lacking in many areas. A present study was conducted to estimate the prevalence of malaria infection suspected cases in Sukkur.

## MATERIALS AND METHODS

This study was undertaken at Ghulam Muhammad Mahar Medical College (GMMC) Hospital, Sukkur among suspected patients of malaria, during the period of two years (January 2011 to December 2012). The patients were included in the study if they met the

eligibility criteria. The age grouping of the patients was divided in to 3 categories: 2 months to 10 years of age, 11 – 20 years and 21 years and above.

The specimen was collected from patients after cleaning the skin with 70% rectified spirit to minimize the chance of contamination. 3 ml of intra venous blood was by drawn into EDTA vacutainer tube and information about age and sex were recorded. All the patients underwent a general examination for dehydration, anemia, spleen enlargement, jaundice and other abnormalities. Body temperature was also recorded by using a standard oral mercury thermometer. Thick and thin blood film were prepared through the through the blood sample in the pathology laboratory of the hospital. Thin film was fixed with 1 – 2 drops of methanol to avoid dehemoglobinization of RBCs while thick films were not fixed with methanol. The slides were pleased in staining jar, containing 5% Giemsa's stain for 20 minutes. After staining, air dry film was examined. 100-200 fields were examined under oil immersion objective (100 X) before being declared negative. Thick blood film were examined for quickly scanning of parasite while thin blood film for identification of malaria parasite species.

Those films that were malaria parasite positive, we identified different species such as *P. falciparum*

and *P. vivax*.

## RESULTS

Total 1746 cases were screened during period of January 2011 to December 2012. 960 cases were males and 786 were females. Ages of patient ranged from above 2 months to 80 years. Male to female ratio was 1.2:1. Mean age was 21 years. The malarial slide positivity was 7.9% (138/1746). Among the positive cases *P. vivax* were 60.2% (83/138) and *P. falciparum* (55/138) were 39.8%.

In 83 positive cases of *P. vivax*, patients aged below 11 years were 60.6% (23/83), from 11 to 20 years were 55.8% (24/83) while in patients above 20 years were 63.2% (36/83). Among *P. falciparum* positive cases (55/138), 39.4% (15/55) were under 11 years, 44.2% (19/55) were aged from 11 to 20 years while 36.3% (21/55) were above 20 years.

The seasonal variation of disease was also noted in this study. It was observed that high infection rate of *P. falciparum* was found in month of January while it was lower in the month of April. Higher rate of infection with *P. vivax* was observed in November and low in the month of January.

**Table No.1: Month wise prevalence of malaria infection in sukur (years 2011& 2012)**

| Month        | Patients*   | MP (+ve)** | Infection (%) | <i>P. vivax</i> (%) | <i>P. falciparum</i> (%) |
|--------------|-------------|------------|---------------|---------------------|--------------------------|
| January      | 157         | 17         | 10.82%        | 01 (0.63%)          | 16 (10.19%)              |
| February     | 135         | 06         | 4.44%         | 02 (1.48%)          | 04 (2.96%)               |
| March        | 212         | 05         | 2.34%         | 02 (0.94%)          | 03 (1.4%)                |
| April        | 148         | 02         | 1.35%         | 01 (0.67%)          | 51 (0.67%)               |
| May          | 94          | 06         | 6.37%         | 05(5.31%)           | 01 (1.06%)               |
| June         | 119         | 09         | 7.56%         | 06 (5.04%)          | 03 (2.52%)               |
| July         | 133         | 03         | 6.75%         | 07 (5.26%)          | 02 (1.50%)               |
| August       | 130         | 08         | 6.15%         | 06 (4.61%)          | 02 (1.54%)               |
| September    | 151         | 10         | 6.62%         | 06 (3.97%)          | 04 (2.64%)               |
| October      | 124         | 20         | 16.12%        | 12 (9.67%)          | 08 (6.45%)               |
| November     | 224         | 40         | 17.84%        | 31 (13.83%)         | 09 (4.01%)               |
| December     | 119         | 06         | 5.04%         | 04 (3.36%)          | 02 (1.68%)               |
| <b>TOTAL</b> | <b>1746</b> | <b>138</b> | <b>7.9%</b>   | <b>83 (4.75%)</b>   | <b>55 (3.15%)</b>        |

\*Numbers of blood slide examined for malaria parasite. \*\*Malaria parasite positive blood slide in patients.

**Table No.2: Age and gender wise distribution of malaria infection**

| S.No | Age (year)   | Male       | Female     | Total       | MP +ve*    | <i>P.vivax</i> (%) | <i>P. falciparum</i> (%) |
|------|--------------|------------|------------|-------------|------------|--------------------|--------------------------|
| 01   | Below 10     | 184        | 160        | 344         | 38         | 23 (60.6%)         | 15 (39.4%)               |
| 02   | 11 - 20      | 332        | 258        | 590         | 43         | 24 (55.8%)         | 19 (44.2%)               |
| 03   | Above 21     | 444        | 368        | 812         | 57         | 36 (63.2%)         | 21(36.8%)                |
| 04   | <b>Total</b> | <b>960</b> | <b>786</b> | <b>1746</b> | <b>138</b> | <b>83 (60.2%)</b>  | <b>55 (39.8%)</b>        |

\*Malaria parasite positive blood slide in patients.

## DISCUSSION

Malaria is a major global health problem, occurring in more than 100 countries in the world<sup>17,24</sup>, affects an estimated 300 million people and causes more than a

million deaths per year.<sup>18</sup> *Falciparum* malaria has high mortality as it causes complication like cerebral malaria, renal failure and algid malaria.<sup>19</sup>

In our study 1746 patients suspected for malaria were screened during January 2011 to December 2012. Out

of 1746 individuals 138 cases were positive for malaria parasite. In positive cases 60.1% were identified positive with plasmodium vivax and 39.90% with Plasmodium falciparum. Negligible mixed infection of P. falciparum and P. vivax was also observed. Male patients were more affected by plasmodium than female may be due to maximum exposure to vector. Male to female ratio were found in this study was 1.2:1 and mean age was 21 years in patients positive with malaria.

The positivity rate for malaria parasite was found 7.9% (138/1746) in general population. A research work for malaria in 2007 at Ayub teaching hospital Abbottabad shows 7.2% malaria infection in general population.<sup>8</sup> A study about the prevalence of malaria infection in human population in 3 district localities of Quetta, Pakistan confirm finding of our study.<sup>17,18,21</sup> Another study conducted about the prevalence of malaria parasite at Dera Murad Jamali in 2008 find out the malaria parasite 40.4%. P. vivax infection was 71.7% and 28.2% with P. falciparum out of positive cases.<sup>22</sup> Among the positive cases we observed significantly high positivity of P. vivax which was 60.2% (83/138) then P. falciparum (55/138) that only were 39.8%. A study conducted at Karachi and other areas in Sindh, Pakistan shows that malaria in patients with P. vivax was 62.5% and patients were positive with P. falciparum were only 36.0%.<sup>13,14</sup> Another study was carry out at Karachi and in others areas of Sindh, Pakistan showing the similar results. It shows two time high P. vivax infection then P. falciparum.<sup>15,16</sup> A study in Mansehra in 2006, 160 cases of malaria in children were investigated and results of study were reveals the high vivax infection.<sup>6</sup> Study conducted in 2011 in patients with fever in all provinces of Pakistan including Islamabad. P. vivax ranged from 2.4% to 10.8% and P. falciparum ranged 0.1% to 3.8% which is similar to this study.<sup>22</sup>

This study raises the roof of positivity of P. vivax and P. falciparum in almost all age groups and do not show significant difference. Positive cases of P. Vivax in patients aged below 11 years were 60.6%, from 11 to 20 years were 55.8% while in patients above 20 years were 63.2%. Among P. falciparum positive cases 39.4% were under 11 years, 44.2% were aged from 11 to 20 years while 36.3% were above 20 years.

However in our study seasonal variation also noted. High prevalence of P. vivax malaria infection was found during the month of October and November due to humidity and optimum temperature in our region while lowest infection rate were found in January. Highest infection of P. falciparum found in January and lowest in April. Study conducted at Dera Murad Jamali shows highest infection of P. vivax in October and lowest in January and infection with P. falciparum in January while lowest in October.<sup>23</sup>

## CONCLUSION

High slide positivity rate was observed in clinically suspected cases of malaria. Identification of malaria in acute stage are significant for morbidity and mortality. Screening of suspected cases and anti-mosquito eradication measures should be taken for breeding sites of vector, mass education and awareness programs may be initiated.

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# The Effects of Insulin on the Volume, Absolute and Relative Weight of Liver in HFD/Streptozocin Induced Diabetic Rats

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## ABSTRACT

**Objectives:** In present study, the effects of insulin on the volume, absolute and relative weight of liver was studied in Wistar albino rats for a period of 4 weeks.

**Study Design:** Retrospective / observational study.

**Place and duration of study:** This study was conducted in the Animal House of DUHS and it took 8 months 1<sup>st</sup> June 2011 to 1<sup>st</sup> Feb 2012 to be completed.

**Materials and Methods:** The Male Wistar albino rats which were randomized into 3 groups; each group containing 10 rats. Group A served as control, Group B as insulin treated and Group E as untreated diabetic rats. All the other rats except the Group A were kept on in-house prepared High Fat Diet (HFD) throughout the study. After 2 weeks of exclusive HFD, diabetes was induced by intraperitoneal (IP) injection of low dose streptozocin (STZ 3.5mg/100gm). After the induction, one group was left untreated (Group E) and one group (Group B) was treated with insulin for 4 weeks. The rats were then, sacrificed, liver was isolated, weighed, and its dimensions were noted.

**Results:** The mean absolute liver weight (ALW) of rats was observed as  $8.60 \pm 2.54$  gm,  $13.18 \pm 0.68$  gm and  $9.40 \pm 3.18$  gm in control, untreated and insulin treated groups respectively. And the mean percent liver weight (PLW) was calculated as  $2.99 \pm 0.66\%$ ,  $5.10 \pm 0.73\%$  and  $3.99 \pm 1.37\%$  in control, untreated and insulin treated groups respectively. Statistically significant difference was noted between ALW, PLW and liver volume of rats of the three groups.

**Conclusion:** Insulin decreases the volume, absolute and relative weight of liver of diabetic rats when used for a short period.

**Key Words:** Diabetic rat model, Type 2 diabetes, Diabetes induction, Insulin, Liver.

## INTRODUCTION

The day to day researches reveal soaring rates of obesity, non alcoholic fatty liver disease and diabetes mellitus. This emerging prevalence is due to more mechanized life style, unbalanced diet and physical inactivity. Use of excessive fat in diet and no exercise makes a person obese leading to a condition known as insulin resistance (IR)<sup>1</sup> which gives birth to lot more diseases like obesity, diabetes mellitus type 2 (DM2) and fatty liver disease. DM2 is a common, severe and chronic form of metabolic disorder characterized by hyperglycemia due to decline in insulin action i.e. IR followed by the inability of insulin producing beta cells to compensate for IR.<sup>1</sup> Increased morbidity and mortality associated with the disease is due to complex metabolic changes that lead to functional impairment of many organs. About 1.3% population of the world is suffering from DM2<sup>2, 3</sup> and its prevalence in our community as well as in the world is increasing like an epidemic. The Nation (issue 2008)<sup>4</sup>, Pakistan occupies 7<sup>th</sup> position in WHO diabetes prevalence list. "In Pakistan 6.9 million people are affected by diabetes and the International Diabetes Federation has estimated that this number will grow to 11.5 million by 2025 unless measures are taken to control the disease."<sup>4</sup>

Enlarged fatty liver is a well-known complication of DM2 with an established prevalence of 21–78%,<sup>5-7</sup> and usually remains undiagnosed because of its silent course in many of DM2 patients. Type 1 diabetes is not associated with accumulation of fat if blood glucose levels are well controlled, but type 2 diabetes may have a 70% correlation with fat accumulation regardless of blood glucose control.<sup>8</sup>

The fatty liver disease NAFLD is defined as fatty infiltration of liver cells (hepatocytes) in patients are taking no or insignificant alcohol (< 20 g/day). It can be idiopathic or secondary to metabolic syndromes like obesity, hypertension, hyperlipidemia and diabetes.<sup>3</sup> Fatty liver is caused by a number of factors which result in progressive hepatic failure.<sup>9</sup> The factors are summarized as Two hit theory. "The 'First Hit' to liver occurs when the enzymes involved in lipid metabolism i.e. uptake, synthesis, oxidation, and export are altered. In other words, the uptake of fatty acids by the liver exceeds its oxidation capacity. Lipid synthesis in liver is increased if diet consists of excess of sucrose, fats or fructose. The increase in lipid synthesis and decrease in lipid oxidation leads to the development of insulin resistance, both hepatic and peripheral.<sup>10</sup> The second hit is due to oxidative stress, which causes peroxidation of

lipids in the hepatic cell's membrane and cytokine production.<sup>9,11</sup>

Nonalcoholic steatohepatitis (NASH) is a variant of fatty liver in which fat in the hepatocytes is accompanied by lobular inflammation and steatonecrosis. The diagnosis can only be made in the absence of alcohol abuse or other causes of liver disease, particularly hepatitis C. Nonalcoholic steatohepatitis has been associated most commonly with obese women with diabetes.<sup>12</sup> There is certainly a higher prevalence in type 2 diabetic patients on insulin.<sup>13</sup>

Insulin is an essential hormone which is involved in glucose as well as lipid metabolism.<sup>14</sup> It is synthesized and released by the  $\beta$  cells of pancreas in the blood in response to elevated blood glucose levels. The body cells especially fat, muscle and liver cells have "insulin receptors" on their surface which regulate entrance of glucose into cells. As glucose levels in blood increase, glucose is pushed into the cells where glucose is converted into energy. Other mechanisms by which insulin keeps blood glucose level in normal range is the inhibition of glucose production by the liver.<sup>15</sup> Unfortunately, people who are insulin-resistant cannot utilize insulin efficiently and glucose, therefore, is unable to enter the cells and accumulate in the blood. In order to clear excess glucose from the blood, the body signals the pancreatic  $\beta$  cells to produce excess insulin which results in a condition referred to as hyperinsulinemia (high level of insulin in blood). Hyperinsulinemia, though compensatory, but has various serious side effects on body. It suppresses fatty acid oxidation which leads to high levels of fatty acids in the form of triglycerides (TGs), to accumulate in the blood.<sup>16</sup> In 2002, Mason et al. proved that serum TGs are usually increased after chronic intraperitoneal and subcutaneous insulin infusion<sup>17</sup> which in turn, causes fatty acids to be deposited in the liver which leads to development of HIR.<sup>18,19</sup> Thus, fatty infiltration and IR can potentiate each other creating vicious cycle of metabolic dysfunction.<sup>9</sup> The underlying mechanism by which obesity induces IR is the fat deposition in liver (HIR) skeletal muscles and adipose tissue (peripheral insulin resistance).<sup>20</sup> The liver compensates for hyperglycemia by decreasing its glucose secretion in the presence of insulin. As the resistance of cells to insulin increases, compensatory insulin secretion fails and either fasting, postprandial or random glucose concentrations increase. IR can progress to DM2 when insufficient insulin is produced by  $\beta$  cells in a condition of hyperglycemia.<sup>21</sup>

The cure for diabetes type 2 is not known yet, but research is focused mainly on the medicines that can halt organ damage or at least slow the process of damage in DM2 patient diabetes. Insulin is the most commonly prescribed drug in patients of diabetes. But,

studies reveal that insulin alone is detrimental to liver cells because of its lipogenic effect.<sup>22</sup>

In view of above facts, the current research was designed to see the effects of insulin on the liver of untreated and insulin treated diabetic rats for a short period.

## MATERIALS AND METHODS

The study was conducted at Anatomy Department, Dow International Medical College, Dow University of Health Sciences, Karachi.

**Duration of Study:** The study took 8 months to be completed from 1<sup>st</sup> June 2011 to 1<sup>st</sup> Feb 2012.

Animals were obtained from the Animal House of Dow University of Health Science. Thirty adult albino rats (average body weight  $160 \pm 20$  gm) were selected for the study and were acclimatized for one week. They were kept at room temperature  $30 \pm 1^\circ\text{C}$  with a 12 hour light and dark cycle and were given balanced in-house prepared HFD diet and water ad libitum. The animals were divided into three groups each containing 10 animals. All rats were weighed on a digital scale at the beginning of the experiment and weekly until sacrificed. Also blood glucose levels were done with glucometer (Accucheck Performa) in all rats every week. Under aseptic condition, the blood sample for glucose testing was taken from the base of the tail because of easy visibility of veins at that area.

Experimental induction of diabetes type 2 was done in 2 phases: In the first phase, control rats ( $n=10$ ) were given free access to water and in-house prepared standard diet while the other rats were kept on in-house prepared HFD for 2 weeks. After 2 weeks of dietary manipulation, all rats except the control group ( $n=10$ ) were given low dose STZ (manufactured by Bio Plus Fine Chemicals, USA) ( $3.5\text{mg}/100\text{mg}$ ) intraperitoneally (IP).<sup>1</sup> STZ was prepared freshly before use by dissolving the powder in cold citrate buffer (pH 4.5) for immediate use within 10 minutes of preparation. Rats were fasted for 12-14 hours before IP injection of STZ. The matched control group was given citrate buffer ( $0.1\text{ml}/100\text{mg}$ ). Four day after injection of STZ rats were tested for blood glucose level. Rats having blood glucose levels  $\geq 200\text{mg/dl}$  were considered diabetic and were included in the study.

After experimental induction of diabetes type 2, the rats were divided into 3 groups; Control Group-A ( $n=10$ ), Untreated diabetic Group-E ( $n=10$ ) and Insulin treated Group-B ( $n=10$ ).

HFD/STZ induced rats (Group B) were given IP injection of insulin ( $0.3\text{U}/100\text{gm/day}$ )<sup>23</sup> for 4 weeks. The rats were allowed to have HFD till the end of the experiment. After 4 weeks of treatment, the animals were weighed and rats were sacrificed. The abdominal cavity was dissected; liver exposed, carefully separated from surrounding tissues and dissected out and placed in a petri dish. Liver was examined for the significant

gross features. The absolute weight of the liver was carefully noted by placing the organ on the Sartorius balance and the relative weight of the liver was obtained by the formula: weight of liver/weight of rat x 100. The volume (length x breadth x height)<sup>24</sup> of the organ was also appropriately measured.

The change in the study variables was statistically analyzed by using ANOVA. Tukey type non-parametric post hoc test was utilized if tests showed the significant difference. P-value of  $\leq 0.05$  was considered as statistically significant.

## RESULTS

### 1. Gross appearance of liver:

Untreated HFD/STZ induced diabetic rats displayed a dark brown coloration of the liver. While insignificant difference was seen in the gross appearance of liver (contour and consistency) of the insulin-treated group when they were compared with the control rats.

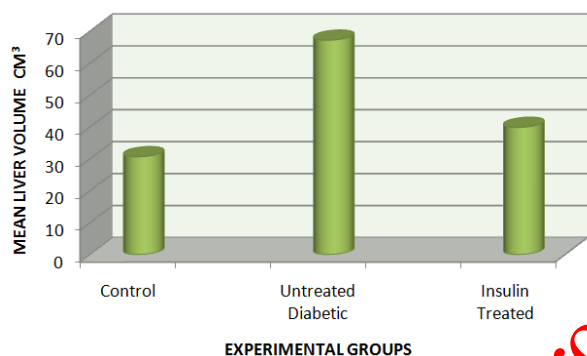


Figure No.1: Graphical representation showing comparative analysis of mean liver Volume (cm<sup>3</sup>) in experimental groups

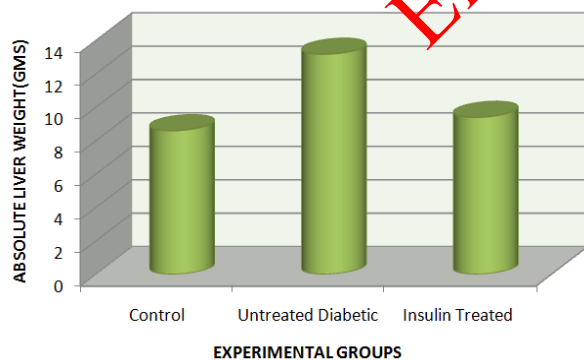


Figure No.2: Graphical representation displaying comparative analysis of mean absolute liver weight (gm) in experimental groups

### 2. Liver volume(length x breadth x height) cm<sup>3</sup>:

Liver volume showed significant changes in insulin treated and untreated diabetic groups in comparison to control group. Mean Liver Volume observed in group A, E and B was  $30.72 \pm 3.85 \text{ cm}^3$ ,  $67.24 \pm 13.32 \text{ cm}^3$  and  $39.93 \pm 3.82 \text{ cm}^3$  respectively. Significant increase

(P Value  $\leq 0.05$ ) in liver volume was found in Group E while comparing with group A. Similarly significant increase (P Value  $\leq 0.05$ ) in liver volume was seen in group B when compared to group A. Graphical presentation of variation in liver volume is shown in Figure-I.

### 3. Absolute liver weight (ALW) gm:

Mean absolute liver weight (ALW) of rats was observed as  $8.60 \pm 2.54 \text{ gm}$ ,  $9.40 \pm 3.18 \text{ gm}$ , and  $13.18 \pm 0.68 \text{ gm}$  in control, insulin treated and untreated groups respectively. On comparison of group A with E, there was significant increase (P Value  $\leq 0.05$ ) in ALW as shown in figure II. On comparison of group A with B, insignificant increase (P-value=0.48) in ALW is noted. On comparing group E with B, there was significant increase (P-value $\leq 0.05$ ) in ALW was observed.

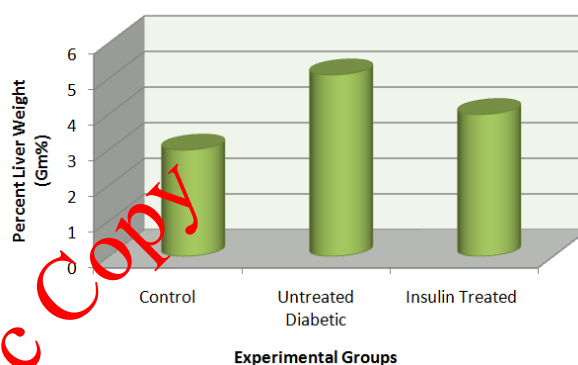


Figure No.3: Graphical representation showing comparative analysis of mean percent liver weight (%) in experimental groups

### 4. Percent liver weight (PLW) %:

The mean percent liver weight (PLW) was calculated as  $2.99 \pm 0.66\%$ ,  $3.99 \pm 1.37\%$  and  $5.10 \pm 0.73\%$  in control, insulin treated and untreated groups respectively. Insignificant increase in PLW was seen when Group A is compared with Group B (P-value = 0.73). While a significant increase was seen in PLW while comparing group A with E (P-value =  $< 0.05$ ). The comparison between Group B and E depicts significant increase in PLW (P-value = 0.44) as shown in Figure 3.

## DISCUSSION

Increasing prevalence of diabetes in our community, has focused our research to learn natural course, triggering factors and effects of therapeutic interventions in diabetes. Hepatomegaly in DM2 patients was overlooked for a long time because of its indolent course. But, with the rise of DM2 and associated liver related morbidities and mortalities in these patients, hepatomegaly and fatty liver disease in diabetics has become the hub of research. An increase in liver volume, absolute and relative weight of liver points to the accumulation of fat. There is strong



association of type 2 diabetes with IR and fatty liver disease. A lot of work has been done on fatty liver disease associated with obesity, but less work is done on increased liver span, its causes and consequences in diabetes. It might be because human livers are not easily available.

In the present study, liver weight and volume was analyzed in untreated diabetic rats and insulin treated diabetic rats. The blend of dietary manipulation and chemicals was used to make a perfect experimental model of DM2 as done previously by many renowned scientists.<sup>21, 22, 24</sup> It is known the fact that HFD creates an animal model with glucose intolerance and IR.<sup>22,24,25</sup> The rats were fed HFD to induce IR followed by a low dose of STZ (diabetogenic agent) which specifically targets insulin secreting cells of pancreas and is used by many researchers to create diabetic model as it is simple, time saving and economical.<sup>21, 24, 26</sup> The rats developed diabetic symptoms, increased blood glucose levels and body weights which is comparable with the studies of Ikebukuro 2002 and Srinivasan K 2005, with no significant difference in them.<sup>22, 27</sup>

As far as the gross features of liver are concerned, no significant changes were noted when compared to control rats. Significant changes were observed in liver volume, absolute and percent liver weight of treated and untreated diabetic rats when compared with control rats. The absolute and percent liver weight of untreated and insulin treated rats increased despite of the facts that mean body weight of these rats decreased. It might be because of the fact that lipogenesis is decreased in peripheral tissues while these lipogenic pathways are activated in liver causing build up of fat in liver leading to enlarged liver.<sup>28</sup> The present observations are consistent with other study.<sup>29</sup>

The study variables showed a significant increase in untreated diabetic rats which can be a consequence of sustained increase in blood glucose levels as they were not given any medicine to lower blood sugar. Increased blood glucose is an another doubtful but, potential risk factor for the development of fatty liver disease because fat deposition is independent of blood glucose levels.<sup>30, 31</sup>

Insignificant increase is noted in the study variables of insulin treated diabetic rats. The likely explanation for the insignificant increase could be the IP administration of insulin which by passes liver and therefore, less insulin passes through liver to stimulate lipogenesis in liver. The IP injection of insulin reduced high blood glucose levels and therefore, insulin was no longer deficient. Thus, the peripheral lipogenic pathways were activated in the presence of insulin and the fat transiently deposited in ectopic sites (i.e. liver) was now redirected to its natural storage place, the peripheral adipose tissue.<sup>22</sup> These results suggest that short term

treatment with IP insulin does not increase absolute and percent liver weight in diabetic rats.

Regardless of the true origin of fatty liver in diabetics, be it our unhealthy life style, increase insulin resistance or uncontrolled glucose, lipid dysmetabolism seems to be the culprit. Despite its obvious importance, pathogenesis of fatty liver is poorly understood mainly because of ethical limitations. But, the questions need to be addressed as the condition is increasing with the increase of diabetes.

## CONCLUSION

It is concluded from the study that short-term (4 weeks) use of intraperitoneal injection of insulin decrease absolute and relative weight as well as volume of the liver in HFD/STZ induced diabetic rats.

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# Socio-Demographic Profile of Female Victims of Vitriolage in Interior Sindh Pakistan

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## ABSTRACT

**Object:** Vitriolage is a reprehensible crime. It is an easy mean of taking revenge in our society. The most common victims of this criminal act are women. This study highlights the sociodemographic profile of such cases.

**Study Design:** Retrospective / observational study.

**Place and Duration of Study:** This study was conducted in the medico-legal section of Deptt. of Forensic Medicine and Toxicology, PUMHS for Women, District Shaheed Benazirabad during the period from 1<sup>st</sup> January 2013 to 31<sup>st</sup> December 2013.

**Material & Methods:** Sixteen cases of vitriolage were studied with reference to age, literacy, socioeconomic background, marital status, occupation, relationship with offender, time of incidence, time between occurrence and medical examination, place of incidence.

**Results:** All the cases were females, majority in age group 20-30, unmarried, uneducated, from middle class, had first degree burns and disfigurement of face. The offenders were known to victims in all the cases.

**Conclusion:** The problem needs to be acknowledged by public at large. Individuals social issues should be resolved timely and wisely to guard against such happenings. Emotionally unstable people must be provided counseling by psychologists. The initiative taken by Peshawar High Court in the form of restriction on the sale of acid is a great attempt to minimize the risk and should be appreciated.

**Key Words:** Socio-Demographic Profile, Victims of Vitriolage, Interior Sindh

## INTRODUCTION

Vitriolage is an acid violence or throwing of acid. It is also called acid attack. The definition of vitriolage is an act of throwing acid onto the body of another person. The motive behind this cruel act is to disfigure the opponent. It is done to take revenge or in jealousy against the victim.

Vitriolage is a reprehensible crime. It is an easy mean of taking revenge in our society. The most common victims of this criminal act are women, the weak gender of interior Sindh. The effects of vitriolage are not only physical but also brings about financial, social & psychological problems. These problems are faced not only by the victims but whole family suffers (Welsh et al 2009)<sup>3-4</sup>. Most commonly sulphuric acid (oil of vitriol) is used but nitric acid & carbolic acid are also used (A man depkans). Caustic soda, caustic potash, iodine, and marking nut juice are sometimes used. These fluids are usually thrown on the face with the object of facial



disfigurement & destroying vision and these results in grievous hurt (Mithiharn 2005, Readj 2004)<sup>1-2</sup>.

Vitriolage cases are common in many countries including Bangladesh, India, Pakistan, Cambodia, Vietnam, Oas, Hong Kong, China, United Kingdom, Kenya etc.<sup>5</sup>

The epidemiological studies have shown that acid attacks are common around the world from the third world countries to the highly developed countries like China, France, Turkey, and United States<sup>5</sup>. The highest incidence of vitriolage is in South Asia. About 1500 cases occur annually in the world, 50% of all these cases are females and 40% to 70% of which are teenage girls.

Keeping in view the above situation the cases of throwing of acid (vitriolage) were studied in tertiary care hospital in Interior Sindh.



## MATERIALS AND METHODS

This study was conducted in the medico-legal section of Deptt. of Forensic Medicine and Toxicology, PUMHS for Women, District Shaheed Benazirabad during the

period from 1<sup>st</sup> January 2013 to 31<sup>st</sup> December 2013. Sixteen cases of vitriolage were studied with reference to age, literacy, socioeconomic background, marital status, occupation, relationship with offender, time of incidence, time between occurrence and medical examination, place of incidence.

## RESULTS

Out of 16 vitriolage victims included in the study most of the victims (50%) were in the age group of 20 – 30, followed by 25% in the age group 15 – 20 years, 12.5% in the age group of 30 – 40 and same number in 40 – 50 years. Table No.1. The maximum numbers of victims were unmarried (62.5%), while married were 05 (31.2%), and one victim (6.25%) was divorcee. Table No.2. The majority of victims were uneducated (44.75%), 4 (25%) were matriculate, same number were intermediate and 1 victim (6.25%) was graduate. Table No.3. Most of victims were of middle class (62.5%), 6 (37.5%) were from middle class and none in upper class. Table No. 4. In our study most of the victims had first degree burn of (75%), while 4 victims (25%) had 2<sup>nd</sup> degree burns. Table No.5. Out of 16 vitriolage victims, 10 victims shown disfigurement of face accounting (62.5%) followed by unilateral corneal opacity in 4 victims (25%), while 2 victims (12.5%) had bilateral corneal opacities as shown in Table No.6. Offenders were known to victims in all the cases. None of the victims was engaged in any job.

**Table No.1: Age of victims of vitriolage**

| S.No. | Age in years | No. of Victims | Percentage |
|-------|--------------|----------------|------------|
| 1.    | 15 – 20      | 04             | 25.00      |
| 2.    | 20 – 30      | 08             | 50.00      |
| 3.    | 30 – 40      | 02             | 12.50      |
| 4.    | 40 – 50      | 02             | 12.50      |
| Total |              | 16             | 100.00     |

**Table No.2: Marital status of victims of vitriolage**

| S.No. | Marital Status | No. of Victims | Percentage |
|-------|----------------|----------------|------------|
| 1.    | Married        | 05             | 31.20      |
| 2.    | Unmarried      | 10             | 62.50      |
| 3.    | Divorcee       | 01             | 6.25       |
| Total |                | 16             | 100.00     |

**Table No.3: Educational status of victims of vitriolage**

| S.No. | Level of Education | No. of Victims | Percentage |
|-------|--------------------|----------------|------------|
| 1.    | Matriculation      | 04             | 25.00      |
| 2.    | Intermediate       | 04             | 25.00      |
| 3.    | Graduate           | 01             | 6.25       |
| 4.    | Illiterate         | 07             | 43.75      |
| Total |                    | 16             | 100.00     |

**Table No.4: Economic status of victims of vitriolage**

| S.No. | Economic status | No. of Victims | Percentage |
|-------|-----------------|----------------|------------|
| 1.    | Lower class     | 06             | 37.0%      |
| 2.    | Middle class    | 10             | 62.50      |
| 3.    | Upper class     | 00             | 00.00      |
| Total |                 | 16             | 100.00     |

**Table No.5: Clinical Presentations of victims of vitriolage**

| S. No. | Clinical Presentation       | No. of Victims | Percentage |
|--------|-----------------------------|----------------|------------|
| 1.     | 1 <sup>st</sup> degree Burn | 12             | 75.00      |
| 2.     | 2 <sup>nd</sup> degree Burn | 04             | 25.00      |
| 3.     | 3 <sup>rd</sup> degree Burn | 00             | 00.00      |
| Total  |                             | 16             | 100.00     |

**Table No.6: Complications in victims of vitriolage**

| S. No. | Complication               | No. of Victims | Percentage |
|--------|----------------------------|----------------|------------|
| 1.     | Disfigurement of face      | 10             | 62.50      |
| 2.     | Unilateral corneal opacity | 04             | 25.00      |
| 3.     | Bilateral corneal opacity  | 02             | 12.50      |
| Total  |                            | 16             | 100.00     |

## DISCUSSION

Acid is used as an easily available weapon, especially against women in most of the developing as well as developed countries. Vitriolage is at rise in developing countries, including Pakistan. Pakistani women are treated in uncivilized manners. They are often victim of such violent incidences. They are bound in cultural restrictions and gender based injustice. The vitriolage cases are reflection of the limitations imposed upon them, Any female going a little away from such limitations they have to experience grave consequences like vitriolage. Victims suffer unbearable pain and unimaginable mental torture (anguish). The dark aspect of the fact is that most families conceal the facts such as name of victim, name of assailant, address & social reason behind this crucial act and photographs. The victim families talked to us only on assurance of secrecy.

In a Reuters report around 1,500 acid attacks were reported each year and 80 percent of them target women. Yet the number is most likely higher, as many victims are afraid to speak out. According to Monira Rahman, CEO of the Acid Survivors Association in Bangladesh, most of the women and girls she supported were attacked by men who viewed them as commodities and therefore believed they were justified in disfiguring them and violating their rights. She writes until women have real equality, they will continue to



suffer not only from poverty but also be subjected to violence.<sup>6</sup>

The Acid Survivors Foundation (ASF) predicts that 150 acid attacks occur in Pakistan each year, with many more going unreported.<sup>24</sup>

The number of acid attacks in Colombia has increased in recent years. A woman in India may be attacked over a dowry or caught without a veil in Pakistan, but in Colombia often attacked out of anger over her independence. Europe is also not an exception. Such incidences are also seen there.<sup>9</sup>

NHS statistics for England do not separate out acid attacks. In 2011-12 there were 105 hospital admissions in England for "assault by corrosive substance", but the category covers more than just acid.<sup>12</sup>

According to The Aurat Foundation, a women's rights organization, more than 8,500 acid attacks, forced marriages and other forms of violence against women were reported in Pakistan in 2011.<sup>7</sup>

In 2010, at least 8,000 acid attacks, forced marriages and other forms of violence against women were reported, according to The Aurat Foundation.

Acid burnings are among the most horrific crimes against women in Pakistan that are now criminalized in a landmark set of laws passed by the parliament. They stand to protect millions of women from common forms of abuse in a conservative, Muslim country with a terrible history of gender inequality. This is a big achievement for the women of Pakistan, civil society and the organizations that have been working for more than 30 years to get women friendly bills passed. The new laws explicitly criminalized acid attacks, and mandated that convicted attackers would get a minimum sentence of 14 years that could extend to life, and pay a minimum fine of about \$11,200.<sup>8</sup> Previously, victims had to prosecute attacks as attempted murder or disfigurement and were largely unsuccessful, said Valerie Khan, head of the Acid Survivors Foundation.<sup>9</sup>

According to Dawn News the Peshawar High Court in October, 2013 has banned the open sale of acid. Chief Justice Peshawar High Court, Justice Dost Muhammad Khan, remarked that acid was being used as a form of weapon & women were being targeted with it.<sup>10</sup>

Acid attacks are seen to be on the rise in Khyber Pakhtunkhwa. In year 2012, 150 acid attack cases were registered in Pakistan, 30 of which were reported from KP's Mardan district alone. According to Acid Survivors Foundation, the data shows an upward trend in this form of violence targeting women. Some 45 per cent of the acid attacks are the result of family feuds while 17 per cent are linked to refusals to marriage proposals. Moreover, a report by the Aurat Foundation released in January 2013 said that although the total number of reported cases of violence against women had decreased by 12 per cent, a deeper analysis showed a significant 89 per cent increase in cases of acid-

throwing, followed by a 62 per cent rise in domestic violence.<sup>10</sup>

The Asian Human Rights Commission (AHRC) is working on acid throwing cases as part of its involvement in denouncing human rights violations across Asia. It has commented that acid attacks are serious concern in Pakistan.<sup>11</sup>

It is a crime with a marked gender skew. Experts say that women and girls are victims in 75-80% of cases. Of the female victims, about 30% are under 18.<sup>12</sup>

In our study 62.5% victims were unmarried, constituting the major group of victims. The reason behind is their refusal for marriage because of their illegitimate relations. Females are the victims in most of the cases in our study, being the weak gender of sindhi community. It is accordance with study of Bandyopadhyay<sup>13</sup>.

In our study most of victims were uneducated (50%), while 25% were matriculate & three (18.75%) were intermediate and only one girl was graduate (6.25%).

The majority of victims belong to lower middle class (62.5%), while 37.5% victims belonged to lower and none from upper class. As in our society mostly girls from lower middle class go out for work in factories, fields, schools or for domestic work, therefore more prone for encounters with men. It results in disputes consequent upon refusal for illegitimate relations or marriage.

In our study majority of females suffered from disfigurement of face (62.5%). Howard health policy review is also in accord suggesting that the main motive of offenders was to disfigure the face.<sup>17</sup> Stating that perpetrators of these acid throwing attacks at their victims, usually were at their faces for burning them.<sup>18</sup> It causes permanent scarring of face,<sup>13,14,15,18,20</sup> 25% of victims had unilateral and 12.5% bilateral corneal opacity as studied by Bandyopadhyay<sup>13</sup> & Bahl<sup>19</sup>. The long term consequences of these attacks cause blindness, according to acid survivors foundation in Pakistan the most notable effects of an acid attack is the life long disfigurement<sup>20,22</sup>.

In our study all the victims were females of all ages. This is comparable to articles by barrister Afzal Hussain<sup>14</sup>, stating that cases of women being the victim were more common & same comment in study of Naveed & Sloan.<sup>23</sup>

## CONCLUSION

The problem needs to be acknowledged by public at large. Individual's social issues should be resolved timely and wisely to guard against such happenings. Emotionally unstable people must be provided counseling by psychologists. The initiative taken by Peshawar High Court in the form of restriction on the sale of acid is a great attempt to minimize the risk and should be appreciated.

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# Significance of CD Markers in the Classification, Patterns and Sub Typing of Non Hodgkin's Lymphoma

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## ABSTRACT

**Objective:** Aim of this study is Immunohistochemical analysis of H&E diagnosed cases of NHL for confirmation, classification and differentiation on the basis of phenotypic expression of CD3, CD30, CD45 and CD20 markers.

**Study Design:** Prospective study.

**Place and Duration of Study:** This study was conducted in the Pathology department of Liaquat University of Medical and Health Sciences Jamshoro (LUMHS) during October 2010 to March 2012

**Materials and Methods:** The sample consisted of all the specimens received in the Pathology department of Liaquat University of Medical and Health Sciences Jamshoro (LUMHS) during the above period. Immunohistochemical stains including CD3, CD30, CD20 and CD45 were used for classification and differentiation of cases of NHL.

**Results:** Out of one hundred and eighty (180) H & E diagnosed cases of Non Hodgkins Lymphoma, only 142 (78.8%) were positive for CD20 and were confirmed as B cell NHL; however 6 (3.3%) cases showed positivity with CD30 and were confirmed as large T-cell NHL. 38(21.2%) cases showed positivity for CD3 and all 180 (100%) cases were positive for CD45 and were confirmed as NHL.

**Conclusion:** It is concluded that Immunohistochemistry is helpful in differentiation of NHL. Cases of B cell NHL occur more frequently than T cell NHL. Furthermore NHL is more common in males and mostly presents with nodal involvement.

**Key Words:** CD markers, Immunohistochemistry, Non Hodgkin's Lymphoma.

## INTRODUCTION

Malignant tumors are composed of abnormal cells having multiple genetic mutations thus resulting in the escape from cell cycle regulatory genes<sup>1</sup>. Non-Hodgkin's Lymphoma (NHL) is one of the many malignant tumors arising from lymphoid organs. The yearly incidence of non-Hodgkin's lymphoma is variable in different geographical location and is found to be around 3% to 4% in developed countries<sup>2</sup>. Non-Hodgkin's lymphoma is encountered more in males than the females and commonly encountered between sixth and seventh decade of life<sup>3</sup>. In Pakistan, NHL accounts for 4th commonest malignant tumor in males with the incidence of 6.1%<sup>4</sup>. WHO classifies NHL into many B cell and T cell subtypes, consisting of several distinct lymphoid neoplasm<sup>5</sup>.

The classification of the NHL is based on various parameters including histomorphologic changes on biopsy specimen, immunohistochemistry and flow cytometry<sup>6,7</sup>. NHLs classification is based on the origin of neoplastic lymphocytic cells and is divided into the B-cell and T-cell lymphoma. Lymphoma of the B cells accounts about 90% of NHLs, whereas rest of the 10% are T-cell lymphoma<sup>8</sup>.

The steps involved in the diagnosis of lymphoma includes hematoxylin and eosin stained biopsy slides,

Immunohistochemical markers along with other diagnostic tools, some of which may be either invasive or non-invasive leads to final confirmation of the disease. This helps out to have a proper therapeutic plan<sup>9</sup>. The classification of both Hodgkins disease and NHL is continuing to evolve incorporating not only histopathologic data, but also immunophenotypic, genotypic and clinical characteristics to design a treatment plan using varying combinations of chemotherapy, radiotherapy and immunotherapy<sup>10</sup>.

The principle of the Immunohistochemistry or IHC involves the use of antibodies for detecting antigens in a tissue sample. Lymphoid as well as hematopoietic diagnosis and classification can be done easily with the help of IHC<sup>11</sup>. Two different types of dyes including chromogenic or fluorescent means are used in IHC for detecting target antigens, however experimental design will be needed to decide the type of readout. In fluorescent method, fluorophore is used for the conjugation of primary and secondary antibody which is later detectable by fluorescent microscopy. In contrast chromogenic detection involves enzymes mainly horseradish peroxidase (HRP) or alkaline phosphatase (AP). This causes formation of colored, insoluble precipitates when substrates, such as DAB and NBT/BCIP are added respectively.<sup>12</sup>

So this study is planned for the Immunohistochemical analysis of H&E diagnosed cases of NHL for confirmation, classification and differentiation on the basis of phenotypic expression of CD3, CD30, CD45 and CD20 markers.

## MATERIALS AND METHODS

This prospective study was conducted in the Pathology department of Liaquat University of Medical and Health Sciences Jamshoro (LUMHS) during October 2010 to March 2012. All sample received during above period were included in this study. All diagnosed cases of NHL on H&E staining of all ages and either gender were included in this study. Biopsies were taken from nodal or extranodal sites and were processed for gross and microscopic examination. After the routine processing and paraffin embedding, H & E and special staining; the immunohistochemical analysis was performed. The antibodies used in immunohistochemical staining included CD3, CD30, CD20 and CD45. The antibodies were ordered from DAKO DENMARK. All cases were analyzed for age, sex distribution (male vs female), site (nodal vs extranodal) and subtypes of NHL. Seven cases (28 slides) of positive and negative control of H&E diagnosed NHL were included for the staining (performed in batches).

## RESULTS

The sample size of this study consisted of one hundred and eighty (180) cases of H & E diagnosed NHL diagnosed on staining. Out of total 180 cases of NHL, patients with age below 60 years were 146 (81.1%) while the patients with age above 60 years were 34 (18.9%) and the mean age was 46 years. Table 1 shows age wise distribution of all these patients. Out of total 180 cases of NHL, 110 (61.1%) cases were seen in male while 70 (38.9%) female were affected. Gender distribution is shown in Table 2.

**Table No.1: Age Distribution of Patients**

| Characteristic | No. of Cases | Percentage |
|----------------|--------------|------------|
| Age < 60 years | 146          | 81.1       |
| Age ≥ 60 years | 34           | 18.9       |

**Table No.2: Gender Distribution**

| Characteristic | No. of Cases | Percentage |
|----------------|--------------|------------|
| Male           | 110          | 61.1       |
| Female         | 70           | 38.9       |

Out of total 180 cases of NHL, majority were found involving lymph node accounting 124 (68.8%) while 56 (31.2%) on extra nodal sides. Site of presentation is shown in Table 3.

Immunohistochemical staining of CD20 show that out of 180 cases of Non Hodgkin lymphoma 142 (78.8%) were seen positive for CD 20 and were confirmed as B cell NHL. Immunohistochemical staining of CD30 show that out of 180 cases of NHL, only 6 (3.3%) cases

show positivity with CD 30 and were confirmed as large T-cell NHL. Immunohistochemical staining of CD3 show that out of 180 cases of NHL, 38(21.2%) cases show positivity and were confirmed as T-cell NHL. Immunohistochemical staining of CD45 showed that out of 180 cases of NHL all 180 (100%) cases show positivity with CD45 and were confirmed as NHL. Results of Immunohistochemical staining are shown Table 4.

**Table No.3: Site of Presentation**

| Characteristic | No. of Cases | Percentage |
|----------------|--------------|------------|
| Nodal          | 62           | 68.8       |
| Extranodal     | 28           | 31.2       |

**Table No.4: Immunohistochemistry Results**

| CD Markers | Positive cases | %age | Negative cases | %age |
|------------|----------------|------|----------------|------|
| CD-20      | 142            | 78.9 | 38             | 21.1 |
| CD-30      | 6              | 3.3  | 174            | 96.6 |
| CD-3       | 38             | 21.1 | 142            | 78.8 |
| CD-45      | 180            | 100  | 0              | 0    |

## DISCUSSION

Diagnosis of Non-Hodgkin's Lymphoma on H&E staining seems to be quite helpful but presence of Reed-Stenberg like cells or round cells in NHL make it difficult to diagnose. In these circumstances, immunoassaying is very much helpful.

The present study included 190 lymph node biopsies, which were diagnosed on H&E by the Pathologists as Non-Hodgkin's Lymphoma, but remained doubtful and need confirmation and further sub typing of NHL, as is needed for the better management plans.

In this study 61.1% patients with NHL were male while 38.9% were female. Aftab et al in a study has also reported male predominance which is in agreement with findings of our study<sup>13</sup>. NHL affects males more when compared with females. However literature of the available data shows remarkable variation in the gender distribution. Male to female ratio of NHL in the developed and developing countries is reported as 1.4:1 and 4.5 to 3.1 respectively<sup>14</sup>. The study conducted by Zeba et al also reported male predominant and support our study<sup>15</sup>.

In the present study 68% patients have nodal involvement while 31.2% patients have extra nodal involvement. Study conducted by Arora et al reported 33% of cases having extra nodal presentation and 67% have nodal presentation<sup>16</sup>. Another study conducted in china found that, tumors in lymph nodes were seen in 42.8% and extra nodal 57.2% and proposed that autoimmune etiology is thought to be involved in extra nodal marginal zone lymphomas and these are reported to be more common in East Asian countries like Japan and China than in Pakistan<sup>17</sup>.

In our study out of 180 cases of Non-Hodgkin's Lymphoma diagnosed on panel of CD markers, 142



(78.8%) were seen positive for CD20 and confirmed as B-cell NHL and 38 (21.2%) showed positivity for CD3 and diagnosed as T-cell NHL. Study conducted by Yasmeen Bhurgri reported 80% of cases as B-cell NHL and 20% as T-cell NHL support our study<sup>18</sup>. Another study conducted in Saudi Arabia also revealed majority of cases of B-cell phenotype; while only 14% of the cases were T-cell lymphoma<sup>19</sup>.

The CD20 marker is expressed in all the maturation levels of B cells except stem cells and plasma cells; however it is present in both the normal and malignant B cells<sup>20</sup>. CD3 is composed of at least five different polypeptide chains closely associated with T cell antigen receptor and with each other<sup>21</sup>. CD3 is a useful marker for the detection of T-cell lymphoma<sup>22</sup>. Polyclonal CD3 along with CD20 distinguishes between T-cell and B cell lymphomas<sup>23</sup>.

The CD30 antigen is an isoglycoprotein whose expression is used for detecting the anaplastic large cell lymphomas (ALCL). This distinct variant of T cell NHL shows proliferation of large pleomorphic cells in a cohesive pattern and is strongly positive for CD30<sup>24</sup>. In the present study CD3 and CD30 were positive in 6 (3.3%) cases of ALCL, while the study conducted by Krol and Gulsah reported 8 (<1%) and 1.2% cases of ALCL respectively which is in accordance with our findings<sup>25,26</sup>.

Immunohistochemical staining of CD45 showed that out of 180 cases of NHL all 180 (100%) cases show positivity with CD45 and were confirmed as NHL. CD45 glycoprotein expression is positive in all lymphocytic cells. However CD45 expression in low-grade B-cell NHL is not well reported in the literature<sup>27</sup>. CD45 is a transmembrane protein-tyrosine phosphatase and is found on the B and T cells, thymocytes and macrophages. Thus it is useful in differentiating lymphomas from non lymphoid tumors as CD45 shows positivity for malignant B and T cells. Furthermore expression of CD20 antigen is generally restricted to the B-cell lineage while CD3 stains only cells of T-cell origin<sup>28</sup>. Thus CD20 and CD3 only help in differentiating B and T cell Lymphomas.

## CONCLUSION

It is concluded that Immunohistochemistry is helpful in diagnosing the types of NHL. Cases of B cell NHL occur more frequently than that of T cell NHL. Furthermore NHL is more common in males and mostly presents with nodal involvement.

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# Fatal Road Traffic Accidents in Karachi

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## ABSTRACT

**Objective:** Fatalities due to road traffic accidents are a major cause of mortality all over the world. The aim of our study is to look at socio-demographic profile of such cases in order to find some remedial measures to minimize the brunt.

**Study Design:** Retrospective / observational study.

**Place and Duration of Study:** This study was conducted at the Emergency Department, Sir Syed Hospital, Qayyumabad, Karachi from January to June, 2013.

**Materials and Methods:** Study was based upon 56 victims of RTA. It includes all those who died during treatment or found dead on arrival in the emergency department. The demographic data of these cases was recorded.

**Results:** Males victims were 71% & maximum number of victims (37.5%) was in age group 30-39 years. Most of the accidents (38%) took place between 1200hrs & 1800hrs. Most of the injuries were found on the head (66%) and then chest 14%, lower extremities 21%, upper extremities 19%. The most common external injuries were abrasions, bruises and lacerations. Skull was the most common bone to be fractured (44%). The head injury constituted major cause of death (53%) followed by hemorrhagic shock (35%). Pedestrians and two wheeler riders were mostly affected individuals followed by cyclists, drivers of three wheeler, light and heavy motor vehicles.

**Conclusion:** The incidence of traffic accidents is at rampant. The accidents risks can be minimized by enhancement of road visibility, good traffic control with properly working road traffic signals. Fatalities of Traffic accidents victims can be reduced by providing good pre-hospital care, establishment of well equipped emergency trauma centres in all big hospitals.

**Key Words:** Road Traffic Fatalities, Vehicles, Injuries, Karachi.

## INTRODUCTION

Accidents are very common in big cities as there are many modes of transport and roads are overburdened. We hear as well as read in newspapers about such happenings almost daily. These accidents often result in loss of life and material. These are caused by the carelessness / negligence of the drivers and their ignorance about the traffic rules.

Like most cities, road accidents are also a problem in Karachi, Pakistan. It is the largest city in Pakistan in terms of area and population and it is significantly facing the issue. According to WHO, road traffic accidents will be the 3<sup>rd</sup> greatest cause of the fatalities by 2020<sup>1</sup>. Fatal RTAs for about 90% occurs on the roads of developing countries despite that the number of vehicles they have are less than half of the globe vehicles<sup>2</sup>. WHO reports that India has the highest score of deaths due to RTAs in the world ranking. According to data for 2007, the number of people died in India due to RTAs is 114,590 and the next in this ranking is China with 89,455 deaths<sup>3</sup>. According to a WHO report in 2009 in Pakistan road traffic injuries lead to 25.3 deaths per 100,000<sup>4</sup>.

The patient logs of the two largest government hospitals in Karachi were studied between December 1993 and February 1994 to identify those persons most likely to

be injured in a road traffic accident and to identify the vehicle types which were most likely to be involved. The 18% of people involved in accidents died. Pedestrians and motorcyclists were the most common victims accounting for 46% amongst all injured and 51% of all deaths. Although buses and trucks were less than 4% of the registered vehicles in Karachi but they were the striking vehicle among 49% of all injured and 65% of all died. Road traffic accidents disproportionately affect wage earners. Specific interventions to improve the road safety concerning trucks and buses is needed<sup>5</sup>.

According to official data compiled by the Accident Department of Karachi Traffic Police, a total of 97 fatal accidents were recorded during January-April this year (2013), which is lower than the corresponding period of last year<sup>6</sup>.

By latest information RTA is the main cause of injury, disablement & mortality all over the world which perplex a great burden on natural health system<sup>7</sup>. RTAs are also the leading cause of mortality in young & adults less than 45 years of age and more so in males. The consequences of injuries substantiated in RTAs depends on variety of reasons including venturous driving location & condition of the roads (roads without speed breakers, cat eyes, sign boards etc.), type of vehicle, condition of the driver, time of accident &

below standard safety designs<sup>8,9</sup>. Head injury is the main cause of death in RTAs.

In Pakistan epidemiological data on RTAs have been reported from emergency departments, intensive & surgical care units of some particular hospitals & police stations<sup>8</sup>. Necessary medical care in the 1<sup>st</sup> hour after an injury to the victim can reduce the number of deaths from RTAs & increase the probability of survival. According to research in Europe about 50% of the deaths from RTAs occur at the place of accidents or on the way to the hospital, 15% victims die within 4 hrs after an accident & 35% die after 4 hours<sup>9</sup>.

## MATERIALS AND METHODS

This Observational retrospective study was carried out in the emergency department of Sir Syed Hospital Qayyumabad Karachi. This hospital is located in a thickly populated area & is traversed by 2 busiest roads in the city. This hospital is a 350 bedded hospital and is the main public hospital in Qayyumabad and most of the residents are taking medical facilities from this hospital. The study was based on deaths due to RTAs during period from January 2013 to June 2013.

Study was based upon 56 victims of RTA. It includes all those who died during treatment or found dead on arrival in the emergency department. The demographic data of these cases was recorded. On admission informed consent was taken from relatives or attendants of those patients who were received unconscious. A detailed medical history was obtained from the persons who survived or from the relatives. From medical charts, type of injury & its severity was assessed. While other details were obtained from medical staff and from police. Definition of road traffic accident used in this study was as follows "A collision involving at least 1 vehicle in motion on a public or a private road that result in at least 1 person being injured or killed"

## RESULTS

Total 56 deaths from RTA were registered in Sir Syed Hospital with in the period of study. Male victims were 71% (Table No.1) & maximum number of victims (37.5%) was in age group 30-39 years (Table No.2). Most of the accidents (38%) took place between 1200hrs & 1800hrs. Most of the injuries were found on the head (66%) and then chest 14%, lower extremities 21%, upper extremities 19% (Table No.3). The most common external injuries were abrasions, bruises and lacerations. Skull was the most common bone to be fractured (44%) (Table No.4). The head injury constituted major cause of death (53%) followed by hemorrhagic shock (35%) (Table No. 5). Pedestrians and two wheeler riders were mostly affected individuals followed by cyclists, drivers of three wheeler, light and heavy motor vehicles.

**Table No. 1: Sex distribution of cases (N=56)**

| Sr.No. | Gender  | No. of cases | %age   |
|--------|---------|--------------|--------|
| 1      | Males   | 40           | 71.43  |
| 2      | Females | 16           | 28.57  |
| Total  |         | 56           | 100.00 |

**Table No. 2: Age distribution of cases**

| Sr. No. | Gender | No. of cases | %age   |
|---------|--------|--------------|--------|
| 1       | 0-9    | 02           | 3.57   |
| 2       | 10-19  | 05           | 8.93   |
| 3       | 20-29  | 08           | 14.29  |
| 4       | 30-39  | 21           | 37.50  |
| 5       | 40-49  | 08           | 14.28  |
| 6       | 50-59  | 07           | 12.50  |
| 7       | >60    | 05           | 8.93   |
| Total   |        | 56           | 100.00 |

**Table No. 3: Distribution of site of fatal injuries**

| Sr. No. | Site of fatal injury | No. of cases | %age  |
|---------|----------------------|--------------|-------|
| 1       | Head                 | 37           | 66.07 |
| 2       | Chest                | 08           | 14.29 |
| 3       | Lower extremities    | 12           | 21.43 |
| 4       | Upper extremities    | 11           | 19.64 |

**Table No. 4: Distribution of fractures in RTA victims**

| Sr. No. | Site of fracture  | No. of cases | %age  |
|---------|-------------------|--------------|-------|
| 1       | Skull             | 25           | 44.64 |
| 2       | Ribs              | 07           | 12.50 |
| 3       | Lower extremities | 11           | 19.64 |
| 4       | Upper extremities | 10           | 17.86 |
| 5       | Spine             | 05           | 8.93  |

**Table No.5: Cause of fatal injuries in RTA victims**

| Sr. No. | Cause of death     | No. of cases | %age   |
|---------|--------------------|--------------|--------|
| 1       | Head injury        | 30           | 53.57  |
| 2       | Hemorrhagic shock  | 20           | 35.72  |
| 3       | Spinal cord injury | 04           | 7.14   |
| 4       | Complications      | 02           | 3.57   |
| Total   |                    | 56           | 100.00 |

## DISCUSSION

The study was undertaken over a period of 6 months in the emergency department of Sir Syed Hospital, Qayyumabad, Karachi. The study shows that majority of the deceased (71.43%) were males & it is consistent with other studies like that in Kenya or in other low socio-economic countries<sup>12</sup>. This is due to more exposure of males to roads because most of their work is outdoor and many of them being the only supporter of their families which causes an adverse economic impact on their families<sup>13</sup>. Majority of victims (37.5%) were in the age of 20-49 years and this is consistent with other studies<sup>14,15</sup>. Severe injuries by road crashes are also associated with rainy seasons; this finding is



similar to that reported in case-control study in Iran & Hong Kong<sup>16,17</sup>. The most commonly effected part of the body was head & chest followed by lower extremities, this finding is similar to that finding in New Delhi<sup>18</sup> where the most common pattern of injury was head (18.9%), followed by fractures of lower limbs (17.8%). Majority of fractures were observed in skull in all type of road users. Most of the accidents occurred between afternoons & evening (1200hrs-1800hrs) with the continuance of early night hours, this finding of our study is similar to other studies.<sup>20,21,22</sup> According to Aygencel et al<sup>19</sup> these hours correspond to the time range that people actively work & travel and then go back to their homes after finishing their work. In late 90s the traffic officers used to visit schools and colleges to guide the students about traffic laws and informing them about the signal system and zebra crossings, but recently this practice has been abandoned.<sup>6</sup>

As the number of vehicles is increasing day by day with the same length and number of roads, lack of attention of drivers and foot travelers and unawareness of traffic rules followed by absence of foot paths and non working of traffic signals and poor traffic control on signals are the main causes of accident. Fast driving at night under the influence of alcohol also increases the number of road crashes.

In our study 64 % victims died on the scene or during transportation. This was the common observation among different researchers<sup>23</sup>.

A study by Saha Dev et al<sup>24</sup> conducted in New Delhi showed that most of the victims were brought to the hospital alive, a delay in emergency services, shortage of pre hospital teams, absence of nurses or doctors & formalities by police were the possible reasons of fatalities due to RTAs.

The experts have advised the motorcyclists to always wear helmets and desist from over speeding, besides the pedestrian also need to be very careful while crossing the roads.

The deadly roads of Karachi where traffic accidents have become the order of the day happen to be the signal-free corridors. These include Shara e Faisal, Quaidabad Chowrangi, Dawood Chowrangi, Korangi Road, Korangi Crossing, Korangi Double Road, Korangi Industrial Area, Jail Road, Karimabad Signal, Rashid Minhas Road, Sohrab Goth, Sakhi Hasan Chowrangi, New Karachi, M.A Jinnah Road, Numaish Chowrangi to Sea-Breeze Plaza, Mauripur Road, Hub River Road, Garden Road and Abul Hassan Isphani Road.<sup>6</sup>

## CONCLUSION

The incidence of traffic accidents is at rampant. The accidents risks can be minimized by enhancement of road visibility, good traffic control with properly working road traffic signals. Fatalities of Traffic

accidents victims can be reduced by providing good pre-hospital care, establishment of well equipped emergency trauma centres in all big hospitals.

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# Fetomaternal Outcome of Pregnancies Complicated by Acute Appendicitis

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## ABSTRACT

**Objective:** To observe the frequency and Fetomaternal outcome of pregnancies with acute appendicitis.

**Study Design:** Prospective / observational study

**Place and Duration of Study:** This study was conducted in gynecology and surgical department of Ghulam Muhammad Mahar Medical College Teaching Hospital Khairpur Sindh from January 2010 to December 2012.

**Materials and Methods:** All pregnant ladies admitted in Gynae and surgical department with history of acute pain in abdomen and strong suspicious of acute appendicitis on the basis of history, clinical examination and ultrasound findings after exclusion of other gynecological and surgical causes of acute abdomen during pregnancy were included in the study for following variables: Presentation, duration of symptoms, operative findings and complications associated with disease and operative procedure were noted. Data was collected on pre-designed Performa and analyzed on SPSS version 15.

**Results:** During 3 year study period total 8700 Obstetric admission and cases with strong suspicious of acute appendicitis in pregnancy was 20 (0.22%), most women belongs to age between 18-40 years. More cases seen 2<sup>nd</sup> trimester 11(55%), duration of symptoms < 24 hours seen in 85% and >24 hours seen in 15% of cases. Abdominal pain was leading symptom present in 80% of cases while lower abdominal tenderness was leading sign seen in 90%. On surgery signs of acute appendicitis seen in 75%, normal looking appendix in 10%, while perforated appendix with moderate pus in peritoneal cavity seen in 15% of cases. One maternal death was seen in study population due to septicemia, most probably because of late presentation.

**Conclusion:** The evaluation of a pregnant woman presenting with acute abdominal pain warrants a careful workup due to the possible risks for the fetus and mother if appendix perforates.

**Key Words:** Pregnancy, acute appendicitis, perforation, maternal mortality.

## INTRODUCTION

Acute appendicitis is the most common general surgical problem encountered during pregnancy.<sup>1</sup>

Suspected cases of acute appendicitis in pregnancy are considered surgical emergency due to the potentially devastating outcome for both mother and unborn fetus if appendix perforates.<sup>2</sup> In non gynecological cause of acute abdomen the most common cause is acute appendicitis with an incidence of 1500-1700 pregnancies.<sup>3</sup> Of those women who are afflicted with acute appendicitis during pregnancy, the incidence by trimester is 32%, 42% and 26%.<sup>4</sup>

Pregnant women are less likely to have a classic presentation of appendicitis than non pregnant women. The most common symptom of appendicitis i.e. right lower quadrant pain, occurs close to MC Burney's point in the majority of pregnant women, regardless of the stage of pregnancy.<sup>5</sup>

The diagnosis is particularly challenging during pregnancy because of the relatively high prevalence of abdominal/gastrointestinal discomfort, anatomic changes related to the enlarged uterus, and the physiologic leukocytosis of pregnancy. Appendiceal rupture occurs more frequently in the third trimester, possibly because these changes and reluctance to operate on pregnant women delay diagnosis and treatment.<sup>6</sup> Maternal mortality rate can reach 4% while

fetal death can be seen in up to 43% of perforated appendix.<sup>7</sup> The definitive treatment for suspected acute appendicitis in pregnant patient is emergent appendectomy, even if intra-operatively the appendix is grossly normal. Immediate surgical intervention within the first 24 hours is warranted in any case of suspected or confirmed acute appendicitis in a pregnant woman to avoid perforation and resultant severe complications.<sup>8</sup>

The aim of this study was to observe the frequency and fetomaternal outcome of pregnancy with acute appendicitis.

## MATERIALS AND METHODS

The present study was conducted combined in Gynae and Surgical department of Teaching Hospital Khairpur Sindh, during three year periods. Total number of 20 cases with strong suspicious of acute appendicitis in pregnancy were included in the study after exclusion of other gynecological, obstetrical and surgical causes of acute abdomen. In all cases a detailed history regarding gestational age, onset of abdominal pain, duration of symptoms were taken. A complete general physical and abdominal examination was performed. All baseline investigations e.g.: complete blood picture, urine D/R, abdominal and pelvic ultrasound were performed and noted. Pre-operative antibiotics were started in all cases.

All the patients were counseled about the disease and surgical procedure laparotomy.

The abdomen was opened through a right paramedian incision. In all cases appendix was removed regardless of its gross appearance was normal in two cases. In two cases the pregnancy was terminated concomitantly by caesarean section. These both cases presented with 4-5 days history of pain in abdomen in 3<sup>rd</sup> trimester and previous history of caesarean section. On operation moderate amount of frank pus was found in peritoneal cavity.

Progesterone was used in all patients whose pregnancy was continued. All the analysis was performed by using SPSS version 15.

## RESULTS

Amongst the 20 cases of acute appendicitis during pregnancy, the age range of patients was 18-40 years and parity was 1-8 children. More cases seen in 2<sup>nd</sup> trimester 11(55%). The duration of symptom was <24 hours found in 85% of cases. (table: 1)

The main complaint of the patient was abdominal pain was seen in 16(80%) of cases, the pain generally beginning in the upper abdomen and shifting to the right lower quadrant associated with nausea and vomiting. Lower abdominal tenderness was present in 18(90%) of cases, only in 7(35%) of patients positive Psoas and Rovsing signs.(table: 1)

**Table No.1: Demographic characteristics of study population N= 20**

| Parameters                      | No:          | %age  |
|---------------------------------|--------------|-------|
| Total Obstt: patients           | 8700         | -     |
| No: of appendicitis pt:         | 20           | 0.22% |
| Age of women                    | 18-40 yrs    | -     |
| Gestational age(trimester wise) |              |       |
| -1 <sup>st</sup> trimester      | 06           | 30%   |
| -2 <sup>nd</sup> trimester      | 11           | 55%   |
| -3 <sup>rd</sup> trimester      | 03           | 15%   |
| Duration of symptoms            | 17 (<24 hrs) | 85%   |
|                                 | 03 (>24 hrs) | 15%   |
| <b>Presenting symptoms</b>      |              |       |
| -Abd: pain shifting to RLQ:     | 16           | 80%   |
| -Rt lower quadrant pain only    | 04           | 20%   |
| - Nausea and vomiting           | 15           | 75%   |
| - Fever >100°F                  | 14           | 70%   |
| -Constipation                   | 13           | 65%   |
| -Lower abd: tenderness          | 18           | 90%   |
| -Rebound tenderness             | 05           | 25%   |
| -Positive Psoas & Rosing sign   | 07           | 35%   |

All women underwent laparotomy for appendisectomy. During operation signs of acute appendicitis was seen in 15(75%) cases, 3(15%) found perforated appendix with moderate frank pus collected in peritoneal cavity

and only in 2(10%) cases appendix looks normal. (table: 2)

**Table No. 2: Operative findings N=20**

| Finding                                                                                  | Number | %age |
|------------------------------------------------------------------------------------------|--------|------|
| -Acute appendicitis (red, inflamed appendix with minimal Fluid present in lower abdomen) | 15     | 75%  |
| -Perforated appendix with moderate Pus in peritoneal cavity                              | 03     | 15%  |
| -Normal looking appendix                                                                 | 02     | 10%  |

Appendix was removed in all cases regardless its normal appearance. In two cases concomitantly caesarean section was performed due to presentation of patients in 3<sup>rd</sup> trimester, late presentation, perforated appendix and previous baby was delivered by abdominal route.

The seriousness of appendicitis in pregnancy is reflected in both maternal and fetal outcome, and can be directly related to the rapidity with the therapeutic regimen is carried out. The patients who were operated as early as possible after admission to the hospital had few post-operative complications, as compared with those who went longer before operation, morbidity including fever, ileus and wound infection as twice as common and they also face prolonged hospital stay.

In patients whose appendix was removed during first trimester, one had miscarriage occurred during hospital stay period and remaining delivered of living baby at term. Fourteen of 20 patients operated during the 2<sup>nd</sup> and 3<sup>rd</sup> trimester 2 had premature deliveries occurred within the 4-5<sup>th</sup> post-operative days and who died in the neonatal period and thus must be considered to be related to the appendicitis and the operative procedure in the mother (table: 3). This all above happened in those patients who presented late and also her operation was occurred late after admission in the hospital.

**Table No. 3: Fetomaternal outcome N=20**

| Variables                     | Number | %age |
|-------------------------------|--------|------|
| <b>Fetal outcome</b>          |        |      |
| -Miscarriage                  | 01     | 05%  |
| -Preterm delivery             | 02     | 10%  |
| -Term birth                   | 17     | 85%  |
| <b>Maternal outcome</b>       |        |      |
| -Morbidity(wound infection)   | 05     | 25%  |
| -Prolong hosp: stay(8-10)days | 12     | 60%  |
| -Maternal death               | 01     | 05%  |

There was one maternal death seen in study population. The patient of 35 weeks pregnant admitted the hospital after 4 days of abdominal pain. The uterus was found irritable, preterm labour, abruption placentae and acute appendicitis was provisional diagnosis. Twenty four hours after admission a diagnosis of ruptured appendix



was made and laparotomy was done, wide spread peritonitis resulted from ruptured suppurative appendicitis. She delivered still born fetus on 3<sup>rd</sup> post-operative day and died on 4<sup>th</sup> post-operative day due to septicemia.

## DISCUSSION

Early surgical intervention has shown to be vital in minimizing both maternal and fetal morbidity and mortality.

The incidence of 0.2% in our study also correlates with other studies where incidence of appendicitis in pregnancy is 0.1 to 0.17%.<sup>9</sup>

Burwell<sup>10</sup> found it three times more common in the first trimester, but in our study more cases seen in 2<sup>nd</sup> trimester which consistent with study by Tracey.<sup>11</sup> The classical symptoms of pain in abdomen shifting to the right lower quadrant, accompanied by nausea and vomiting was present in 80% of cases.

The risk of delay in diagnosis is associated with a greater risk of complications such as perforation, infection, preterm labour and risk of fetal and maternal loss.<sup>12</sup>

Maternal mortality has been reported from none to 2%.<sup>8, 11</sup> An un-ruptured appendix carries a fetal loss of 1.5% to 9% while this rate increases up to 36% with perforation.<sup>13</sup> fetal loss rate 15% was seen in this study. The risk of premature delivery is the greatest during the first week after surgery as seen in our study. However, maternal mortality is very low and if occur it is directly related with delay in diagnosis and intervention.

## CONCLUSION

The accurate diagnosis of appendicitis during pregnancy requires a high level of suspicious and clinical skills, and not merely relying on the classic signs and diagnostic testing. Early surgical intervention is essential in pregnancy with acute appendicitis.

Suspected cases of this condition require serial physical examination as well as general surgeon and Obstetric consultation, since they are most qualified to evaluate all aspects of gravid patient and maternal physiology.

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# Comparison of the Efficacy of Partial Inferior Turbinectomy and Submucosal Diathermy on Nasal Obstruction in Allergic Rhinitis

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## ABSTRACT

**Objective:** The purpose of this study was to compare the effects of bilateral partial inferior turbinectomy and sub-mucosal diathermy of inferior turbinates on nasal obstruction in patients with allergic rhinitis.

**Study Design:** Prospective comparative study

**Place and Duration of Study:** This study was conducted at Departments of ENT, Mufti Mehmood Memorial (MMM) Teaching Hospital and District Headquarter Teaching Hospital (DHQ), Lakki Marwat from January 2009 to June 2013.

**Materials and Methods:** Subjects of either sex, aging more than 10 years with symptomatic bilateral enlarged inferior turbinates due to allergic rhinitis attending ENT OPD were included. They were divided into two groups. An alternate sequential entry was made to group A and group B. Patients in group A were offered bilateral partial inferior turbinectomy (PIT) while those in group B underwent mono-polar sub-mucosal diathermy (SMD) of inferior turbinates. Data was collected at first visit prior to intervention, second at 1 month and third at 3 months after surgery. Anterior rhinoscopy and visual analogue scale were used to assess treatment outcomes.

**Results:** Out of 96 patients with 48 patients in each group, males (58.3%) outnumbered the females (41.7%) in both groups. Mean age of the patients in group 1 was  $21.88 \pm 7.528$  range (10-35) years and in group 2 was  $19.75 \pm 6.525$  range (10-33) year. The mean nasal obstruction score was lower in group 1 than in group 2 at 1 month, and 3 months after surgery suggesting a good outcome, although statistically non-significant ( $p$ -value 0.177, 0.198 respectively).

**Conclusion:** Both bilateral PIT as well as SMD are effective in improving nasal obstruction in patients with hypertrophied inferior turbinates due to allergic rhinitis.

**Key Words:** Hypertrophied inferior turbinate, Sub-mucosal diathermy, Turbinectomy.

## INTRODUCTION

Chronic nasal obstruction due to hypertrophied inferior turbinates is a relatively common occurrence in patients suffering from allergic rhinitis, and when more conservative treatment fails (nasal steroids, antihistamines, etc), turbinate surgery may be indicated.<sup>1</sup> Allergic rhinitis generally leads to increased thickness of the medial mucosal layer which could be attributed to hypertrophy of the lamina propria that houses sub-epithelial inflammatory cells, venous sinusoids and sub-mucosal glands or it could be due to an increase in the size of the bony structure of the inferior turbinate.<sup>2</sup> Various surgical techniques have been tried to reduce the size of the inferior turbinate to improve nasal airways such as turbinectomy, turbinoplasty, extra mucosal or sub mucosal electrocautery, radiofrequency ablation (RFA), laser-assisted resection or ablation, and cryosurgery.<sup>3</sup> Turbinectomy is a partial or complete resection of the inferior turbinate with or without the guidance of an endoscope.<sup>4</sup> The exposed raw mucosal edges and bone from this procedure may lead to nasal crusting with need for postoperative debridement. The most common

complications of bilateral turbinectomy are bleeding and empty nose syndrome.<sup>5</sup>

Sub-mucosal diathermy (SMD) is a very common thermal technique which involves passing a probe just below the mucosal surface lining of the turbinate bones and cauterizing using heat energy to shrink the size of these structures. This preserves most of the mucosal lining and allows for preservation of normal function. This technique has the advantage that it can be done in the office setting under local anesthesia and it has rare and minor complications.<sup>6</sup>

The purpose of this study was to compare the effects of bilateral partial inferior turbinectomy and sub-mucosal diathermy on nasal obstruction in patients with hypertrophied inferior turbinates due to allergic rhinitis.

## MATERIALS AND METHODS

The study was approved by the Ethics and Research Committee of the hospital. Informed consent was obtained from all patients that participated in the study. This prospective comparative study was conducted at Departments of ENT, Mufti Mehmood Memorial (MMM) Teaching Hospital and District Headquarter Teaching Hospital (DHQ), Lakki Marwat from January 2009 to June 2013. Subjects of either sex, aging more

than 10 years with symptomatic enlarged inferior turbinates due to allergic rhinitis attending ENT OPD were included. Criteria for enlarged inferior turbinates due to allergic rhinitis from the history included symptoms of nasal obstruction, rhinorrhoea, sneezing and ocular pruritis. Examination criteria included nasal mucosal oedema, clear nasal discharge, post nasal drip, oedematous and grayish enlarged inferior turbinates. Patients with other nasal pathology, including nasal polyps, septal perforation and gross septal deviations were excluded from the study. Data was collected at first visit prior to intervention. During this time patients were asked about their nasal symptoms on a proforma and they were briefed on how to scale their level of nasal obstruction on a 10-point VAS where 0 represents no pain and 10 represents severe nasal obstruction. Scoring criteria on VAS was as follows: no nasal obstruction-0, mild obstruction-1, moderate obstruction-2, fairly bad obstruction-3 and severe obstruction-4. Patients were divided into two groups. An alternate sequential entry was made to group A and group B. Patients in group A were offered bilateral partial inferior turbinatectomy (PIT) while those in group B underwent bilateral mono-polar sub-mucosal diathermy (SMD). A standardized anaesthetic protocol was followed for all patients undergoing partial inferior turbinatectomy and patients <15 years undergoing SMD. Partial inferior turbinatectomy was performed by sharp dissection. After medializing the inferior turbinate, it was crushed with a straight artery forcep before cutting it down with a sharp turbinatectomy scissor all along. After securing haemostasis, both nasal cavities were packed with gauze soaked in Furacin skin ointment for 24 hours. Silastic splints were put in both nasal cavities for one week to prevent nasal synechiae. Sub-mucosal diathermy was performed after injecting a volume of 2.5-5ml of 2% xylocaine with 1:80,000 into muco-cutaneous junction of the inferior turbinate. Turbinates were cauterized at 2-3 spotted areas of the turbinate using a monopolar power with an isolated cautery needle. The needle was inserted deep to the conchal bone and withdrawn gradually while the power on. The strength and length of cauterization is judged by the amount of discolouration of turbinate. No nasal packs or splints were used routinely after SMD and the patients were all discharged the same day from hospital. The evaluation was performed by anterior rhinoscopy at 1 and 3 months after surgery. The symptomatic improvement was rated by the visual analog scale (VAS).

**Data collection:** A Performa was used for each patient having following variables noted and entered into the data sheet of SPSS 17: gender and age as demographic and independent variables and nasal obstruction score

preoperatively, 1 month and 3 months after surgery as study and dependent variables.

**Data analysis:** Age and gender were expressed as frequency and percentage. Nasal obstruction score preoperatively, 1 month and 3 months after surgery were expressed as mean and standard deviation and their differences between the groups were analyzed by Two-Sample Independent T Test. P value of < 0.05 was considered as statistically significant.

## RESULTS

Out of 96 patients with 48 patients in each group, males (58%.3) out-numbered the females (41.7%) in both groups. Mean age of the patients in group 1 was  $21.88 \pm 7.528$  range (10-35) years and in group 2 was a  $19.75 \pm 6.525$  range (10-33) years. The difference in mean age between the two groups was statistically non significant ( $p = 0.144$ ) as determined by Two-Sample Independent T Test. Further the age was stratified into five categories with maximum number of patients in both the study groups was in the age group 10-15 years (Table-1).

Table-2 shows analysis of research variables. The mean nasal obstruction score was lower in group 1 than in group 2 preoperatively, at 1 month, and 3 months after surgery, although statistically non-significant ( $p$ -value 0.203, 0.177, 0.198 respectively) as determined by Two-Sample Independent T Test.

**Table No.1: Age and Gender wise distribution of the patient**

| Age (Years)          | No. of Patients (%age) | Gender | No. of Patients (%age) |
|----------------------|------------------------|--------|------------------------|
| <b>GROUP A (PIT)</b> |                        |        |                        |
| >10-15               | 12 (25.00%)            | Male   | 29 (60.4%)             |
| 16-20                | 11 (22.90%)            |        |                        |
| 21-25                | 09 (18.75%)            |        |                        |
| 26-30                | 07 (14.60%)            | Female | 19 (39.6%)             |
| 31-35                | 09 (18.75%)            |        |                        |
| Mean age             | $21.88 \pm 7.528$      |        |                        |
| <b>Total</b>         | <b>48 (100%)</b>       |        | <b>48 (100%)</b>       |
| <b>GROUP B (SMD)</b> |                        |        |                        |
| >10-15               | 15 (31.25%)            | Male   | 27 (56.2%)             |
| 16-20                | 13 (27.10%)            |        |                        |
| 21-25                | 08 (16.65%)            |        |                        |
| 26-30                | 09 (18.75%)            | Female | 21 (43.8%)             |
| 31-35                | 03 (06.25%)            |        |                        |
| Mean age             | $21.88 \pm 7.528$      |        |                        |
| <b>Total</b>         | <b>48 (100%)</b>       |        | <b>48 (100%)</b>       |

**Table No.2: Mean Nasal Obstruction Score preoperatively, at 1 month & 3 months after surgery on VAS (n=48 each group)**

| Nasal Obstruction Score | Preoperatively |         | At 1 month after surgery |         | At 3 months after surgery |         |
|-------------------------|----------------|---------|--------------------------|---------|---------------------------|---------|
|                         | Group 1        | Group 2 | Group 1                  | Group 2 | Group 1                   | Group 2 |
| MNOS                    | 5.27           | 6.02    | 4.81                     | 5.60    | 4.35                      | 5.08    |
| Std. Deviation          | 2.811          | 2.914   | 2.750                    | 2.944   | 2.605                     | 2.901   |
| D F                     | 1              |         | 1                        |         | 1                         |         |
| p-value                 | 0.203          |         | 0.177                    |         | 0.198                     |         |

MNOS= Mean Nasal Obstruction Score, DF=Degree of Freedom.

## DISCUSSION

There is currently no consensus on patient selection for hypertrophied inferior turbinates in allergic rhinitis. Furthermore, the long-term effects on nasal airflow dynamics, nasal physiology and long-term complications remain to be studied. The evidence base for turbinate surgery is weak and surgeons empirically offer surgery where the predominant symptom is nasal obstruction. Few authors have utilized objective measurements of nasal airflow such as rhinomanometry to select suitable patients for surgery.<sup>7</sup>

In our study the age range of the patients is almost similar to that reported in literature.<sup>8-10</sup> On the other hand in the studies by Chen et al and Leong and colleagues, all of the patients were from pediatric age group<sup>11,12</sup>. Contrary to our reports in the study by Batra PS et al, all of the patients were from adult group.<sup>13</sup> All of the above studies also had male preponderance like our study but more females had been reported in another study.<sup>14</sup> But contrary to these reports, more than half of the patients i.e 15 out of 18 were male in a study by Ashoor from Bahrain.<sup>15</sup> These differences in gender distribution may be attributed to genetic and geographic differences.

The surgical technique used for turbinate surgery plays an important role in post-operative improvement in nasal airways. Only patients with inferior turbinate hypertrophy due to thickness of the mucosal layer could benefit from SMD. If the hypertrophy is due to an increase in bony structure, only turbinoplasty is the solution to improve the nasal airways.<sup>15</sup> Functional results of SMD were less than partial turbinectomy although statistically non-significant. Mean nasal obstruction was reduced to 4.35 from 5.27 after surgery in group A and to 5.08 from 6.02 after diathermy. Almost similar results have been reported by other two studies as well.<sup>8,15</sup> In one of these studies,<sup>15</sup> the postoperative improvement in nasal breathing after PIT was reported for 96% of patients 2 weeks, and for 88% 2 months after surgery. Similarly diathermy showed good results in 78% of cases 2 weeks, and 76% 2 months after surgery. In our series 15% of the SMD patients were advised to undergo operative revision while only 2% of the PIT patients were advised revision surgery. These results are better than those reported in other study where 20% of PIT patients were advised

revision surgery.<sup>8</sup> In agreement to our reports, significant results were observed at 1 month after turbinectomy in all patients in a study by Cavaliere and colleagues.<sup>16,17,20</sup>

Probably the better results for partial turbinectomy than diathermy on nasal airways could be due to two reasons. First it involves removal of both mucosal as well as bony parts of the inferior turbinate and second there are decreased chances for re-growth of turbinate after the more radical procedure of turbinectomy.<sup>18,19</sup>

## CONCLUSION

In this study we concluded that both bilateral partial inferior turbinectomy as well as sub-mucosal diathermy are effective in improving nasal obstruction in patients with hypertrophied inferior turbinates due to allergic rhinitis.

**Suggestions:** Further multi centre randomized controlled trials are needed to evaluate the role of inferior turbinate surgery for nasal obstruction in allergic rhinitis after failed medical treatment.

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# Acute Septic Arthritis: Open Drainage versus Needle Aspiration

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## ABSTRACT

**Objective:** This study aims to compare the effectiveness of open drainage with needle aspiration in acute septic arthritis in our local population.

**Study Design:** Randomized controlled trial.

**Place and Duration of study:** This study was conducted in Orthopedics and Trauma unit, Khyber Teaching Hospital, Peshawar from Feb 2009 to Jan 2010.

**Materials and Methods:** There a total of 114 patients that were randomly assigned to group A and B with 57 patients in each group. Group A was subjected to open drainage and Group B to needle aspiration. The effectiveness of intervention was assessed by the reduction of at least one grade of pain from the baseline on 7<sup>th</sup> post-operative day.

**Results:** In group A 26 (45.61%) and 31 (54.38%) patients had Grade 2 and Grade 3 pain respectively whereas in group B 28(49.12%) and 29(50.88%) patients had Grade 2 and Grade 3 pain respectively(p value 0.0025). Open drainage and needle aspiration in group A and B were effective in 49 (85.96%) and 39(68.42%) patients respectively (p value 0.0025).

**Conclusion:** Open drainage is more effective than needle aspiration in patients with acute septic arthritis.

**Key Words:** Septic Arthritis; Open drainage; Needle Aspiration.

## INTRODUCTION

Acute septic arthritis or suppurative arthritis is an infection of the joint by microorganisms resulting in purulent effusion into the joint capsule.<sup>1</sup>

Knee and hip joints are most commonly involved in acute septic arthritis (ASA) in adults and children respectively. The annual incidence of acute septic arthritis ranges from 2 to 10 percent per 100,000 population.<sup>2</sup> The incidence of septic arthritis has been noted 34% higher in males as compared to females.<sup>3</sup> Acute septic arthritis is an orthopedic emergency<sup>4</sup> and delayed or inadequate treatment can lead to significant morbidity and mortality.<sup>5</sup>

The prognosis is directly related to host factors, the virulence of the infecting organism, and the promptness of treatment.<sup>4</sup> Despite of more effective antibiotics and advanced methods of joint drainage, about one third of patients need amputation, arthrodesis, prosthetic surgery or functional impairment due to cartilage degradation and irreversible bone loss<sup>6</sup>, systemic sepsis and death.<sup>7</sup> Acute septic arthritis was a fatal disease whose mortality was 50% in 1874<sup>8</sup> but due to development of various antibiotics and general progress in the management of septic patients, now a days, the mortality rate ranges from 10 to 15%.<sup>9</sup>

There are a variety of methods to drain the purulent fluid from the infected joint including needle aspiration, tidal irrigation, arthroscopy, and arthrotomy. There is no set of universally accepted criteria for choosing the drainage method to clean the joint of harmful degradative products, to control the infection, and to preserve the articular cartilage and function of the joint.<sup>10</sup> However the treatment principle is pus

evacuation in any possible technique.<sup>11</sup> The comparative studies between repeated needle aspiration and open surgical drainage of ASA has been done previously but this comparison has controversies.<sup>12,13</sup> Some authors have concluded that aspiration is a satisfactory method for all joints except the hip<sup>12</sup> and open surgical drainage is necessary especially in children<sup>2</sup> and others that the hip joint can be satisfactorily aspirated and claim that the technique of aspiration has become the usual practice in several pediatric orthopedic departments.<sup>11</sup> The current study was designed to determine the best treatment option for ASA in our local population after comparing the open drainage and needle aspiration.

## MATERIALS AND METHODS

This study was conducted at Orthopedics and Trauma unit, Khyber Teaching Hospital, Peshawar from August 02, 2011 to February 02, 2012. All patients 10 years old and above, with ASA of knee, hip, elbow and shoulder joints with Grade 2 (moderate) to Grade 3 (severe) pain were included in the study. Patients with infected prosthetic joints (hemi arthroplasty and total arthroplasty), with adjacent osteomyelitis preceding joint infection evident by plan radiographs of the effected joint and those with pre-existing osteoarthritis, rheumatoid arthritis and gout were excluded from the study. Patients with diabetic mellitus were also excluded from the study due to their peripheral neuropathies and altered sensations of pain.

The study was conducted after approval from hospitals ethical and research committee. The purpose and benefits of the study were explained to all patients and

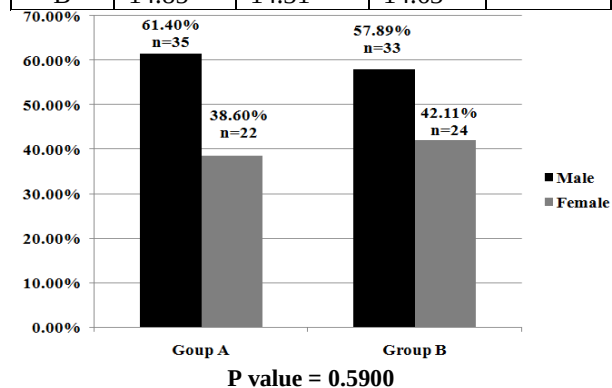
if agreed upon, a written informed consent was obtained. All patients were worked up with detailed history and clinical examination followed by routine baseline pre-operative investigations. The patients were randomly allocated in two groups by lottery method. Patients in group A were subjected to open drainage for ASA and patients in group B were subjected to needle aspiration for ASA. Needle aspiration was done under local anesthesia and repeated after 24 hours. Patients in open drainage group were prepared for surgery under general anesthesia on next OT day and a suction drain was put in place to keep draining the joint fluid and was removed after 24 hours. Post operatively, all patients in both groups were kept under observations for 24 hours and discharged on the 2<sup>nd</sup> post-operative day if indicated. All the patients were followed up after 7 days to determine intervention effectiveness in terms of reduction in at least one grade of pain from the baseline preoperative grade. Chi square test was used to compare the effectiveness between needle aspiration and open drainage. P value of < 0.05 was considered significant. Effectiveness was stratified among age, gender, baseline grade of pain and joint involved to see the effect modifications.

## RESULTS

The total number of patients in Group A and B each was 57. The overall mean age in group A and B was 31.89 years  $\pm$  14.24SD and 33.01 years  $\pm$  14.63SD respectively with insignificant p value of 0.3266. Comparison of open drainage versus needle aspiration is presented in graphic and tabular form. Results are stratified according to age, gender and joint involved.

**Table No. 1: Mean age and standard deviation of patients with acute septic arthritis in group A (open drainage) & B (needle aspiration)**

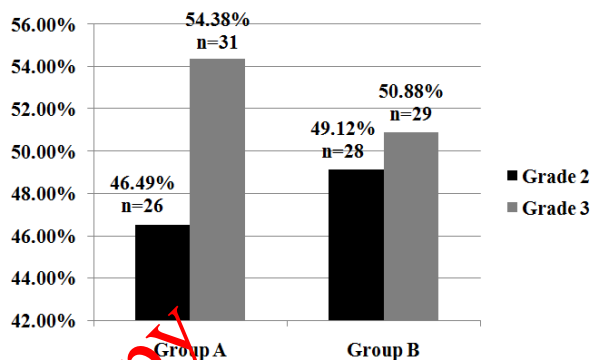
| Group   | Mean $\pm$ SD     |                   |                   | P value |
|---------|-------------------|-------------------|-------------------|---------|
|         | Male              | Female            | Total             |         |
| Group A | 33.14 $\pm$ 15.45 | 28.32 $\pm$ 10.20 | 31.89 $\pm$ 14.24 | 0.3266  |
| Group B | 30.67 $\pm$ 14.85 | 28.80 $\pm$ 14.31 | 33.01 $\pm$ 14.63 |         |



**Graph No. 1: Gender Distribution Of Patients With Acute Septic Arthritis In Group A (Open Drainage) & B (Needle Aspiration)**

**Table No. 2: Frequency of joint involvement in patients with acute septic arthritis in group A (open drainage) & B (needle aspiration)**

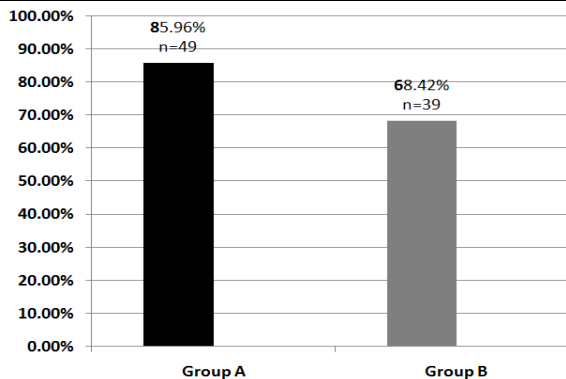
| Joint Involved | Group A     | Group B     | P value |
|----------------|-------------|-------------|---------|
| Shoulder Joint | 3 (5.26%)   | 2 (3.51%)   | 0.831   |
| Elbow Joint    | 12 (21.05%) | 10 (17.54%) |         |
| Hip Joint      | 20 (35.08%) | 23 (40.35%) |         |
| Knee Joint     | 22 (38.59%) | 22 (38.59%) |         |



**Graph No. 2: Base line pre operative grade of pain in patients of open drainage (group A) and needle aspiration (group B) of acute septic arthritis**

**Table No. 3: Stratification of effectiveness of open drainage (group a) and needle aspiration (group b) in patients with acute septic arthritis according to age**

| Age Groups (years) | Group       |             | P value |
|--------------------|-------------|-------------|---------|
|                    | Group A     | Group B     |         |
| 10-20              | 10 (20.40%) | 18 (46.15%) | 0.342   |
| 21-30              | 21 (42.85%) | 13 (33.33%) |         |
| 31-40              | 9 (18.36%)  | 3 (7.69%)   |         |
| 41-50              | 5 (10.20%)  | 2 (5.13%)   |         |
| 51-60              | 3 (6.12%)   | 2 (5.13%)   |         |
| 61 and above       | 2 (4.75%)   | 1 (2.56%)   |         |
| Total              | 49 (100%)   | 39 (100%)   |         |



**Graph No. 3: Effectiveness of open drainage (group A) and needle aspiration (group B) in patients with acute septic arthritis**

## DISCUSSION

Septic arthritis is a substantial public health problem, accounting for 0.2-0.7% of hospital admissions. However, despite the availability of effective antibiotics, the appropriate approach to adjunctive therapy remains controversial. Although early drainage is essential to minimize the risks of permanent loss of articular function, it is unclear whether the optimal approach involves arthroscopic lavage or daily arthrocentesis; surgeons appear to prefer surgical lavage because their training routinely considers septic arthritis to be a closed-space infection comparable to an abscess, whereas rheumatologists appear to prefer daily arthrocentesis because of its ease and non-invasive nature. There is a paucity of prospective data comparing the two approaches, and the literature is largely retrospective.<sup>15</sup>

In our study majority of patients presented with Knee and hip septic arthritis in both groups. In a study conducted at china, septic arthritis of hip and knee was mostly reported affected joints (33% and 35.4%).<sup>5</sup> In a local study by Shabir M,<sup>16</sup> hip joint was most commonly involved (40.8%) followed by knee joint (31.8%). In our study the involvement of different joints was insignificant regarding the effectiveness of open drainage and needle aspiration (p value 0.831).

Removal of purulent material from affected joint is considered essential in the effective management of septic arthritis, although this is based on expert opinion rather than any randomized controlled trial<sup>17</sup>. This can either be achieved surgically by arthroscopy or open arthrotomy, or through closed needle aspiration. There is controversy regarding which method is better, and a systematic review of the literature in 2007 did not reveal any prospective studies in adults addressing this question<sup>18</sup>.

In our study, open drainage was more effective (85.96%) as compared to needle aspiration (68.42%) in terms of improvement in at least one grade of pain on Visual Analogue Scale at 5th day follow up and this was also statistically significant (0.0025). This correlates well with Kang SN et al<sup>14</sup> who has reported arthrotomy as the best method of treatment and has reported that open drainage was successful in 92.59% with failure in only 7.41% and needle aspiration was successful in 54.55% with failure in 45.45% of cases. Similarly in a local study by Shabir M<sup>16</sup>, open drainage was more successful (57.9%) as compared to needle aspiration (48.8%).

In our study the values for distribution of gender (p value 0.5900), mean ages of patients (p value 0.3266), effectiveness according to age (p value 0.342), gender (0.755), base line grade of pain (0.022) and joint involvement were statistically insignificant. This observation has also been noted by Kocher MS et al.<sup>21</sup>

## CONCLUSION

Open drainage is more effective than needle aspiration in patients with acute septic arthritis in terms of improvement in at least one grade of pain on Visual Analogue Scale at 7th day follow up. The best treatment option for ASA in our local population after comparing the open drainage and needle aspiration is open drainage of infected joint in terms of improvement of pain. It is recommended to other orthopedic surgeons to adopt the open drainage as a first line of treatment option for all patients with acute septic arthritis.

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# To Determine the Frequency of Modes of Delivery in Short-Statured Primigravidae at Term

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## ABSTRACT

**Objective:** The aim of this study was to determine the frequency of modes of delivery in short-statured primigravidae at term.

**Study Design:** Descriptive cross sectional study.

**Place and Duration of Study:** This study was conducted in the Department of Obstetrics and Gynaecology, Khyber Teaching Hospital, Peshawar, from Apr 2010 to Mar 2011.

**Materials and Methods:** 369 primigravidae, 15-35 years old with singleton pregnancy, cephalic presentation and with height less than 152 cm were randomized for the study. Pelvic assessment was done clinically in all and radiologically in some cases. Monitoring of labour was done and modes of deliveries were recorded.

**Results:** Mean age and height was 25.57 years + 3.22SD and 148.9cm + 2.1SD respectively. Normal vaginal delivery occurred in 96 (26.02%) while 32 (8.67%) patients had instrumental vaginal delivery (13 (3.52%) vacuum and 19 (5.15%) outlet forceps). Elective and emergency cesarean section was done in 28 (7.59%) and 207 (56.09%) patients respectively.

**Conclusion:** Primigravidae with short stature constitutes a high risk group for poor progress in labour. Emergency cesarean section is more common in short statured primigravidae.

**Key Words:** Short stature, Primigravida, Modes of delivery, Cesarean section.

## INTRODUCTION

In many developing countries most women deliver at home or in health facilities without operative capacities<sup>1,2,3</sup>. Identification before labour of women at risk of dystocia and timely referral to a district hospital for delivery is one strategy to reduce maternal and perinatal mortality and morbidity<sup>1,3,4</sup>. In a country like Pakistan, maternal and perinatal/ morbidity and mortality are high<sup>5</sup>. Anthropometric measurements which are not costly, none invasive may be used as predictors to pick up women at risky labour<sup>6,7,8</sup>. It is a well-established fact that the height of mother is correlated to the size of the pelvis<sup>9,10,11</sup>. Several studies have demonstrated that mothers with CPD are shorter than those who have normal vaginal deliveries<sup>11,12</sup>. Timed optimally, a cesarean delivery for CPD is best for the mother as well as her fetus<sup>13,14</sup>. To facilitate this it is imperative that CPD is diagnosed sufficiently early<sup>15,16</sup>. The consequences of late detection are particularly grave in the developing world where the mother may go into labor in a setting where facilities for performing cesarean section are inadequate<sup>1,2,3,5</sup>. In such situations, it is vital that women at potential risk of CPD are identified prior to the onset of labor to facilitate referral to a center where a cesarean delivery can be performed<sup>17,18</sup>. There is, however, no consensus on the height below which CPD is likely to occur.<sup>19,20,21</sup> Several studies have used a cut-off value of 150cm for height to predict CPD<sup>1,8</sup>. However, this will not be appropriate for all ethnic populations. Yet the recognition and prediction of possible CPD is necessary at every birth to prevent the serious complications

associated with undiagnosed disproportion.<sup>1,9,22,23</sup> Many studies and literature stress on the use of height as an indicator for identification of CPD.<sup>1,2,6,7,24</sup> Maternal height is related strongly to the ability of primiparous women to be delivered vaginally without great difficulty.<sup>25,26,27,28</sup>

## MATERIALS AND METHODS

Primigravidae, 15 to 35 years old with height less than 152 cm and at term with singleton pregnancy and cephalic presentation were included in the study. After taking an informed consent, a questionnaire was used to collect data and the mode of delivery was recorded. Detailed history was taken from every patient to exclude those having diseases and/or complications of pregnancy influencing the mode of delivery like diabetes, hypertension, intrauterine growth restriction, oligo/polyhydramnios, antepartum hemorrhage. Maternal height and weight were recorded. A thorough abdominal and pelvic examination was done. Based on clinical pelvimetry an impression was made whether pelvis was grossly inadequate, borderline or adequate. In borderline &/or doubtful cases radiological pelvimetry was advised. In cases with inadequate pelvis, findings were confirmed by radiological pelvimetry. However it was not done in laboring patients. Cases with grossly inadequate pelvic diameters either clinically or radiologically were scheduled for elective cesarean section taking into consideration patient's wishes. Patients having borderline pelvis were given trial of labour. Progress of labour was charted on partogram. Patients with primary or secondary arrest of

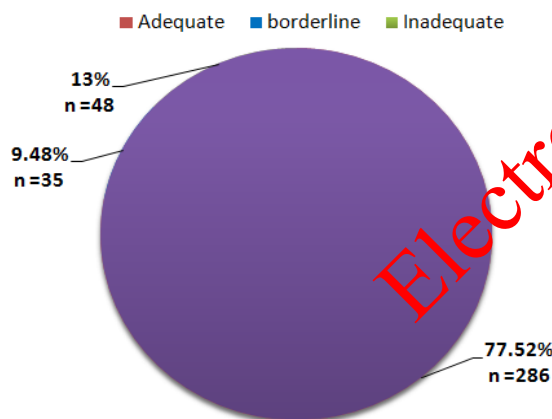
labour in first stage were delivered through emergency cesarean section. Patients with P/V findings favorable for instrumental vaginal delivery were delivered through outlet forceps or ventouse (vacuum). Mode of delivery for each case was recorded in the proforma.

## RESULTS

There were 369 primigravidae patients in the study fulfilling the inclusion criteria. Age range was 15 to 35 years as set forth in inclusion criteria. The mean age was 25.57 years + 3.22SD. Mean height was 148.9cm + 2.1SD. Among all cases 41(11.11%) were not in labour while 207 (56.09%) were in early labour and 121 (32.79%) were in advanced labour. Mean gestational age was 38.1wks + 1.43SD by dates and was 39.1wks + 1.09SD by scan.

**Table No. 1: Modes of delivery in short statured primigravidae**

| Mode Of Delivery        | Frequency      |
|-------------------------|----------------|
| NVD with Episiotomy     | n=102 (27.64%) |
| Outlet Forceps Delivery | n= 19 (5.16%)  |
| Vacuum Vaginal Delivery | n=13 (3.52%)   |
| Emergency C Section     | n=207(56.09%)  |
| Elective C Section      | n= 28 (7.59%)  |
| Total                   | n= 369(100%)   |



## Figure No.1: Clinical Pelvimetry Findings in short statured primigravidae

Clinical pelvimetry findings are given in Figure No. 1. Trial of labour was given to 341(92.41%) cases, including those with borderline pelvis either clinically or radiologically. Mean total duration of labour in these cases was 9hours + 1.04SD. Mean duration of first stage of labour was 7.5 hours + 1.3SD and that of the second stage was 1.5hours + 0.56 SD. Out of those given trial of labour, 124 (33.60%) of cases were having secondary arrest of cervical dilatation (Table No.3). Mean dilatation of cervix at which arrest of labour occurred was 6cm + 1.0SD. There was failure of descent of head in 35 (9.49%) cases. Mean head station at which arrest occurred was -1 + 0.2SD.

Among those given trial of labour 207 ( 60.70%) ended up in emergency cesarean section while 134 (39.30%) were delivered vaginally.

Modes of delivery for all cases is given in Table No.1. Indication for all elective cesarean section cases was contracted pelvis diagnosed clinically and confirmed radiologically. Indications for emergency cesarean section is given in tabular form.(Table No. 2)

**Table No. 2 :Indications for emergency cesarean section in short statured primigravidae**

| Indication                   | Number of Cases | Percent |
|------------------------------|-----------------|---------|
| Primary dysfunctional labour | 8               | 3.86%   |
| Secondary arrest             | 124             | 59.90%  |
| 2 <sup>nd</sup> Stage arrest | 25              | 12.08%  |
| Fetal Distress               | 9               | 4.35%   |
| Failed Vacuum                | 0               | 0%      |
| Failed Forceps               | 6               | 2.90%   |
| Failed descent               | 35              | 16.91%  |
| Total                        | 207             | 100%    |

**Table No.3: Mode of delivery according to height in short statured primigravidae**

| Height Range (Centimeters) | Elective C.Section | Emergency C.Section | Normal vaginal delivery | Outlet forceps delivery | Vacuum vaginal delivery |
|----------------------------|--------------------|---------------------|-------------------------|-------------------------|-------------------------|
| 141-143, n = 19            | 16 (84.21%)        | 2 (10.53%)          | 0 (0%)                  | 1(5.26%)                | 0 (0%)                  |
| 144-146, n= 48             | 9 (18.75%)         | 23 (47.92%)         | 10 (20.83%)             | 6(12.5%)                | 0 (%)                   |
| 147-149, n= 121            | 3 (2.48%)          | 74 (61.15%)         | 32 (26.45%)             | 9 (7.44%)               | 1 (0.83%)               |
| 150-152, n= 181            | 0 (0%)             | 108(59.67%)         | 54(29.83%)              | 9 (4.97%)               | 10 (5.52%)              |
| Total                      | 28 (7.59%)         | 207(56.09%)         | 96 (26.02%)             | 25(6.77%)               | 413(3.52%)              |

## DISCUSSION

Short height in females is generally associated with a small pelvis. Pelvic size plays a very important role in obstetrics. It is a valuable tool for prediction about

mode of delivery. Hence height of the pregnant women which is readily measurable in antenatal clinics is of utmost importance in the antenatal assessment. In our study we recorded the frequency of modes of delivery in short statured primigravidae with term singleton

pregnancies. Age range chosen was between 15 to 35 years thus excluding teen and advanced age pregnancies which are themselves associated with various pregnancy and labour complications.

We did clinical pelvis assessment in all our cases since various studies shows that it is superior to radiological pelvimetry.<sup>11,12</sup> However cases with inadequate findings were supported by CT & or X ray pelvimetry. Clinical pelvimetry findings in more than 90% cases were consistent with radiological findings. Since various studies.<sup>11,12,24</sup> have shown that radiological pelvimetry underestimates the pelvic capacity in majority of cases, cases with borderline findings on clinical pelvimetry were given trial of labour. This approach was not only cost effective, but also reduced the frequency of elective cesarean section. Same was the recommendation of JI Adinma and AO Aghai.<sup>25</sup>

**Table No.4: Pelvic adequacy according to height**

| Height Range (Centimeters) | Inadequate n (%) | Borderline n (%) | Adequate n (%) |
|----------------------------|------------------|------------------|----------------|
| 141-143<br>N= 19           | 13(68.42%)       | 3(15.78%)        | 3(15.78%)      |
| 144-146<br>N=48            | 19(39.58%)       | 16(33.33%)       | 13(27.08%)     |
| 147-149<br>N= 121          | 13(10.74%)       | 6(4.95%)         | 102(84.30%)    |
| 150-152<br>N= 181          | 3(1.66%)         | 10(5.52%)        | 168(92.82%)    |
| Total (N= 369)             | 48(13%)          | 35(9.48%)        | 286(77.52%)    |

Although X Ray Pelvimetry has a limited role in the diagnosis of cephalopelvic disproportion and is considered obsolete nowadays. We, however did it in some cases due to poor financial circumstances of the patient and in some emergency cases presenting in early labour in the evening times where facilities for CT Pelvimetry was not available in our Hospital. But we did not decide the mode of delivery solely on the basis of X Ray Pelvimetry findings unless the pelvis was clinically inadequate

When we looked at the relation of different heights with the mode of delivery within our study group, we found that at the height below 148 cm the rate of operative delivery, both instrumental and cesarean section was drastically increased supporting the fact that as the height of the mother decreases the rate of cesarean section rises. This fact has been confirmed in a number of studies.<sup>2,4,10,14,16,20</sup>

In Pakistan so far no study has been conducted to identify the relation between height and mode of delivery. So a cut off point for height below which the risk of cesarean section increases has never been identified. We selected a cut-off point based on the average height of women in our population which falls between 145 to 165 cm. More data about the anthropometric measurement in the Pakistani pregnant women is needed to establish the normal distribution of maternal height in our population.

Since most of the short statured women are favored by nature by producing small babies, fetal weight was not given any consideration in this study. However we feel that wherever possible pelvic capacity should be related to the fetal size while deciding about the mode of delivery.

Rate of emergency caesarean section in our study was 56.09%, the major indication being secondary arrest of cervical dilatation. This is close to the rate (53.2%) reported by Kathleen M Merchant<sup>29</sup>. In majority of cases, cervical dystocia (59.90%) was the indication for emergency cesarean section indicating that there was failure of descent of head and hence no mechanical stimulus/stretch for the cervix to dilate due to inadequate pelvis.

Adequacy of pelvis should be assessed in every short statured primigravida once she reaches term. Clinical pelvimetry should be done in every short statured primigravidae presenting to health care facility at term. In case of any doubt about pelvic adequacy radiological assessment of the pelvis should be done preferably through CT pelvimetry. However in our setup, considering the fact that most of our patients belong to low socioeconomic class, it may not be cost effective in each case. Since labour is the best predictor of pelvic adequacy, unless the pelvis is grossly contracted clinically or radiologically, every primigravida with short stature needs to be given a well monitored trial of labour. In case of any signs of poor labour progression or fetal compromise, a timely decision regarding the preferred mode of delivery should be undertaken, either vaginal delivery or cesarean section.

The results of this study will be shared with other obstetricians and will help in developing a protocol for management of labour and delivery in short statured primigravidae at term.

## CONCLUSION

This study concludes that maternal height is a simple indicator for pelvic adequacy. Short stature is associated with a small pelvis. The risk of cesarean section and instrumental vaginal delivery is higher in short statured primigravidae. Therefore, these women need to be delivered in a health care facility where labour can be monitored closely and timely decision could be taken regarding mode of delivery. This will



help reduce maternal and fetal morbidity and mortality in our country.

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# To Assess Vitamin D Levels in Patients Diagnosed as Fibromyalgia in Patients Attending Dow University Hospital

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## ABSTRACT

**Objective:** To assess the Vitamin D levels in patients diagnosed as fibromyalgia in patients attending Dow University Hospital Karachi.

**Study Design:** Descriptive study

**Place and Duration of Study:** This study was conducted at Dow University Hospital, Karachi from 21<sup>st</sup> January 2013 to 30<sup>th</sup> December 2013.

**Materials and Methods:** 83 patients were selected from the outpatient department of medicine OPD. **Results:** among 83 patients who were enrolled in the study 60 (72.71%) were male and 23 (27.71%) were females ages were between 7 and 70 years. the vitamin D levels ranged between 2 and 58 with mean vitamin D level found to be 12.58 which is counted as moderate deficiency.

**Results:** 83 patients with fibromyalgia were included in study. Among them who were enrolled in the study 60 (72.28%) were male and 23 (27.71%) were females. The subjects included in study age between 17 and 70 with mean age of 39.69 years. The fibromyalgia was gauged on clinical assessment. Vitamin D levels were classified. Vitamin D levels ranged between 2 and 58 with mean 12.58. As objective of study to assess vit D levels in diagnosed fibromyalgia patients in our population it was found that relationship between two parameters is significant.

**Conclusion:** Vitamin D deficiency is frequently diagnosed in patients with fibromyalgia and nonspecific musculoskeletal pain in study population.

**Key Words:** Vitamin D deficiency, fibromyalgia, musculoskeletal pain.

## INTRODUCTION

Fibromyalgia (FM) is a common chronic widespread pain disorder that has a worldwide prevalence of between 0.5% and 5%.<sup>1</sup> In 1990 American college of rheumatology (ARC) gave criteria that helped to increase the recognition and classification of the disorder as: At least 3 months of widespread pain defined as axial pain and pain above and below the waist and on the right and left sides of the body. Pain in 11 of 18 tender point sites determined by digital palpation.<sup>2,5</sup> In 2010, the ACR accepted a clinical case definition to diagnose the disorder: 1. Widespread pain index (WPI)  $\geq 7$  and symptom severity (SS) scale score  $\geq 5$  or WPI 3 - 6 and SS scale score  $\geq 9$ . 2. Symptoms have been present at a similar level for at least 3 months.<sup>3</sup> The patient does not have a disorder that would otherwise explain the pain.<sup>3,4</sup> Comparing to 1990 criteria this criteria did not include a physical or tender point examination, but required that other disorders that would otherwise explain the pain are ruled out. The proposed criteria taking into account other fibromyalgia symptoms besides pain and are intended to also assess fibromyalgia symptom-related severity. Vitamin D

deficiency is a common problem in Middle Eastern as well as Bangladeshi, Indian, and Pakistani populations.<sup>5</sup> Vitamin D deficiency is defined by most experts as 25-Hydroxy Vitamin D level less than 20 ng/ml (50 nmol/ml).<sup>7,8</sup> With the use of such definitions, it has been estimated that one billion people worldwide have Vitamin D deficiency or insufficiency.<sup>9</sup> Fibromyalgia as well as non-specific muscle diseases is associated with vitamin D deficiency.<sup>6</sup> Studies of fibromyalgia and persistent nonspecific musculoskeletal pain have found that a low level of vitamin D is common.<sup>10</sup> As Vitamin D plays an important role in nonspecific musculoskeletal pain and fibromyalgia, and it has also been described in previous studies that fibromyalgia patients were found to have vitamin D deficiency.<sup>10,11</sup>

## MATERIALS AND METHODS

This is a descriptive study data was obtained from medicine OPD at Dow University of Health Sciences, Karachi from the period of January 1<sup>st</sup> 2013 to 30<sup>th</sup> June 2013. Informed consent was taken from the patients. Pretested self-administrated questionnaire was used to collect data. 83 patients diagnosed with fibromyalgia were sent to the laboratory to check vitamin D levels.

After aseptic measures 5ml blood was drawn. The serum 25-ohd concentrations was measured by electrochemiluminescence method. The reference range for 25-ohd was = or > 30 ng/ml as normal, vitamin d deficiency was defined as serum 25-ohd levels < 20 ng/ml while a level between 20.1-20.9 ng/ml was defined as insufficiency. The data was entered in SPSS and analyzed using SPSS version 19, p value at 95% confidence interval was calculated with <0.05 taken as significant. Female patients diagnosed as fibromyalgia according to ARC criteria with normal CBC, ESR, serum calcium, phosphate and alkaline phosphates were included in the study. Females with history of systemic illnesses, history of surgery and hospitalization in last 1 year. Females on hormone replacement therapy, glucocorticoids, bisphosphonates and other drugs affecting bone mineralization were excluded from the study.

## RESULTS

83 patients with fibromyalgia were included in study. Among them who were enrolled in the study 60 (72.28%) were male and 23 (27.71%) were females. The subjects included in study age between 17 and 70 with mean age of 39.69 years (table 1). The fibromyalgia was gauged on clinical assessment. Vitamin D levels were classified (table 2). Vitamin D levels ranged between 2 and 58 with mean 12.58 (table 3). As objective of study to assess vit D levels in diagnosed fibromyalgia patients in our population it was found that relationship between two parameters is significant.

**Table No. 1: Mean age of patients**

| Mean  | Standard Deviation | 95% Confidence Interval |       |
|-------|--------------------|-------------------------|-------|
|       |                    | Lower                   | Upper |
| 39.69 | 14.42              | 35.54                   | 42.84 |

**Table No. 2: Vitamin D levels classification**

|                                      |          |
|--------------------------------------|----------|
| Normal vitamin D level               | >30      |
| Mild vitamin D deficiency            | 15 to 20 |
| Moderate vitamin D deficiency levels | 11 to 15 |
| Severe vitamin D deficiency level    | <10      |
| Vitamin D toxicity                   | >150     |

**Table No.3: Mean Vitamin D level**

| Mean  | Standard Deviation | 95 % Confidence Interval |       |
|-------|--------------------|--------------------------|-------|
|       |                    | Lower                    | Upper |
| 12.58 | 11.58              | 10.19                    | 14.97 |

## DISCUSSION

Fibromyalgia is a complex problem which has revealed symptoms of low levels of Vitamin D along with anxiety and depression<sup>12</sup>. Vitamin D controls over 200 genes and it plays a pivotal role for development and growth of the body. In Pakistan the prevalence of Vitamin D deficiency is on account of poor diet,

cultural practices and poverty. Lack of exposure to sunlight is the major cause of Vitamin D. Every food does not naturally contain Vitamin D and the one that does contain is not adequate to meet the requirements of adults and children alike<sup>13,14</sup>. Our observations revealed that of 83 patients, 63 (75.9%) had vitamin D deficiency (fibromyalgia) and 20 (24.9%) had vitamin D insufficiency. The patients exhibiting vitamin D deficiency were mostly less than 40 years of age. One study does reveal that younger patients are more vulnerable to Vitamin D deficiency<sup>15</sup>. In our study the mean age of patients with decreased levels of vitamin D was 39.69 which is consistent with the findings of another local study<sup>16</sup>. Similar results were seen in a study conducted in India which showed prevalence of vitamin deficiency to be of 70%-100% with no difference of prevalence of in rural or urban population<sup>24</sup>.

Vitamin D levels below normal are found to be linked with nonspecific musculoskeletal pain (R) the results of which are similar to our study. Plotnikoff GA et al suggests that physicians should disregard lab reports lower limit range and that the serum level of vitamin D should be at least 20ng/ml<sup>17</sup>. Holick et al suggested that vitamin D deficiency can be treated by administering the patient to an oral dose of Vitamin D of 50,000 IU once a week for 56 days<sup>18</sup>. One study conducted revealed that despite abundant sunlight all the year round, subjects with serum 25 hydroxy vitamin D levels below 10 ng/ml revealed normal serum calcium concentration<sup>19</sup>.

Vitamin D deficiency has also been found to be related to cardiovascular diseases<sup>20</sup> which may serve as evidence towards linking of hypo-vitaminosis to fibromyalgia. More over vitamin D deficiency has been linked with inflammatory reactions, increased stores of calcium in coronary artery, impaired function of endothelium and increased vascular stiffness.<sup>22</sup>

The use of vitamin D and calcium supplementation has been found to reduce the risks of fractures in appropriately given doses. However, benefit or harm of vitamin D supplementation for prevention of cancer has not been clarified<sup>21</sup>. In a study that was conducted to see the effects of vitamin D supplementation on diffuse musculoskeletal pain found vitamin D supplementation to be associated with decreased pain scores and improved quality of life.<sup>23</sup>

Our study showed that large number of patients was in the hypovitaminosis range.

Patients revealing myositis, fibromyalgia and chronic fatigue should be considered for Vitamin D deficiency and osteomalacia. Health professionals should be well educated and trained, whereas awareness should be created amongst the masses highlighting the severity of the matter. Increased skin pigmentation, ageing and obesity are all associated with vitamin D levels.

There is a need for a prospective long term study to provide stronger evidence regarding the true prevalence and association of vitamin D deficiency in patients with fibromyalgia.<sup>24</sup>

## CONCLUSION

Vitamin D deficiency is frequently diagnosed in patients with fibromyalgia and nonspecific musculoskeletal pain in our population hence health professionals should be well educated and trained, whereas awareness should be created amongst the masses highlighting the severity of the matter.

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# Attitude and Perception of Oral Health Problems in Pregnant Women

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## ABSTRACT

**Objective:** The objective of this study was to assess attitude towards oral and dental health during pregnancy and to examine their self-care practices in relation to oral and dental health.

**Study Design:** cross-sectional descriptive and analytical study

**Place and Duration of Study:** This study was conducted at the Jinnah Medical & Dental College, Karachi from January 2013 to September 2013

**Materials and Methods:** This was a cross-sectional descriptive and analytical study conducted at the Jinnah Medical & Dental College Karachi (JMDC). The study group comprised of 118 pregnant women attending the Jinnah Medical & Dental College OPD from January 2013 to September 2013 using convenience sampling method. A 15 item questionnaire was used, after it was pre-tested and validated. The data entry was done by the house officers of JMDC. Statistical analysis was done using SPSS version 16.

**Results:** 65% of the total patients were found to have dental caries on overall intraoral examination out of these 52% patients had pain on percussion. 44% of the patients presented with gingivitis and bleeding on probing while 21% presented with clinical periodontitis with mobility. 22.8% of the pregnant women presented with gingival enlargements out of which 13.55% had localized while 9.3% had generalized gingival enlargements. 62% of the pregnant women said they brush twice daily while 27% brush once daily only 3% women said that they brush their teeth occasionally. None of them did flossing. Only 10% of the women had regular dental checkups after every six months.

**Conclusion:** This study observed the oral health care practices of the pregnant women. The study highlighted the lack of awareness of maintenance of oral health. Intensive oral and dental health education in pregnancy can lead to improved oral and dental health, and ultimately safe pregnancy outcomes.

**Key Words:** Pregnancy, Oral health care, Attitudes, Perception.

## INTRODUCTION

Oral hygiene maintenance and regular dental checkups are important factors for prevention of complications like; gingivitis, periodontitis and tooth loss. Unfortunately oral health is ignored in majority of population due to lack of education, poverty and lack of awareness programs.

Good oral hygiene is often overlooked during pregnancy.<sup>1</sup> A number of periodontal changes including; bleeding gums, gingivitis, localized or generalized gingival enlargement may be seen during pregnancy.<sup>2</sup> This is caused by hormonal alteration during pregnancy. Hormones like progesterone and estrogen may affect the metabolism, immunology and size of blood vessels all leading to periodontal problems.<sup>3</sup> The gingivitis which is caused by the hormonal changes in pregnancy is known as pregnancy gingivitis.<sup>4</sup> Neglecting oral hygiene during pregnancy may result in caries progression and tooth ache.

The objective of this study was to assess attitude towards oral and dental health during pregnancy and to examine their self-care practices in relation to oral and dental health. The problem is well recognized but only

a limited work is done locally. This study was carried out at the Jinnah Medical and Dental College, Karachi.

## MATERIALS AND METHODS

This was a cross-sectional descriptive and analytical study conducted at the Jinnah Medical & Dental College Karachi (JMDC). The study group comprised of 118 pregnant women attending the Jinnah Medical & Dental College OPD from January 2013 to September 2013 using convenience sampling method. A 15 item questionnaire was used, after it was pre-tested and validated. The data entry was done by the house officers of JMDC. Statistical analysis was done using SPSS version 16.

## RESULTS

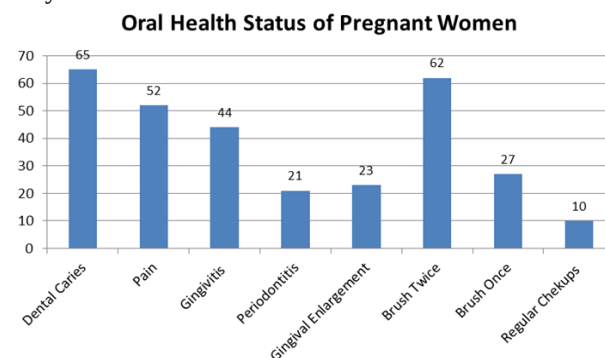
65% of the total patients were found to have dental caries on overall intraoral examination out of these 52% patients had pain on percussion.

44% of the patients presented with gingivitis and bleeding on probing while 21% presented with clinical periodontitis with mobility 22.8% of the pregnant women presented with gingival enlargements out of

which 13.55% had localized while 9.3% had generalized gingival enlargements.

62% of the pregnant women said they brush twice daily while 27% brush once daily only 3% women said that they brush their teeth occasionally. None of them did flossing. Only 10% of the women had regular dental checkups after every six months.

13% of the women had a habit of using betel nuts while only 3% consumed smokeless tobacco.



## DISCUSSION

Routine dental care such as brushing at least twice daily, use of floss, brushing after meals, and dental checkup at least twice a year was found to be poor among the pregnant women in this study. In our study 62% of the pregnant women said they brush twice daily while 27% brush once daily only 3% women said that they brush their teeth occasionally. None of them did flossing. Only 10% of the women had regular dental checkups after every six months in comparison with a postnatal survey conducted in Australia,<sup>5</sup> 16.4% of pregnant women did not receive dental care at least twice yearly. This raises serious concerns as pregnant women may need extra oral and dental care due to susceptibility to gum disease during pregnancy. Studies have shown that gum disease may contribute towards the birth of low birth weight babies and premature births.<sup>6,7,8</sup>

In our study 65% of the total patients were found to have dental caries on overall intraoral examination out of these 52 patients had pain on percussion. This may be due to the fear of getting the dental treatment during pregnancy may harm the fetus. The new research data shows women should not fear any dental intervention during pregnancy; indeed, specialists believe that common treatment during pregnancy is not harmful for pregnant women or the unborn baby.<sup>9</sup>

44% of the patients presented with gingivitis and bleeding on probing while 21% presented with clinical periodontitis and mobility, pregnant women are more susceptible to periodontal disease like gingivitis because of female reproductive hormonal influences.<sup>10</sup>

In this study 22.8% of the pregnant women presented

with gingival enlargements out of which 13.55% had localized while 9.3% had generalized gingival enlargements. Gower in his study described that the hormonal imbalance coincident with pregnancy heightens the organism's response to irritation; however, bacterial plaque and gingival inflammation are necessary for subclinical hormone alterations leading to gingival enlargement.<sup>11</sup>

13% of the women had a habit of using betel nuts while only 3% consumed smokeless tobacco. Knowledge intervention in this area might be necessary.

This study shows that proper education on oral and dental healthcare among the pregnant women may lead to correct practice of oral and dental health. Pregnancy is a time when women may be more motivated to make health changes. Therefore, maintaining good oral health during pregnancy is important, apart from reducing the risk of adverse pregnancy outcomes, but it also improves general health of both the mother and her infants.<sup>12</sup>

## CONCLUSION

This study observed the oral health care practices of the pregnant women. The study highlighted the lack of awareness of maintenance of oral health. Intensive oral and dental health education in pregnancy can lead to improved oral and dental health, and ultimately safe pregnancy outcomes.

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