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Mortality and Morbidity in Hospitalized Preterm Neonates

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Original Article

MORTALITY AND MORBIDITY IN HOSPITALIZED PRETERM NEONATES

Tayyaba Khawar Butt and Zahid Anwar

Objective: To determine pattern of morbidity and mortality in hospitalized preterm neonates.
Material and Methods: All preterm babies presenting to the Neonatology Ward of Services Hospital except those with major congenital malformations were selected for the study. A predesigned proforma was used to record clinical data on presentation. This included physical characteristics like gestational age, weight, gender, presenting complaints. The profroma was updated on daily basis to make note of any clinical problems or complications arising during the course of hospital stay till outcome (discharge, leave against medical advice or death). Note was made of respiratory complications, infections, metabolic, neurological and hematological problems and complications related to feeding and weight gain. The data was subsequently computed and analyzed using SPSS (Statistical Package for the Social Sciences) version 14 by the authors.
Results: Three hundred and one preterm babies ranging in gestational age from 22 to 36 weeks (mean 31.2 SD +/- 2.9) were included in the study. The overall mortality was 53.8%. Survival was significantly better in more mature, larger babies and those who could be started successfully on enteral feed. Most deaths were encountered within the first 7 days of admission. The chances of survival increased significantly with longer duration of admission. There was no significant difference in mortality between males and females. Respiratory distress was the commonest admitting complaint seen in 46.5% cases. During hospital stay respiratory problems (requiring varying degree of ventilatory support) were seen most frequently, followed by metabolic complications and infection related morbidity.
Conclusion: Prematurity is associated with significant mortality and morbidity seen in hospitalized neonates.
Key words: Preterm, Hospitalized, Mortality and Morbidity.

Introduction

While the infant mortality rate in Pakistan has declined from 124/1000 live births in 1990 to 87 in 2010, the neonatal mortality rate has remained almost unchanged (51 vs 41) during this period. Neonatal mortality in Pakistan accounts for 57% percent of under 5 mortality.[1] It is evident that achieving Millennium Development Goal 4 would not be possible unless neonatal mortality is addressed.[2] Prematurity, neonatal infections and perinatal asphyxia is one of the three main causes of neonatal mortality.[3,4] The burden imposed by preterm babies in terms of contribution to neonatal morbidity and mortality in Pakistan remains largely undetermined. The magnitude of this problem needs to be evaluated before appropriate steps may be taken to improve survival of this high risk group of newborn babies.

Methodology

This observational study was carried out in the Neonatal Unit of Services Hospital, Lahore over a 8 month period from 1st March 2010 to 31st October 2010. All neonates born at or before 36 weeks of completed gestational age were included in the study. Babies with major congenital malformations and those in whom gestational age could not be ascertained for any reason were excluded from the study. Gestational age was calculated using either last LMP (last menstrual period), dating scan record or Ballards Score. The latter was used where information by first two methods was either unavailable or of doubtful accuracy. Ballards Score was done within the first 48 hours of admission.

Information regarding weight, sex, age on admission, clinical course and problems arising during stay were recorded on a predesigned proforma that was updated on daily basis until outcome (discharge, death of left against medical advice). Statistical analysis was carried out using the SPSS 14 programme. P value using Chi-square test was calculated where applicable and was considered as significant if <0.05.

Results

A total of 301 babies were included in the study. This included 174 (57.8%) males and 125 (41.5%) females. There were two (0.66%) babies who had ambiguous genitalia and died before sex could be ascertained. Overall 124 (41.2%) babies survived and 15 (5%) left against medical advice (Figure-1Outcome). Cases ranged in gestational age from 22 to 36 weeks (mean 31.23; SD ±2.896). The mean weight of the cases was 1457 grams (range 600-3300 grams; SD ± 474 grams). The age at admission ranged from 1-27 days with mean age of admission of 2.36 days. The mean duration of stay on the unit was 7.95 days (range 1-52 days).

The commonest presenting complaint was respiratory distress which was seen in 46.5% of admissions. Fifty nine (19.6%) babies were brought to the hospital for care without a specific complaint. This was either on advice of the birth attendant or because the parents themselves felt that it was unsafe to keep the baby at home. Other presenting complaints in order of frequency were: cyanosis (10.3%), delayed/ weak/ absent cry at birth (8%), poor feeding (6%), lethargy (4.3%), seizures (2.7%), bleeding (0.3%) and other causes (2.3%) (Figure 2 Presenting Complaint). During the course of stay 266 (88.4%) required supplemental oxygen (Table 1 Morbidity). One hundred and fourteen (37.9%) required nasal CPAP (continuous positive airway pressure) at some point during their stay while 62.1% needed mechanical ventilation (either manual ambubagging or ventilator). Because of limited number of available ventilators many babies requiring mechanical ventilator had to be intubated and hand bagged. Other respiratory complications encountered during hospital stay included pneumonia (3.3%), pulmonary hemorrhage (6%), pneumothorax (0.7%). Apnoea of prematurity defined as apnoea with bradycardia responding to tactile stimulation or bagging, was seen in 37.5% cases. One hundred and sixty three (54.2%) were diagnosed with sepsis on combination of clinical grounds and raised CRP (C-reactive protein value greater than 6 microgram/ml) or band neutrophil ratio (value greater than 0.2). Six babies had spinal fluid findings compatible with meningitis. Positive blood culture was seen in 8 cases. Organisms isolated included Klebsiella, Pseudomaonas, E.coli, Coagulase negative staphylococci and Candida. During the course of their stay 25.9% needed packed cell transfusions because either the baby's hemoglobin levels fell below 8 mg/dl or with higher hemoglobin levels if anemia was considered clinically significant. Thirty five (11.6 %) cases had thrombocytopenia warranting platelet transfusion (platelet counts less than 30,000/ml in asymptomatic babies or at any level less than 100,000/ml in babies with clinically overt bleeding). Ninety nine (32.9%) babies could not be started on enteral feed because of poor clinical status. Every attempt was made to start enteral feed with breast milk as early as possible. Formula milk was used if breast milk was unavailable or insufficient. Of the 202 cases that were started on enteral feed, exclusive breast milk was available in 79 (39.1%) cases only. This was because in many cases mothers were not present on site. Sixty nine cases out of 202 developed feeding intolerance at some point of their stay necessitating reduction or stopping of feed. Although not statistically significant, exclusive breast milk seemed to confer a better chance of survival (50/79; 63.3%) than mixed or exclusive formula feeding (69/123; 56.09%); lowest survival occurring in those who could not be started on enteral feeding (8/99; 8.1%) ($p<0.000$)

Other problems that were encountered in the study group include metabolic acidosis at some point during hospital stay (41.9%), hyperbilirubenemia warranting treatment predominantly indirect-27.6%, predominantly direct-5.65%), disseminated intravascular coagulation (DIC ; 19.6%), symptomatic hypoglycemia (15.9%), symptomatic hypocalcemia (5.6%), necrotizing enterocoloitis (12%), patent ductus arteriosus (3%) and spontaneous intestinal perforation (1%). Metabolic acidosis was reflective of severity other morbid conditions like infections. All babies had axillary temperature measured at admission using a mercury thermometer. Hypothermia (defined as axillary temperature < 97°F) at admission was seen in more that 41% of babies. Intraventricular hemorrhage was diagnosed by bed side ultrasonography in 40 (13.3%) cases. Fourteen (4.7%) cases had clinical evidence of hypoxic insult at birth. Majority (82.7%) of our patients presented to the hospital at day 1 of age. Forty two babies (42/162; 25.9%) succumbed on day 1 of admission. Majority of deaths occurred within 7 days of admission (121/162; 74.7%). If a baby survived the first 7 days of admission the chance of dying became significantly less ($p<0.005$). Mortality was significantly less with increasing weight ($p<0.00$) and gestational age ($p<0.001$).

Discussion

The neonatal mortality rate for Asia is 24/1000 live

Table-1: Morbidity.

Morbidity	No of Pt's	Percentage
Respiratory		
Pneumonia	10	3.3
Pneumothorax	02	0.66
Pulmonary hemorrhage	18	5.98
Needed oxygen	266	88.4
Required CPAP	114	37.9
Required mechanical ventilation	187	62,.1
Apnoea with bradycardia	113	37.5
Infections		
Sepsis	163	54.1
Meningitis	06	1.99
DIC	59	19.6
NEC	36	11.96
Spontaneous perforation	03	0.99
Metabolic		
Direct hyperbilirubinemia	17	5.7
Hypoglycemia	48	15.9
Hypocalcemia	17	5.7
Hypothemia	125	41.5
Metabolic acidosis	126	40.9
Indirect hyperbilirubinemia requiring therapy	83	27.6
Neurological		
Kernicterus	02	0.66
IVH	40	13.3
HIE	14	4.7
Feeding		
Poor weight gain	52	17.3
Feeding intolerance	69	22.9
Miscellanceous		
PDA	09	2.99
Anemia requiring transfusion	78	25.9
Thrombocytopenia	35	11.6

births. The figure for Pakistan stands at 41/1000 live births. In comparison, the neonatal mortality rate for

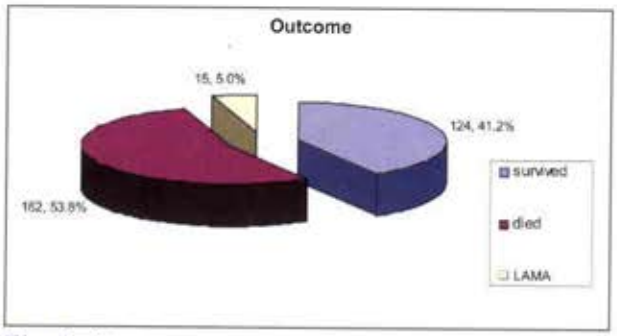

Fig-1: Outcome.

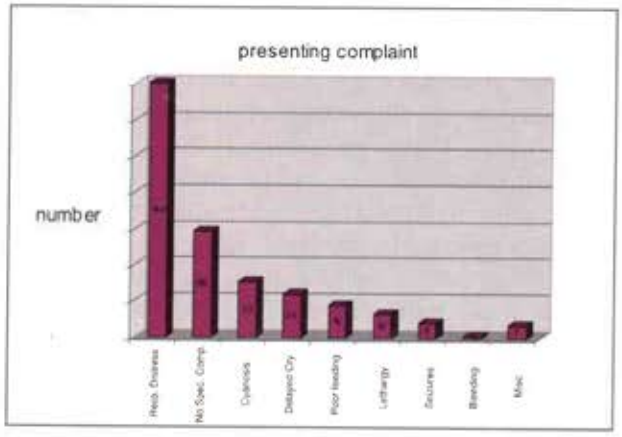

Fig-2: Presenting Complaint.

India is 32 while that for Bangladesh 27/1000 live births. It is therefore clear that Pakistan has failed to keep pace with other countries in the region.[5]

There are many studies looking at the causes of neonatal mortality both locally and globally. Prematurity is consistently quoted as one of the leading contributors to death in newborn babies.[6,7,8,9] Preterm labour was the primary cause of neonatal death in a population based study.[10] Data on cause of death in hospitalized newborns is no different. Prematurity and its complications is a leading contributor to mortality in neonatal units in different regions of the world.[11,12] In our study group 162 (53.8%) babies succumbed. This is in keeping with the high mortality observed in preterm babies in general. Even in centers with advanced care facilities the mortality of 49.5% has been reported.[13]

The higher mortality and adverse outcomes noted in preterm babies is a result of both immaturity per se (low gestational age) and of maternal complications leading to preterm birth in the first place.[14]

Respiratory distress was the commonest presenting complaint in our group. This is in keeping with the high rates of respiratory morbidity noted in other studies. As many as 95% preterm babies were noted

to require endotracheal intubation at birth in a large cohort studied across UK. Upto 61% of survivors had severe bronchopulmonary dysplasia at 36 weeks of post menstrual age.[15] In the same study all but one survivor needed total parenteral nutrition and 8% underwent laprotomy for necrotizing enterocoloitis. We did not have the facility for TPN (total parenteral nutrition) and relied on proactive introduction of enteral feed using preferably breast milk. Formula milk was used under circumstances where breast milk was either unavailable or insufficient. Two hundred and two (67.1%) infants could be started on enteral feed at some point during their stay. The rest were not considered for enteral feed due to poor clinical status. Feeding intolerance was encountered in 69 cases. Thirty six babies (12%) developed necrotizing enterocolitis (NEC) during their stay. This figure is somewhat higher than the 5.1% incidence reported by Yee et al.[16] Reason may be that only 39.1% cases could be given exclusive breast milk as many mothers were not available on site. High rate of infections encountered in our group could be another contributor. Infections in hospitalized preterm along with length of mechanical ventilation were found to be the primary predictors of NEC in preterm infants.[17]

More than half (54.15%) cases were diagnosed with sepsis on a combination of clinical features and raised CRP and/or band neutrophil ratio of more than 0.2. Neonatal infection is the leading cause of admission in many neonatal units across Pakistan[18] and in other countries of the region.[19] Neonates in general and premature babies in particular are at high risk of infections due to functional deficiency of innate immunity. Prematurity is a known risk factor for development of late onset sepsis.[20] Neutrophils display functional immaturity in preterm babies.[21] It is therefore not unexpected that more than 50% of our cases were diagnosed with sepsis. The commonest organisms isolated were gram negative (Klebsiella, E. Coli and Pseudomonas). This is in keeping with data from other centers in Pakistan and other developing countries where a predominance of gram negative organisms have been reported to cause neonatal sepsis[22,23] Culture positivity rate was low in our group. This may be due to intrapartum antibiotics received by the mother, prior to admission use of antibiotics on prescription of general practitioners, or the small volume blood samples used. Similar problems in reporting blood cultures in neonates have been noted by other researchers als.[24] Disseminated intravascular coagulation noted was seen as a mostly as a complication of underlying infection.

Metabolic problems including symptomatic hypoglycemia, hypocalcemia and hyperbilirubinemia (indirect requiring therapy and direct) was noted in 15.9%, 5.7% and 33.2% respectively of our cases. These have been noted in other studies as well and attributed to organ immaturity.[25]

Although not statistically significant, higher percentage of babies fed exclusively on breast milk survived till discharge. Breast feeding is known to confer protection against necrotizing eneterocolitis.[26] The reason why we could not demonstrate a statistical significance may be explained by considering several factors contributing towards mortality were operative in our study group that may have masked the beneficial effect of breast milk.

The highest mortality was noted in the smallest and the most premature babies. This is not surprising as survival increases proportionately with increasing weight and gestation.[15] If a baby survived the first seven days of admission the chances of survival increased significantly. These babies succumbed early may have had greater severity of underlying pathology to begin. Patients who survived beyond 7 days of admission perhaps represented those with pathology of lesser severity at admission. Generally speaking, early neonatal period is associated with greater mortality than late neonatal period. In a population based cohort study researchers found that neonatal mortality with the first 48 hours of life was 45.3%, 28.3% between three and seven and 26.4% between eight and 28 days of life.[14] Our data may be reflective of the same trend in neonatal mortality. Likewise, greater survival in those who could be started on early enetral feed perhaps represents cases that had lesser severity and magnitude of problems to begin with and therefore were capable of tolerating enteral feed. As many as 41.5% babies had hypothermia (axillary temperature <97°F) at admission. The global burden of hypothermia as a contributor to mortaltilty and morbidity in newborns (particularly preterms) as a co morbid condition, even in tropical countries, is often under appreciated. A recent systematic review showed that the prevalence of hypothermia ranged from 32% to 85% in hospital delivered newborns.[27]

Anemia requiring blood transfusion is very common in neonatal intensive care units. Reasons in the critically sick newborn are manifold: suppression of bone marrow, increased destruction of red cells and repeated phlebotomies.[28] Seventy eight (25.9%) of

our cases required at least one packed cell transfusion during their stay. Thirty five (11.63%) babies needed platelet transfusion for thrombocytopenia (without DIC). Thrombocytopenia is also a fairly common hematological problem in NICUs. The over all prevalence of thrombocytopenia in neonatal intensive care patients ranges from 22-35%.[29] Our figure is lower in comparison, perhaps because we have considered only those babies with thrombocytopenia (without DIC) in whom it was significant enough to merit platelet transfusion.

Intraventriclar hemorrhage was noted in 40 (13.29%) of cases. Preterm babies are known to be risk from this complication. This is probably because the premature germinal matrix is vulnerable to hemorrhage. Coagulation deficiency in preterm babies has also been also been postulated to contribute to this problem.[30]

Conclsion

Premature babies represent the most vulnerable group amongst neonatal population. They are at a high risk of mortality and morbidity. Respiratory problems, metabolic immaturity and infections (mainly due to gram negative organisms) including necrotizing enterocolitis are the main causes of morbidity. Chances of survival at discharge increase if the babies survive the first few days of admission and in those who can be started successfully on early enteral feeding.

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Original Article

MANUAL VACCUM ASPIRATOR: A CHANGING TREND

Farhatulain Ahmed, ShumilaYasir and Noor-i-Kiran Naeem

Objectives: To compare manual vacuum aspiration (MVA) and uterine curettage (D&C) for first trimester abortions, in terms of the frequency of complications, incomplete procedure, blood loss, duration of patients' hospitalization and patient satisfaction.

Methods: In a prospective study, 100 patients in the MVA group A and 100 in the D&C group B were randomly included. Inclusion criteria included patients with missed or incomplete miscarriage at gestational age less than 12 weeks calculated from last menstrual period. In case of incomplete miscarriage, endometrial thickness should be more than 16mm on endovaginal scan. Pre evacuation haemoglobin more than 10g/dl, afebrile state. Blood samples were collected before and after surgical procedures for control of hemoglobin levels. . Both groups were evaluated intra and post operatively as regard to: uterine perforation, blood loss (pre and post hemoglobin),pelvic infection, retained products of conception(incomplete procedure) ,duration of hospitalization and patients satisfaction.

Results: Characteristics of the study population at enrollment were similar in two groups regarding age, gestational age in weeks and ultrasonographic parameters and indications for procedure. However more patients in group A are multigravida whereas more patients in group B are either primigravida or para 1 or 2. Both groups showed the same efficiency in emptying of the uterus with 6 incomplete procedures in group A and 4 incomplete procedures in group B (p value>0.05).1 uterine perforation was observed in group A and 3 in group B(p value<0.02).There were 2 cases of pelvic infection in group A and 4 in group B(p value>0.05). In the patients who have undergone the uterine curettage, the duration of hospital stay was on average, 18.32 hours (± 8.01), and in the patients who underwent vacuum aspiration the mean time was 7.12 hours (± 1.44) (p <0.0001). All the patients who had manual vacuum aspiration are satisfied with the modality whereas patient satisfaction rate was 95% in group B who had curettage (p value<0.0001). The decrease in hemoglobin rates was higher in the Group of patients subjected to uterine curettage, i.e. from 12.44mg/dl to 11.39mg/dl as compare to patients subjected to MVA i.e.from12.55mg/dl to 11.92mg/dl (p value<0.0001).

Conclusions: MVA caused less blood loss, was less time consuming, and resulted in shorter hospitalization.

Keywords: Miscarriage, Uterine curettage. Manual vacuum aspiration. First trimester of pregnancy.

Introduction

It is estimated that 40% of all women will end a pregnancy by abortion at sometime in their reproductive life. Spontaneous pregnancy loss occurs in 25% to 50% of pregnancies prior to 14 weeks of gestation.[1] In 2003, about 16 women for every thousand aged 15-44 year had an abortion. For every 1000 live births about 241 abortions were performed according to centre of disease control and prevention. According to WHO in its 2005 World Health Report, "Make every mother and child count", states major cause of maternal mortality with unsafe abortions (13%) at the third number after hemorrhage (25%) and infections (13%). Unintended pregnancy is a major cause of death. World wide unintended pregnancy resulted in 700,000 maternal deaths from 1995 to 2000.[2] The majority (64%) resulted from complications of unsafe or unsanitary abortions. In fact a study carried out in Lahore, revealed a maternal mortality rate of 4.17% due to induced miscarriages by untrained persons or in unsanitary conditions.[3]

Women experiencing complications from spontaneous or unsafely induced abortions have the right to receive high quality health care services. Once a pregnancy loss has been diagnosed, there are three forms of management: Expectant, Medical and Surgical.[1] Expectant management means leave to nature and let the process of abortion start and complete by itself.

Medical management for first trimester abortion includes use of mifepristone and methotraxate in combination with misoprostol. The perceived benefit of medical abortion are the abilities to avoid surgery and its discomfort and associated morbidity.[4] Even though medical management has been well accepted by patients, its routinely requires multiple visits and the need for unplanned after hours intervention is not uncommon. The rate of successful medical abortion are 90-98%for less than 6 weeks of gestation, 89-98% at 7 weeks of gestation, 82%-96% at 8 weeks of gestation and 60% at greater than 8 weeks of gestation.[5,6,7] In developing counties including Pakistan where mifepristone is not available and methotraxate is not used in routine because of its side effects and patients compliance in view, misoprostel alone is used in routine for medical management of abortions with success rate of 50.4%.[8,9] Surgical methods include dilatation and curettage and manual vaccum aspiration. Dilatation and curettage refers to dilatation of cervix and surgical removal of contents of uterus by scrapping and scooping (curettage) under general anesthesia.

Whereas the MVA is a technique of suction curettage performed using a hand held syringe attached to a uterine catheter.[10] It uses aspiration to remove uterine contents through the cervix. It is done as an outpatient procedure avoiding general anesthesia and hence prolonged hospital stay when compared to conventional dilatation and curettage. Post treatment care includes a brief observation in recovery area and discharge with follow up appointment. MVA, when used in early pregnancy losses, has lower complications as compared to Dilatation and curettage and is 98% effective in removing all uterine contents. Trials have shown that MVA is associated with significant decreased blood loss, less pain, shorter procedure time and stay in hospital.[11] Major complications like perforation and sepsis are even lower as compared to sharp curettage.

In most developed countries, MVA has replaced sharp metal curettage, but in many developing countries, physicians continue to use sharp curette because they are not trained in vaccum aspiration or do not have necessary equipment. Many studies have documented the safety of vaccum aspiration and WHO includes it as an essential obstetric service at the first level of care. (WHO 1991)

Material and Methods

The study was carried out on 200 patients with missed or incomplete first trimester abortions admitted to Fatima Memorial Hospital, Shadman, Lahore from January 2010 to December 2012. 100 were subjected to manual vaccum aspiration (Group A) and another 100 were subjected to conventional dilatation and curettage or evacuation and curettage (Group B).

Inclusion criteria included patients with missed or incomplete miscarriage at gestational age less than 12 weeks calculated from last menstrual period. In case of incomplete miscarriage, endometrial thickness should be more than 16mm on endovaginal scan. Pre evacuation haemoglobin more than 10g/dl. Blood group was done so one can give Anti-D accordingly. In order to rule out septic abortion axillary temperature was recorded. Exclusion criteria included haemoglobin less than 10g/dl, heavy vaginal bleeding, suspicion of gestational vaginal disease and previous cesarean section. The study followed a quasi experimental randomized trial design. Patients were divided into two groups (group A MVA, group B D&C) using a simple random sampling method. Both groups were evaluated intra and post operatively as regard to: uterine perforation, blood loss (pre and post hemoglobin), pelvic infection, retained products of conception (incomplete procedure), duration of hospitalization and patients satisfaction. Those who were allocated randomly to group A were treated by MVA after systemic analgesia (intramuscular diclofenic sodium) or sedation (intravascular buperonmaxalon). I PAS MVA with flexible cannula 4, 5,6,7,8,9,10 & 12 were used. Group B patients were treated under general anesthesia by standard D&C or E&C and standard procedure was performed. Both groups were discharged on doxycycline (200mg bd for 7days) for cover of chlymidial infection and analgesics were prescribed on SOS basis. Patients were asked for a follow up after 2wks and were asked about vaginal bleeding (to rule out RPOC's and a scan was planned to confirm the diagnosis) fever and offensive discharge (pelvic infection), use of analgesics and satisfaction rate. Satisfaction was assessed by asking the patient if she would prefer the procedure again if, unfortunately, she has a miscarriage again in life or would she recommend the procedure to her friends and family in case of miscarriage.

Results

The duration of hospital stay is significantly different between the two groups. In the patients who have undergone the uterine curettage the duration of hospital stay was on, on average, 18.32 hours (± 8.01), and in the patients who underwent vacuum aspiration

Table-1: Demographic characteristics of study population.

	Group A(MVA) n=100 Mean±SD	Group B (D&C) n=100 Mean±SD	P-Value
Age (years)	26.65±6.8	27.50±6.9	0.38
Parity n (%)	n (%)	n (%)	
0	29 (29)	33.(33)	<0.0001
1	15 (15)	18 (18)	<0.0001
2	35 (35)	38 (38)	0.0008
>3	21 (21)	11 (11)	<0.0001
Gestational age (wks) mean±SD	9.73±2.6	9.93±2.4	0.71
Indications for procedure)	n (%)	n (%)	
Incomplete	63 (63)	58 (58)	0.051
Missed	37 (37)	42 (42)	0.040
Ultasonographiic parameters	Mean=SD	Mean=SD)	
Gestational age on scan (weeks)	7±3	6.7±2.8	0.767
Endometrial thickness (mm)	22.14±4.8	22.68±5.68	0.65

P value<0.05 is considered significant

Table-2: Outcome measures.

	Group A(MVA) n=100 n (%)	Group B (D&C) n=100 n (%)	P-Value
Uterine perforation	1 (1)	3 (3)	< 0.02
Pelvic infection	2 (2)	4 (4)	0.700
Incomplete procedure	6 (6)	4 (4)	0.516

P value <0.05 is considered significant

Table-3: Secondary outcome measures.

	Group A n=100	Group B n=100	P-Value
Duration of hospital stay (hours)	7.12±1.44	18.32±8.01	<0.0001
Patient santisfaction	Group A	Group B	
Yes	100 (100%)	95 (0%)	<0.0001
No	0 (0%)	5 (5%)	

P value<0.05 is considered significant

the mean time was 7.12 hours (±1.44) (p <0.0001). All the patients who had manual vacuum aspiration are satisfied with the modality whereas patient satisfaction rate was 95% in group B who had curettage (p value<0.0001) The decrease in hemoglobin rates was higher in the Group of patients subjected to uterine curettage, i.e. from 12.44mg/dl to 11.39mg/dl as compare to patients subjected to MVA i.e.from12.55mg/dl to 11.92mg/dl(p value<0.0001)

Discussion

At our hospital, as in most public hospitals, the most commonly used method for treatment of incomplete and missed abortion in the first trimester (up to 12 weeks gestation) is the emptying of the uterus by curettage, under general anesthesia, or medical termination. The risks of anesthetic and surgical procedure as well as the exposure of patients to infection by staying in hospitals, can contribute to increasing morbidity and maternal mortality and

hospital costs. Medical methods if fails often leads to D&C and thus patient often refuses it on this basis or is less satisfied with this method.

Vacuum aspiration is safer than sharp curettage, and the WHO recommends vacuum aspiration as the preferred method for uterine evacuation before 12 weeks of pregnancy.[12] With regards to the safety and adverse effects of two treatment modalities, MVA was found safer than EVA. one uterine perforation occurred in MVA group versus three perforations in EVA group. This may be attributable to flexible, soft and easy to handle cannula used in MVA versus metallic hard and non flexible cannula in EVA. Review of literature in this regard shows a uterine perforation rate of 0.06% for MVA.[13] The overall early complication rate (hemorrhage, uterine perforation, cervical injury) is between 0.01 and 1.16%.[14] The MVA is associated with the small number of complications i.e. uterine perforation.[15,16]

Westfall et al. used MVA for treatment of incomplete abortions and demonstrated effectiveness of 99.5% with no major complications.[13] various studies have confirmed safety of MVA.[16,17] Minor complications seen in our study, have been reported in 0.7%-2% cases.[18,19] Infection being the commonest among these. In our study infection is in 2 patients in MVA group as compare to 4 patients in D&C group.

Complete evacuation rate with single intended modality was 94% for MVA vs 96% for D&C. Other studies comparing MVA with other surgical methods have shown similar success rates, 95.2% vs. 97.6% and 98% vs. 95% respectively.[20,21] A meta analysis based on the results of 10 studies involving 1660 women have shown no significant difference between the two methodologies in terms of complete abortion rate.

The emptying of the uterus by manual vacuum aspirator is presented as an alternative therapy, with the advantage of replacing the general anesthesia for pain relievers or paracervicalblock, which shorten hospital stay and reduce the cost of the procedure.[22,23]

It has been observed decrease in hemoglobin rates after both procedures, being greater in the Group of patients subjected to uterine curettage.[24,25]

In the present study, the average time for the emptying of the uterus by curettage was greater than in the group treated with MVA (2.5 times higher), result, therefore, in agreement with other studies.[16]

Also, in this study, we have seen that the length of stay in hospital was different between the two groups; the patients subjected to manual vacuum aspirator were interned, on average, 7 hours while the patients who underwent D & C were retained for 18 hours (on average). In our study the satisfaction rate with manual vacuum aspirator is 100% whereas in D&C group it is 95 %.in different studies conducted worldwide manual vacuum aspirator is associated with high satisfaction rates.[28,29]

MVA has been used worldwide for more than 30 years and has been a safe and effective procedure for the management of early pregnancy loss.[30] This method is faster, safer, more comfortable, and associated with shorter hospital stay for induced abortion than sharp curettage.[31] Additional advantages compared with sharp curettage are its ease of use as an outpatient procedure, the need for less analgesia and anesthesia,[32] and its lower cost per procedure especially if done on an outpatient basis.[33] In countries with a small number of physicians, vacuum aspiration can be safely and effectively used by mid-level health service providers, such as midwives.[34] despite being simple, inexpensive and easy to handle tool, its use in most of the hospitals is restricted due to unfamiliarity of the clinicians with its use. A high success rate with no major complications with MVA provides evidence that the technique is safe and easy to learn.

Conclusion

MVA cause less blood loss, is less time consuming, and results in shorter hospitalization. However, both surgical procedures were found to be equally in treatment of incomplete abortions during the first trimester of pregnancy success full.

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Original Article

PERVIOUS CESAREAN BIRTH: A RISK FACTOR FOR PLACENTA PREVIA?

Afshan Ambreen, Samina Khurshid, Ayesha Intsar and Misbah Khurshid

Objective: To compare the risk of Placenta Previa among women who had a pervious cesarean section with women who delivered vaginally.

Material and Methods: Retrospective cohort study. Study analysed available data from department of Obstetrics & Gynecology Fatima Memorial Hospital Lahore. Two Years, July 2010 to July 2012.

Results: Total 56 patients with all types of Placenta Previa were included in the study. Mostly patients were between 26-30 years age. Twenty patients were after normal delivery and 36 were after lower segment caesarean section.

Conclusion: There is an increased risk of Placenta Previa in the subsequent pregnancy after lower segment caesarean section as compared to a normal vaginal delivery.

Key words: Placenta Previa, lower segment caesarean section, hemorrhage.

Introduction

The placenta is an organ which provides the fetus with oxygen and nutrients and takes away wastes such as carbon dioxide via the umbilical cord. It is said to be previa if it is abnormally implanted over or near the internal cervical os .It remains one of the leading causes of major obstetric hemorrhage which is the most common cause of maternal mortality and morbidity and is a risk factor for various maternal complications.[1] Overall prevalence rate for placenta previa is about 4 per 1000 live births[2] and varies with parity. For nulliparous it is 0.2% while for grand multiparous it is 5%. Incidence of hysterectomy after caesarean section for placenta previa is 5.3%.[3] Perinatal mortality rates are 3 to 4 times higher than in normal pregnancies.[4,5] Risk factors for placenta previa include prior caesarean delivery, pregnancy termination, intrauterine surgery, smoking, multifetal gestation, increasing parity and maternal age.[6]

The usual presentation is painless vaginal bleeding. Transvaginal ultrasound is preferred method for accurate localization of a low lying placenta and 60% of women who undergo transabdominal ultrasound may have re-classification of placental position when they undergo transvaginal ultrasound.[7-10] It has positive predictive value of 93.3% making it gold standard for diagnosis of placenta previa.[11] The maternal complications of placenta previa include major haemorrhage, shock and DIC, renal failure, placenta previa accreta, anaemia, infection and maternal mortality while the fetal complications include prematurity and risk of fetal anaemia.

Placenta previa can have serious consequences most important one being abnormal placental growth into the uterus which can result in morbidly adherent placenta which maybe placenta accreta, increta or percreta and is associated with severe maternal morbidity. Its increased incidence in recent years is due to increase in the caesarean section rates.[12,13] With one previous caesarean section risk of placenta accrete is 25% while for previous two caesarean sections it is 40%.[14,15] Hence placenta previa is one of the leading causes of major maternal mortality and morbidity and requires proper clinical and ultrasound diagnosis to decrease incidence of major maternal as well as fetal complications.

Material and Methods

Retrospective cohort study. Study analyzed available data from department of Obstetrics & Gynecology Fatima Memorial Hospital Lahore. Two years, July 2010 to July 2012.

Results

Total 56 patients with all types of Placenta Previa were included in the study. Mostly patients were between 26-30 years age. Twenty patients were after normal delivery and 36 were after lower segment caesarean section. As in our study 64% of the patients with placenta previa have previous lower segment cesarean section. Maximum no. of cases of Placenta Previa are reported after previous I and Previous II lower segment cesarean section i.e. 35.7% and 30.35% respectively. Our study has demonstrated that in addition to women with previous cesarean section, women with advanced maternal age, women with birth interval less than 1 year and women who had a previous placenta previa are at a higher risk of

developing placenta previa.

Table-1: Distribution of cases according to pervious cesarean ratio.

Previous Cesarean Section	No. Of Patients	Percentage
Yes	36	64.2
No	20	35.7
Total	56	1000

Table-2: Distribution of cases according to pervious Placenta Previa.

Previous Placenta Previa	No. Of Patients	Percentage
Yes	31	55.35
No	25	44.6
Total	56	1000

Table-3: Distribution of cases according to maternal age.

Maternal Age	No. Of Patients	Percentage
< 20	09	16.07
20 - 29	14	25
To30 - 39al	31	55.35
> 40	02	3.571
Total	56	1000

Table-4: Distribution of cases according to inter-birth interval.

Inter-Birth Internal	No. Of Patients	Percentage
< 1 Year	26	46.4
1 - 2	08	14.2
2 - 3	05	8.9
3 - 4	04	7.14
>3	13	23.2
Total	56	1000

Table-5: Distribution of cases according to No. of Previous Lower Segment Cesarean Section.

No. Of Previous Cesarean Section	No. Of Patients	%Age
Previous -I	10	17.85
Previous II	20	35.71
Previous III	17	30.35
Previous IV	09	16.07
Total	56	100

Discussion

There is an increased risk of placenta previa and its complications with the rise in the rate of cesarean section worldwide. Cesarean section in previous delivery increased the risk of placenta previa in subsequent delivery by 60%.[16]

The risk of placenta previa is also increased by previous placenta previa, advanced maternal age and with birth interval less than one year or more than four years. Women who had placenta previa in the previous pregnancy were at a greatest risk of placenta previa in a current pregnancy but less than 5 in 100 of women with previous placenta previa were expected. Clinicians should consider and communicate these factors when counseling their patients.

Conclusion

Cesarean section ratio rising worldwide and an increase in the long term complications of cesarean section should be anticipated. There is a need for better understanding of the relative risk associated with vaginal and cesarean births to support decision making by the mothers and clinicians. Women with a prior cesarean section should have placental localization in current pregnancy to exclude placenta previa. If placenta previa is diagnosed, there must be further investigations to exclude placenta accrete, a potentially life threatening condition.Maternal prognosis with placenta previa is good when managed properly. This is done by managing patients in tertiary care hospitals, hospitalizing those at risk who are exhibiting symptoms and signs, appropriate ultrasound diagnosis and subsequent counseling, prehand arrangement of blood and blood products and performing delivery by caesarean section. There should be effort to decrease the rising caesarean section rate and all patients with history of previous one caesarean section should be encouraged for VBAC.

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Original Article

Pre-Auricular Sinus and its Microsurgical Excision

M. Tariq, Ghulam Murtaza, A. Akram and Tasawwar Bashir

Objectives: To determine the role of operating microscopic magnification in reducing its recurrence after surgical excision of pre-auricular sinus.

Methods: All patients who underwent microscopic magnification guided surgical excision of pre-auricular sinus were studied. Follow up was carried out for one year for recurrence and other complications.

Results: One year follow up revealed satisfactory results regarding recurrence (10%) and post operative complications.

Conclusions: Magnification under operating microscope gives good results regarding recurrence, tissue trauma, wound infection, ugly scar and complete excision.

Keywords: Pre-auricular pit / sinus, Microscope.

Introduction

Pre-auricular pits or sinus are skin lined depressions found just anterior to anterior crus of helix. They may be shallow or extend down to cartilage. A pre-auricular sinus is a deeper squamous or columner epithelium lined tract, which can extend medially usually at the tympanic ring.[1] Pre-auricular pits/sinus are a common congenital abnormality, first described by Van Heusinger.[2] In 1864 Robertberg defined that it is a congenital lesion in which a small skin opening, located anterior to pinna communicates with a subcutaneous network of cysts.[3] Pre-auricular pits are inherited through an autosomal dominant gene with incomplete penetrance.[4] They are usually bilateral and asymptomatic, although filled with small amount of cheesy, keratin debris. During sixth week of gestation, six small buds of mesenchyme appear around dorsal end of first branchial cleft called hillocks of HIS, three from 1st (Mandibular Arch) and three from 2nd (Hyoid Arch).The Mandibular Arch develops into Tragus (1st Hillock),Helix (2nd & 3rd Hillocks).While Hillocks 4 & 5 form Anti Helix and 6th hillock forms Ear Lobule.[5,6,7] The auricle begins in anterior neck region, then migrates dorsally and reaches in its adult location at 20th week of gestation.[8] Pre-auricular sinuses arise because of disunion of hillocks of mandibular and hyoid arches. It presents as a small opening in the skin anterior to crus of helix. From this opening a long branched tract may run under the skin between helix and tragus and anterior to tragus. Tract is lined with squamous epithelium, is often cystic and patient is initially seen because of infection of the cyst and purulent discharge. Recurrent infection can lead to pre-auricular ulcer. Recurrent infection is the indication for surgical excision. If infection is present this should first be treated with injectable antibiotics (according to culture and sensitivity) and analgesics. Incision and drainage should be avoided. In acute infection no surgical excision should be done to avoid spread of infection. Incomplete removal is associated with draining sinuses, requiring their complete excision which is more difficult. Also difficulty of surgery is caused by branching of the tract cysts. Patients with pre-auricular sinuses present with persistent discharge, recurrent infection and recurrence after incomplete surgical excision. Several methods have been used for complete surgical excision to improve success rate, including use of pre operative sinogram, per operative use of injection methylene blue into the tract and lacrimal probe.[9] The objective of this study is to get help of magnification of operating microscope for complete surgical excision of the sinus tract.

Patients and Methods

This is a hospital based study done at Mayo Hospital and Services Hospital, Lahore. All patients who presented in OPD of ENT Departments of these hospitals were included in the study consecutively. Those patients who presented in acute phase were first controlled of infection with injectable or oral antibiotics (according to culture and sensitivity) and analgesics. Those who presented with abscess formation were 1st treated with aspiration of purulent material through sinus tract with wide bore I.V branula. After control of infection relevant investigations required for general anesthesia were done and after consent for G/A the sinus tract was excised under magnification of operating microscope. Local anesthesia (injection xylocaine 2 %

With adrenaline 1:200,000) was infiltrated subcutaneously for vasoconstriction, bloodless field and proper complete excision of the tract & its ramifications. The wound was closed with 5/0 prolene. No drain was inserted. Post operative antibiotics were used. Stitches were removed after five days. All patients were followed up.

Twenty five patients were enrolled for study, seven were females and eighteen were males. Five patients had bilateral pre-auricular sinuses, thirteen patients had pre-auricular sinuses on left side and seven had on right side. Twenty patients were less than ten years and five were more than ten years of age. Five patients presented with recurrent discharging sinus. Surgery was done in some other hospital.

Results

Twenty-five patients were included in this study. Complete surgical excision was done under microscopic magnification. Follow-up was done for one year regarding recurrence, tissue-trauma, wound infection, ugly scar and complete excision. Recurrence did not occur in any patient during one-year follow-up. The quality of scar was also good.

Table-1: Sex distribution.

Gender	No of Case	Percentage
Male	18	72%
Female	07	28%

Table-2: Site distribution.

Site	No of Case	Percentage
Left	13	52%
Right	07	28%
Bilateral	05	20%

Table-3: Age distribution.

Age	No of Case	Percentage
Less than 10 years	20	80%
More than 10 years	05	20%

Discussion

A pre-auricular sinus/pit is a common congenital lesion. Complete excision of the pit or sinus tract is the only definitive cure to the patients, after infection is eradicated properly. Recurrence of pre-auricular sinus is manifested by recurrence of abscess and / or persistence of discharge. In secondary surgery chances of surgical failure are more than primary surgical excision. Instillation of methylene blue in the sinus tract helps in complete excision of the tract but it stains the surrounding tissues if extravasation or rupture of the tract & spillage of the dye occurs per operatively and so proper excision of the tract does not occur and can lead to persistence of sinus tract remnants and recurrence of the symptoms which can range from 9-42%.[12] Guru and co-workers have reported a recurrence of 8.22% without infection and 15.79% in the presence of infection.[4] Per operative lacrimal probe insertion can also help in sinus tract excision. Results are always better in primary surgical excision. We have adopted a better technique of sinus excision under magnification of the operating microscope. Such technique was used by Tan T and co-workers in 2005.[13] Similarly Kumar Krishna also has done same study of excision of pre-auricular sinus under microscopic magnification and reported good results. He is of the opinion that this method enables precise dissection without any epithelial breach.[14] In our study, we also had good and satisfactory results.

Conclusions

It is concluded that operating microscopic magnification is very helpful for complete surgical excision of pre-auricular sinus tract and its ramifications. Surgery should not be done in the presence of acute infection. Infection first should be treated with appropriate culture and sensitivity report directed antibiotics and analgesics and anti-inflammatory drugs.

If abscess has already formed incision and drainage should not be done rather it should be drained with wide bore no.16 I/V branula through sinus opening. We recommend the use of operating microscope in every case of pre-auricular sinus excision.

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Original Article

Effect of Preemptive Analgesia with Ketorolac on Intra and Post Operative Opioid Requirements in Patients Undergoing Total Abdominal Hysterectomy

Muhammad Aqeel, Khalid Javid Siddiqi and Muhammad Amjad Khan

Objective: Pre-emptive analgesia may prevent or reduce hyper-analgesia, inhibit inflammation and reduce pain by blocking the synthesis of prostaglandins in response to tissue damage caused by surgery. NSAIDS are used frequently for treatment of post-surgical pain along with opioids. However, they may not be as effective as opioids. Ketorolac (one of the NSAIDS) used post-operatively can be used for pre-emptive analgesia to reduce opioid requirements in patients undergoing total abdominal hysterectomy (TAH).

Material and Methods: This was a double blind controlled trial with random allocation. After approval from hospital ethics committee, seventy ASA I and II patients between the ages of 40-60 years undergoing total abdominal hysterectomy (TAH) were included in the study after informed consent. They were divided into two equal groups (35 patients in each group). Each patient was shown the VAS (Visual Analogue Scale) preoperatively and explained how to rate her severity of pain on the scale. Thirty five patients, preemptive group (P group) received 30 mg of Ketorolac and 35 patients, control group (C group) received placebo (saline) intravenously (I.V) 30 minutes before induction of anesthesia. Intra-operatively, an increase in blood pressure and heart rate were taken as an indicator of pain during surgery and Injection Nalbuphine 0.05-mg/kg was administered as rescue analgesia. Postoperatively, for the initial 24 hours, pain was assessed on a VAS (VAS-score) of 1-3 considered as mild pain, 4-7 as moderate pain & 8-10 as severe pain). If score was more than 3 a top up dose of Inj. Nalbuphine 0.05 mg/kg was administered intravenously. Total Nalbuphine consumption during the intraoperative as well as initial 24 hours postoperative period was recorded for each patient.

Results: Thirty five patients in study group (P group) and 35 patients in the control group (C group) completed the study. Overall, there was no statistically significant difference in pain scores as well as opioid requirements in both these groups. ($P > 0.05$).

Conclusion: The results suggested that there was no decrease in opioid requirements in patients who received Inj. Ketorolac pre-emptively, therefore Ketorolac has little or no place as a preemptive analgesic.

Keywords: Ketorolac, NSAIDS, Nalbuphine, Pain Score and Total Abdominal Hysterectomy.

Introduction

Postoperative pain, a type of acute pain, is one of the disturbing conditions in surgical patients. A variety of drugs have been tried for this purpose. However, the basic drugs used for postoperative pain relief are still paracetamol, NSAIDS, local anesthetics and opioids. Opioids are used most frequently as an analgesic to treat surgical pain. Opioids also reduce the anesthetic requirements and result in smooth intra-operative course.[1] They are helpful in reducing the sympathoadrenal response to laryngoscopy and intubation especially in patients of hypertension and ischemic heart disease.[2] Opioids, however, are not free of side effects which are of concern to the anesthetist like respiratory depression, nausea and vomiting.[3] These side effects are dose related and by reducing the total dosage we can reduce the incidence of side effects.

Recent understanding of acute pain mechanisms particularly peripheral and central sensitization of dorsal horn neurons by surgical stimuli has led to the search for novel treatments.[4] Peripheral tissue injury provokes peripheral sensitization (a reduction in the threshold of nociceptor afferent peripheral terminals) and central sensitization (an activity dependent increase in the excitability of spinal neurons). These changes contribute to the post injury pain hypersensitivity state. The pre-emptive form of pain treatment (pain treatment before skin incision) prevents this state.

At the beginning of the last century, Crile was among the pioneers to introduce the concept of preemptive analgesia.[5,6] The preemptive analgesia reduces the intra and postoperative requirements of analgesics. It is achieved by modulation of central and peripheral sensitization processes, thereby attenuating or ideally preventing postoperative amplification of pain sensation.[7] Several drugs have been tried but the clinical utility has been limited by only moderate preemptive analgesic effect or significant side effects.[8]

Ketorolac (Trometamol) is a non-steroidal anti-inflammatory drug (NSAID) which can be given by IV route safely. NSAIDs unlike opioids do not cause adverse effects like respiratory depression, nausea and vomiting. Furthermore, they have been shown not to increase the risk of bleeding intra-operatively and post-operatively.[9] The idea of using Ketorolac preemptively was to reduce the total opioid dosage and thus minimizing the incidence of side effects while maintaining the quality of pain relief.

Material and Methods

This double blind, randomized controlled trial was done in anesthesia department of Fatima Memorial Hospital, Lahore and completed in 8 months (January 2006 to August 2006). After approval from the hospital ethics committee, seventy ASA I & II patients between the ages of 40-60 years undergoing TAH were included. The patients having history of allergy to any drug, acid peptic disease, hypertension, ischemic heart disease, asthma, renal or hepatic insufficiency and coagulation disorders were excluded from the study. These patients were randomly allocated to either of two groups after informed consent. Each of the patients was shown the visual analogue scale preoperatively and was explained how to rate their severity of pain on the scale. These seventy patients were divided into two groups. Group P (35 Patients) received pre-emptive dose of Ketorolac, 30 mg diluted in normal saline to make 3 ml, by IV route, 30 min before induction of anesthesia. Group C (35 Patients) received placebo, 3ml normal saline IV, 30 min before induction of anesthesia. The syringes containing ketorolac or normal saline (placebo) were prepared by another anesthetist having randomization list. He entered the name and medical record number of the patient on list and according to group allocation labelled the syringes inj-1 and inj-2. Thus for group P inj-1 contained ketorolac and inj-2 contained normal saline. For group C inj-1 contained normal saline and inj-2 contained ketorolac. These syringes were handed over to the anesthetist who was conducting the research. He did not know the information on the allocated groups or contents of the syringes.

Outcome Variables:

Pain assessment done intra-operatively, indirectly, if there is an increase in blood pressure and heart rate due to pain and postoperatively oy visual analogue scale score (VAS score). These were noted/ recorded by a person who was blinded to the drug used. Intra-operative and postoperative additional Nalbuphine, if given, was also recorded. Ages of patients were also noted. Anesthetic technique was standardized for both groups. GA was maintained with O_2 40 %, N_2O 60% and Isoflurane 0.6% - 1% with flow rate of 3L/min. Muscle relaxation was maintained using reocuronium 0.1 mg/kg on appearance of one twitch on train of four (TOF). Ringer lactate (R/L) fluid was used for deficit and maintenance requirements of the patients. Blood loss initially replaced with three times of R/L and blood transfusion was given when estimated Hb % fell below 8 g/dl. If there was a drop in blood pressure by more than 20% of base line, R/L 3ml/kg was administered. In case of persistence of problem, isoflurane was reduced. When BP or HR increased by more than 20%, isoflurane was increased. If hypertension persisted, rescue analgesia was given. Reversal (Neostigmine 2.5 mg plus glycopyrrolate 0.5 mg) IV was given after skin sutures. All patients were monitored using ECG, Pulse Oximetry, Noninvasive blood pressure, $EtCO_2$ and Neuromuscular Function monitor. For postoperative analgesia in postanesthesia care unit (PACU)/ postoperative ward, all patients received Nalbuphne 0.05 mg/kg IV every two hours, first dose given two hours after surgery. All patients also received Ketorolac 30 mg IV 8 hourly, first dose given after 8 hours of induction. Assessment of pain was done using VAS score (VAS score of 1-3 considered as mild pain, 4-7as moderate pain and 8-10 as severe pain) on hourly basis for 8 hours and then 2 hourly until 24 hours. Patients with a VAS score of 3 or more were given a dose of Nalbuphine 0.05 mg/kg IV as rescue analgesia. Total dose of Nalbuphine used during 24 hours for each patient was recorded by a designated nurse who was blinded regarding the treatment groups.

Statistical Analysis:

The data was entered on pre-coded forms and processed using SPSS version 12. Statistical analysis was done by applying chi-square test for qualitative data and student's t test for quantitative data. A p-value of <0.05 was considered significant.

Results

Data forms were collected from all seventy patients included in the study (100% data collection) with 35 patients in each group, pre-emptive and control. The age of patients ranged between 40-60 years with a mean of 43.5 years. Intraoperatively, 27 patients (38.5%) out of total 70 received rescue analgesia. Among these 27 patients who received rescue analgesia, reason for giving the analgesia in 14 patients (20%) was a rise in BP, in 8 patients (11.4%)an increase in HR and in 5 patients (7.1%) a rise in both BP and HR. Intra-operatively out of 27 patients who received rescue analgesia, 12 patients were in pre-emptive group while 15 patients were in the control group.

In the post-operative period, rescue analgesia was prescribed if score was more than 3 cm (moderate pain) on VAS scale. In our study no pain was noted in 6 patients (8.6%), mild pain (0-3) noted in 21 patients (30%), moderate in 43 patients (61.1%) and severe pain in 0 patients (0%).

Post-operatively out of 43 patients who received rescue analgesia,18 patients were in the pre-emptive group and 25 patients in the control group. There was no significant difference between both groups regarding use of rescue analgesia (P>0.05).No significant difference was found in the average dose of Nalbuphine in both groups (Pre-emptive and control). (Table III, P>0.05)

Discussion

Pre-emptive analgesia works to prevent the process of central neuroplasticity due to the surgical nociception and the resultant hyper-algesic state, thereby ensuring a more positive overall surgical experience.[10] The definition of pre-emptive analgesia has varied and this has caused confusion, misunderstanding and controversy.[11,12] In our study we found that there was no significant difference in opioid requirements in both groups (Pre-emptive and control groups). An average dose of <4mg was given to only 2 patients in pre-emptive and 1 patient in control group, whereas an average dose of > 4 mg was given to 28 patients in pre-emptive and 34 patients in control group. There was not a significant association between average dose of Nalbuphine in

Table-I: Reasons for giving rescue analgesia intra-operatively.

Reason	Pre-emptive (n)	Control (n)	Total (n)
BP increase	5 (7.1%)	9 (12.8%)	14 (20%)
HR Increase	4 (5.7 %)	4 (5.7%)	8 (11.4%)
Both BP and HR increase	3 (4.3%)	2 (8.%)	5 (7.1%)
Total	12 (17.1%)	15 (21.4%)	27 (38.5%)

P- value is 0.600 that is greater than 0.05. So there is no association between reasons for giving analgesia in both groups (preemptive and control).

Table-II Visual analogue scale (Post-operatively)

Visual Analogue Scale (cm)	GROUPS Pre-emtive (n)	Control (n)	Total (n)	Analgesia given
No Pain	05	01	6 (8.6%)	No
Mild Pain	11	10	21 (30%)	No
Moderate Pain	18	25	43 (61.4%)	Yes
Severe Pain	0	0	0 (0.0%)	No
Total	34	36	70 (100.0%)	

P- value is 0.052. It is greater than 0.05. So there is no significant difference between the mean pain score of preemptive and control groups.

Table-III: Nalbuphine given in both groups *Group Cross tabulationn.

Dose of Nalbuphine (mg)	Pre-emptive (n)	Control (n)	Total (n)
Average Dose< 4	02	01	03
Average Dose >4	28	34	62
Total (n)	30	35	65

Calculated P- value is 0.466, that is greater than 0.05. So there is no association between the average dose of nalbuphine in both groups (preemptive and control).

Pre-emptive and control groups. The opioid requirements were not significantly reduced in pre-emptive group. The pain score on the VAS scale showed that none of our patients felt severe pain. Forty three of these patients felt moderate pain (61.1%). Out of these 43 patients, 18 were from the pre-emptive group (52.9%) and 25 were from the placebo group (69.4%). Although rescue analgesia was permitted if the pain was unbearable within 24 hours of operation, yet there was no difference in this regard between pre-emptive group and placebo group. Like diclofenac, ketorolac is associated with decreased platelet function and increased bleeding time and may result in excessive blood loss[13,14]. This may exacerbate the bleeding in patients who have gastric ulceration. This is the reason the patents with gastric ulceration were excluded from the study. None of our patients who included in our study suffered from excessive blood loss. In this regard COX-2 inhibitors e.g. Parecoxib, are superior to conventional NSAIDs which are both COX-1 and COX-2 inhibitors. Almost twenty studies (from 1983 to 2000) were done to identify the pre-emptive effect with NSAIDs. Some aspects of post-operative pain control were improved by pre-emptive treatment in 4 of the 20 studies but no improvement was demonstrated in remaining16 trials. Overall, the meta-analysis demonstrated no analgesic benefit for pre-emptive compared with post-operative administration of NSAIDs.[15] From 2001 to 2004, at least 30 randomized studies of preversus post-operative administration of various analgesics were performed. Some reductions in post-operative pain and analgesic requirements with pre-emptive analgesia were observed in 13 studies[16-19] whereas no significant differences were observed in 17 other studies (20,21). In these studies the results were also inconclusive as far as NSAIDs are concerned for pre-emptive treatment. Our study results coincide with results of majority of the studies carried out as mentioned above. A number of other drugs have been demonstrated to interfere with the induction and maintenance of central hypersensitivity. Ketamine, dextromehorphan and gabapentin have demonstrated promising anti-hyperanalgesic potential in a number of clinical trials of post-operative pain.[22,23] The only way to prevent central sensitization might be to completely block any pain originating from the surgical wound from the time of incision until the final wound healing. Consequently, an 'idea' pre-emptive or post-emptive or protective analgesic clinical trial should investigate the effect of intense and prolonged multimodal interventions versus less aggressive conventional perioperative analgesia on immediate and late postoperative pain as well as on various psychosocial variables.

Conclusion

In this study, there was no significant difference in perioperative opioid requirements in the pre-emptive as well as in control groups in patients undergoing total abdominal hysterectomy. The treatment regimen used in this study was well tolerated by all patients.

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Original Article

SKULL BASE OSTEITIS: OUR EXPERIENCE AND SYSTEMATIC REVIEW OF LITERATURE

Khalid Munir Cheema, Mohammad Amjad, Tahir Ayub, Malik Masood Ahmad, Kashif Ilyas and Damish Arsalan

Objective: This article discusses etiopathogenesis, diagnostic problems and various management modalities available to manage skull base ostietis (SBO) which is a rare but life threatening disorder and in addition national and international references will be reviewed.

Material and Methods: Cross sectional, retrospective study carried out at ENT unit-I SIMS/SHL which included 17 patients with SBO which were sorted out for etiological diagnosis based on detailed history, physical examination and labs.

Results: Mean age was 52 years. Diabetes is the most significant risk factor and was seen in 82% of patients, pseudomonas was isolated in 8 patients. The main complication facial paralysis was present in 64% of patients.

Conclusion: SBO remains a severe debilitating and life-threatening condition. It may develop in patients with benign otitis media and externa, and must be considered in all patients with temporal bone inflammation; especially those with risk factors and those who fail to improve with more conservative measures. Small-vessel vasculopathy and immune dysfunction associated with diabetes are primarily responsible for this predisposition. Cranial nerves most commonly the facial, can be affected by inflammation along the skull base or by a neurotoxin produced by Pseudomonas species. We, in this article, intend to share our experience in managing seventeen patients with SBO over a period of three years and review the relevant and recent global literature suggesting updates.

Keywords: Skull Base, Otitis, Necrotizing.

Introduction

Skull base osteitis (SBO) or necrotizing (malignant) external otitis, an infection involving the temporal and adjacent bones, occurs primarily in immunocompromised persons, especially elderly with diabetes mellitus, and is often initiated by self-inflicted or iatrogenic trauma to the external auditory canal. The most frequent pathogen is Pseudomonas Aeruginosa. Toulmousch (1838) reported the first case of otitis externa but was discussed in details by Meltzer(1959).[1] however Chandler (1963).[2] coined the term "Malignant otitis externa because of its propensity to cause complications however it must not be construed in a histological sense.[1,2]

The typical patient with SBO is an elderly diabetic, with males outnumbering females by twice the number. This could be due to the possibility of males being more prone to secrete wax which are more acidic in nature. Studies reveal that it is more common among insulin dependent diabetics and current literature also reports a few such cases involving young insulin dependent diabetics.[3] Patients with SBO complain of severe otalgia that worsens at night, and otorrhea. Clinical findings include granulation tissue in the external auditory canal. Cranial nerve palsies, typically facial nerve, and intracranial complications indicate poor prognosis. Diagnosis requires culture of ear secretions and pathologic examination of granulation tissue. Imaging studies may include computed tomographic scanning, technetium (Tc) 99m medronate bone scanning and gallium citrate (Ga 67) scintigraphy. Treatment includes improvement of immunosuppression status, local treatment of the auditory canal, narcotic analgesics, longterm systemic antibiotic therapy and in selected patients, surgery. Currently fluoro- quinolones hold lots of promise in managing these patients.

Material and Methods

It is a retrospective study conducted in the department of ENT Unit-1 of SIMS/Services Hospital, Lahore over a period of about three years from April, 2010 to March, 2013. Seventeen patients were included in the study that fulfilled the criteria of SBO. All of these patients were admitted in the department and were assessed in details. Data was assembled with the help of a self administered structured questionnaire. This Performa sought information on demographic characteristics and specific sign symptoms and progress of disease. All patients were followed up at least for six months. Data was analyzed using statistical package for social

sciences 16 and for categorical variables measure of association was chi square test.

Results

The study spanned over a period of 3 years included 17 patients fulfilling the inclusion criteria. The results of this study were analyzed after feeding the data in statistical package for social sciences and calculated by using chi square test. Out of 17 patients there were 12 males (70.5%) and 5 (29.5%) females. The mean age of presentation was 52 years. The highest proportion of patient who presented amongst the whole range of the study were mostly in their 60s followed by the ones in 50s.14 out of 17 (82%) were diabetics and all with suboptimal control of their disease. Other three were having gross anemia, renal transplantation and hepatitis C. Facial paralysis was seen in 11 patients (64%). Others presented with severe unremitting otalgia refractory to routine analgesics otorrhorea, aural fullness. headache and facial paralysis of variable degree. Pseudomonas was isolated in 8, fungus in 2 and negative culture in 7 Granulations sent for Histopathology came as inflammatory. Skull base lesion with necrosis was evident on CT scan.

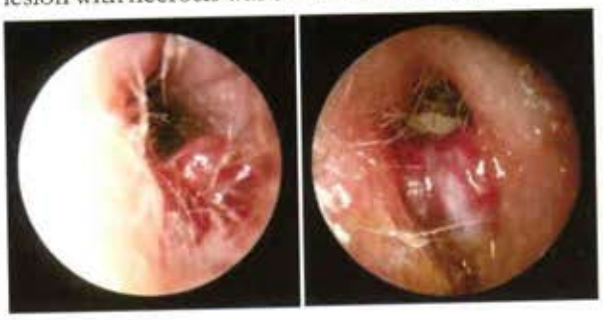

Fig-1: External canal granulation.

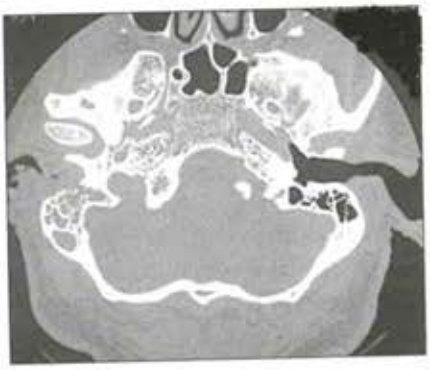

Fig-2: The CT scan shows bony destruction of the right temporal bone and posterior wall of the external auditory canal is missing. Mastoid air cells are secondarily involved and are pacified compared with the well-aerated left side.

Fig-3: Gallium citrate Ga 67 scintigraphy in a patient left-sided temporal bone osteitis.the left temporal bone shows enhanced uptake of 67Ga *(arrow)*.

Discussion

Diabetic microangiopathy plays a vital role in the reduction of tissue perfusion causing opportunistic infections involving the area.[4] Rubin identified triggering factor for SBO in more than 60% of cases and was able to elicit history of frequent attempts at removing wax with ear buds.[5] Diabetic patients secrete wax which has less lysozyme content than normal thereby reducing the effectiveness of wax as an antimicrobial agent. It should also be remembered that diabetic patients have impaired phagocytosis, poor leukocytic response, and impaired intracellular digestion of bacteria. Pseudomonas Aeruginosa is a gram negative aerobe which invariably behaves like an opportunistic pathogen. The pathogenicity of this organism is due to ability to secrete exotoxin and various enzymes like lecithinase, lipase, esterase, protease etc. Since this organism is clothed by a mucoid layer it is resistant to digestion by macrophages. Radionucleotide scan using Technitium 99 helps in the diagnosis. Fixation of Technitium correlates with high degree of osteolytic activity which is commonly seen in these patients. This test is highly accurate (100%) but its specificity is rather low.[6] Gallium-67 scintigraphy is very useful for prognostic evaluation because of its high specificity.[7] Levenson has designed a diagnostic criteria which includes refractory otitis externa, severe nocturnal otalgia, purulent , discharge, grand tissue in the external auditory canal, growth of pseudomonas aeruginosa from external canal and presence of diabetes/Immunocompromised state.[8] Patients with SBO of the skull sometimes have extra-auricular manifestations, such as cervical lymphadenopathy, trismus (because of temporomandibular joint involvement)or irritation of the masseter muscle.[9]

As the infection spreads in the temporal bone, it may extend into the cranium and result in cranial nerve palsies. These palsies generally are caused by the secretion of neurotoxins or the compressive effect of the destructive process through the relevant foramina. Because of its anatomic location in the temporal bone, the facial nerve is usually the first nerve to become involved.

Cranial nerve involvement indicates a poor prognosis. Death is usually due to intracranial complications such as sigmoid sinus thrombosis, but it also may occur because of treatment complications, including bone marrow suppression induced by long-term antibiotic therapy. Prognosis is adversely affected by comorbid conditions, which are common in patients who develop SBO. CT scanning is used to determine the location and extent of diseased tissue **(Fig 2)**

The temporal bone is the first bone to be affected, with imminent involvement of the petrous apex and mastoid.In evaluating the CT scan, it is important to remember that at least one third of bone mineral must be lost before radiologic changes become apparent; conversely, bone remineralization continues long after the infection is cured. Thus, as related to the infectious process, pathology is late to appear on the CT scan and late to disappear. These factors limit the usefulness of CT scanning as a follow-up tool. Both osteoclasts and osteoblasts absorb 99mTc. Hence, bone scanning can locate a Pathologic process in bone but is not informative about the nature of the process (infectious or other).

Table-1: Radiological staging of skull base osteitis.

Grade	Diagnostic Criteria
I	Disease limited to soft tissue not involving bone refractory to standard antibiotic therapy for more than 4 weeks.
II	Earliest form of SBO with involvement of Mastoid bone.
III	SBO extending medially to involve petrous portion of temporal bone.
IV	SBO extending medially to involve the petrous apex or withcranial nerve involvement or pread Anteriorly to involve thefacial bones, posteriorly to involve the occipital bone, orspread to the contralateral base of skull

Table-2: Other staging and classification system.

Stage	Ga67	Tc99	Extent of Disease
I	+	-	Soft tissue (Necrotising Otitis)
I	+	+	Ear and mastoid (mastoid (Skull base osteomyelitis)
II	+	+	Extensive skull base osteomvelitis

Table-3: Systemic antibiotic therapy for necrotizing external otitis.

Drug	Dosage	Comments
Ciprofloxacin	750 mg orally every 12 hours 400 mg IV every 12 hours	Fluoroquinolone for oral therapy
Ticarcillinclavulanate potassium	3 g IV every 4 hours	Antipseudomonal penicillin
Piperacillin-tazobactam	4 to 6 g IV every 4 to 6 hours	Antipseudomonal penicillin; at this dosage, combine Piperacillintazobactam with an aminoplycoside.
Ceftazidime	2 g IV every 8 hours	Third-generation cephalosporin
Cefepime	2 g IV every 12 hours	Fourth-generation cephalosporin
Tobramycin	According to patient weight: 1 to 1.66 mg per kg IV or IM every 8	Aminoglycoside; combine tobramycin with a pencillin.

According to uri et al the99m Tc scan remains positive as long as bone repair continues, this imaging modality is not helpful in follow-up.[10]

Since 67 Ga is absorbed by macrophages and cells of the reticuloendothelial system, scanning with this radioisotope is a sensitive measure of ongoing infectious process **(Fig-3)** If 67 Ga scintigraphy is available, it should be used for initial diagnosis and as a follow-up. By using imaging modalities in combination, it is possible to prove that the temporal bone is afflicted with an infectious process .[12] In many patients with SBO, the initiating event may be self-inflicted or iatrogenic trauma to the ear canal. Therefore, susceptible patients should be instructed to avoid manipulation of the external auditory canal (i.e., they should not use cotton swabs to remove cerumen). Cleaning of the external auditory canal, including aural irrigation by medical staff, should be carried out with extreme caution to avoid injuring delicate skin in the canal.[5]

Treatment of SBO otitis includes correction of immunosuppression (when possible), local treatment of the auditory canal, long-term systemic antibiotic therapy and, in selected patients, surgery. Strict control of diabetes mellitus is mandatory, although it can be difficult to achieve during the acute illness. Other immunosuppressive states and comorbid conditions also must be aggressively managed.

Local treatment of the auditory canal includes meticulous cleaning and debridement plus topical application of antimicrobial agents. Sequestra and other necrotic tissue should be removed. Initially, treatment may include the application of antimicrobial-impregnated dressings to the canal. As in other infections involving bone, long-term administration of systemic antibiotics is the mainstay of treatment. Antibiotics that are effective **(table-3)** against *P. aeruginosa* include aminoglycosides, penicillins (especially piperacillintazobactam), ceftazidime cefepime and occasionally, imipenem . Depending on bacterial sensitivity, a combination of agents may be needed. The introduction of orally administered antipseudomonal agents in the 1980s simplified the ambulatory treatment of osteitis of the base of the skull.[12] Fluoroquinolones, primarily ciprofloxacin and ofloxacin, are DNA-gyrase inhibitors that are effective against *P. aeruginosa* and well tolerated by patients. Poor vascularization of the target area is one of the reasons that high-dose antibiotic therapy is needed to treat SBO. For example, the appropriate dosage of ciprofloxacin is 750 mg twice daily.[13]

Because of the reported emergence of ciprofloxacin resistant pseudomonal strains,[14] culture should be performed before topical or systemic antimicrobial therapy is initiated.

Verifying the response to treatment can be difficult. Thus, determining the proper timing for its cessation can be problematic. Treatment should be continued for at least four weeks, but the duration of therapy must be individualized on the basis of the clinical presentation, ESR, and imaging studies. Hyperbaric oxygen, an adjunct to antibiotic therapy, is believed to increase the ability of polymorphonuclear cells to fend off pathogen bacteri.[15] A Cochrane Review found no clear evidence exists to demonstrate the efficacy of hyperbaric oxygen therapy when compared to treatment with antibiotics and/or surgery.[24]

Surgery has a definite but limited role in the treatment of SBO. Although bone sequestra and abscess are treated surgically, further extension of the operation may be counterproductive because it may expose healthy bone to the infection.[16] A combination of technetium scanning to detect osteoblastic activity gallium 67 imaging to detect granulocytic activity and is recommended a mean of monitoring response to treatment. Boustard can also be used to monitor therapeutic response.[18] Resistant strains of pseudomonas have been described following treatment with ciprofloxacin Staphylococcus aureus (MRSA) has been identified and can be methicillin-resistant staphylococcus aureus and rarely staphylococcus epidermidis is isolated. Fungal SBO is mostly due to aspergillus and candida but some unusual organisms have been identified as a cause such as scediosporum apiospermum and malassezia sympodialis.[19] The pathogenesis of this condition is unclear, however a number of factors are thought to contribute; microangiopathy, hypoperfusion and diminished host resistance (impaired phagocytosis, poor leukocytic response, impaired intracellular digestion of bacteria)ndue to diabetes. Their susceptibility to pseudomonas infection is increased by their ear wax being less acidic and having a lower lysozyme content, more favourable to pseudomonas infection. Isolated cases have been reported in a small number of non-diabetic patients, particularly in children who are immunocompromised due to malignancy, malnutrition and severe anaemia as well as in patients with HIV SBO. In a case series of 37 patients with, 51% had diabetes, 40% had facial nerve palsies and 24% had multiple cranial nerve palsies.[21] A Study on the various radiological and radionuclide investigations for SBO concluded that CT and/or

MRI should be supported by routine SPECT bone imaging for initial diagnosis of SBO.[22] Dual handershot et al suggested that WBC/Tc-99m MDP bone SPECT scintigraphy provides an accurate imaging modality for diagnosis and follow-up of temporal and facial osteomyelitis when existing clinical or postoperative bone changes make it Difficult to detect active osteomyelitis by computed tomographic scan.[22] Immunomodulators, such as topical tacrolimus to the affected ear have also been reported in the literature as being effective when used in combination with other treatments.[25] However, due to the increased use of ciprofloxacin for both simple ear infections and upper respiratory tract infections there is concern pseudomonas malignant otitis externa infections are increasingly resistant to ciprofloxacin.[23]

Conclusion

Despite advances in the treatment of malignant otitis externa, multiple complications can ensue including parotiditis, mastoiditis, meningitis, cerebral abscess and jugular vein thrombosis. There is the emergence of resistant strains of causative organisms to the fluoroquinolones that have improved treatment of these cases. Morbidity and mortality from this condition is still high especially with skull base osteomyelitis and cranial nerve involvement. Several investigative modalities are currently available and include MRI CT Scans, and gallium 67 SPET29, Therapies being used with varying success include immunomodulators and hyperbaric oxygen. The central management principles remain meticulous aural toileting, long-term antibiotics and ensuring adequate glycaemic control. This disorder could be caused by a combination of poor immune response and peculiar characteristics of the offending micro argmisam. All health care professionals providing medical care for immunocompromised patients should sort out the possibility of this condition in patients complaining of otalgia, particularly if they have diabetes mellitus and otitis externa that has been refractory to standard medical therapy. Susceptible patients should be educated to avoid manipulation/cleaning of the ear canal and to minimize exposure of the ear canal to water with a high chloride concentration. The aim of otolaryngologist is also to differentiate this condition from that of real malignancy.

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Original Article

Frequency of Dementia in Patients with Parkinson's Disease in a Tertiary Care Hospital in Lahore

Ayesha Aslam and Ahsan Numan

Objective: The objective of the study is to determine the frequency of dementia in patients with Parkinson's disease.

Material and Methods: A hundred patients of Parkinson's disease presenting to OPD between the ages of 40 and 100 years were enrolled in the study and dementia was assessed in these patients by performing mini-mental state examination .

Results: Mean age was 69.31±16.37years,. The age range was 40-100 years, but 68 (68 %) patients were more than 60 years of age. Out of the 100 patients, 66 (66%) were males and 34 (34 %) were females. Mean mini-mental state score at admission was 16.75±2, 7(24%) Patients were having mini-mental score of 5-10 , 10 patients (34%) had mini-mental score 11-18, and 12 patients (41%) had mini-mental score of 19-24 at presentation. Mean duration of disease was 11±2.08 years. Out of total 100 patients, 29 (29%) patients had dementia ,whereas 71 (71%) did not have cognitive impairment.

Conclusion: It is concluded from the study that dementia develops in considerable number of patients and is most commonly associated with late onset of disease and with longer duration of PD. Most of the patients had moderate dementia. Therefore, it is recommended that every patient with PD should be assessed for cognitive impairment so as to enable early detection of dementia and to halt the progression in such patients

Key words: Parkinsons disease, Dementia, Mini-mental state.

Introduction

Dementia affects about 40% of patients with Parkinson's disease.[1] The incidence increases with advancing age, approaching 65% risk of dementia as compared with healthy populations.[2]

Dementia is associated with higher mortality, and increased risk of institutionalization. Severe motor symptoms and advance age are risk factors for development of dementia.[3] Cognitive and mental symptoms could be as incapacitating as motor symptoms which cause problems for both patients and caregivers.[4]

Cognitive impairment is a commonly occurring phenomenon in Parkinson's disease (PD) and involves dysfunction of memory as well as attention and executive functions. Dementia occurs more frequently in patients with PD as compared to people of same age without PD.[3]

Among all neurodegenerative movement disorders Parkinson's disease (PD) is the most common. It affects about 0.5-5% of the population older than age 65, both in Europe and other populations.[5]

In most studies the prevalence of PD increases with age. It increases from less than 1% in people aged 65-69 years to more than 2-3% in people older than age 90.[2] Now there is increase in worldwide recognition of dementia as part of Parkinson's disease. The incidence of dementia in PD has increased up to six times and the point prevalence is 30%.[7] There is a two fold increase in mortality associated with development of dementia.[8] In PD impaired memory and difficulty in performing activities that require high skills are associated with increased risk of developingdementia.[9]

The Mini-Mental Status Exam (MMSE) is commonly used to calculate dementia score. Its validity has been studied and established in Arab populations.[10] A patient has been found to have clinical dementia syndrome he should be subjected to structural brain imaging to look for focal lesions, ischemic and atrophic changes.[10] The data for this extensively used scale is still limited in PD patients.[11]

In general, Dementia occurs in later stages of Parkinson disease. Early onset of significant cognitive dysfunction with onset of parkinsonian features suggest a diagnosis other than PD. Parkinson's disease dementia is sometimes over diagnosed due to high prevalence of depression in PD patients.[12]

The purpose of carrying out this study is to ensure early detection of dementia in patients with PD so as

to improve the quality of life in patients and to reduce the burden on caregivers.

Material and Methods

Study Design:

Descriptive case series

Setting:

The study was carried out on patients coming to Outdoor department of Neurology, Services Hospital Lahore.

Duration Of Study: Study was carried out from 1st July 2011 to 31st December 2011

Study Sample Size: 100 patients

Sampling Technique: Non probability consecutive sampling

Inclusion Criteria:

1. Duration of parkinson's disease at least 12 months (as determined by history and clinical examination.)
2. Age 40 -100yrs.
3. Patients of either gender.

Exclusion Criteria:

1. Occurrence of symptoms of dementia during the course of delirium(as defined by altered state of consciousness due to to any metabolic cause).
2. History of depressive illness.(as defined by history of insomnia ,low mood and loss of appetite).
3. Illiterate patients (cannot read or write).

Data Collection Procedure:

The study was approved from hospital ethical committee. All patients underwent a detailed history taking and physical examination. All relevant investigations were performed. The diagnosis of PD was made on clinical findings.

The dementia was classified as mild, moderate or severe according to MMSE . Patients fulfilling the inclusion criteria were enrolled after taking informed consent from the them or their relatives. The data collected was entered on the specifically designed proforma . The data was analyzed using SPSS version 14.0. Descriptive analysis was done for numerical variables such as age and reported as mean; median and standard deviation, whereas frequencies and percentages was calculated for categorical variables such as gender, duration of parkinsons disease and degree of dementia according to minimental scoring at presentation.

Results

A total of 100 patients fulfilled the inclusion criteria and were enrolled in the study. Minimental state examination was done in all patients to identify patients with dementia. Mean age was 69.3 years. The age range was 40-100 years, but 68 (68 %) patients were more than 60 years of age.

Out of the 100 patients, 66 (66%) were male and 34 (34 %) were female. Thus Parkinson's disease was more commonly seen in men compared to women 66 % vs 34 %. Out of the 29 patients who had dementia, 18 (62.07%) were males and 11 (37.93%) were females in our study. When results were stratified on the basis of age, it was noticed that most of the patients (34.48%) with dementia were in the 72-81 age group followed by (31.03)% in the 82-91 yrs group.

The least number of patients fell into the 42-51 age group. as shown in patients were having mini-mental score 5-10, 10 patients (34%) had mini-mental score 11-18, and 12 patients (41%) had mini-mental score of 19-24 at presentation. Mean duration of disease was 11±2.08 years. Out of total 100 patients, 29 (29%) patients had dementia, whereas 71(71%) did not have cognitive impairment. Out of 18 patients having < 10 years duration of disease only 10.34% had dementia whereas in patients having disease duration >10 years 89.66% had dementia.

Table-1: Frequency of dementia.

Dementia	No of Patients	Percentage
Yes	29	29%
No	71	71%

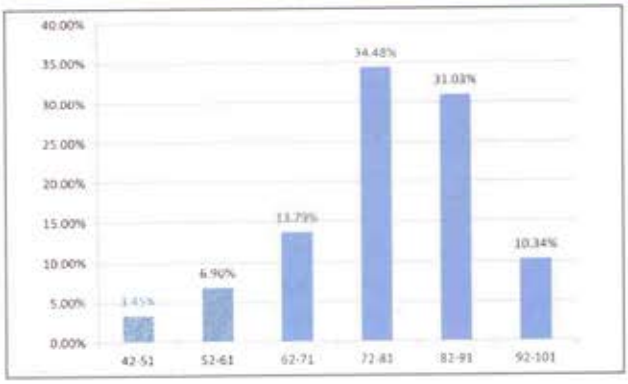

Fig-1: Distribution according to age.

Discussion

The prevalence of Parkinson's disease varies from 7 to 450 per 100,000.[13] Dementia can develop in 80 % of patients with long standing PD (>20yrs).[14] Dementia associated with PD is found to have good

Response to levodopa depending on certain factors.[15] MMSE is a widely used tool for assessment of dementia in memory clinics because of its simplicity.[16] Dementia contributed to 3.8% of deaths in patients with PD according to a study carried out in japan.[17] In one study prevalence of dementia with PD was crudely 41.1%.[18] Out of 100 enrolled patients, 66 patients (66 %) were male and 34 (34 %) were female. This difference in number of patients with respect to gender is reflected in various studies conducted worldwide, where male patients were in overwhelming majority.[19,20] This difference may further strengthen the fact that male population seeks health care facilities with increased frequency in Pakistan. The mean age was 69.31 ± 13 years which was well in accordance wit internationally published study.[10] In our study 29 patients (29%) developed dementia, supporting further the already established fact by different studies conducted worldwide, although it was slightly lower than those in the west.[21] In this study group most of the patients were having motor symptoms of PD for a long time. This fact is well supported by different studies in which patients having mild parkinsonian features were more likely to develop cognitive decline.[22]

Regarding the severity of dementia which was based upon minimental state examination, most of the patients (34%) had minimental score in the range of (10-19). International data also suggests that the most studies had mean minimental score of 20-24.[23,24] Results of current study showed that dementia appeared in more patients within the late stage of PD .many other studies have also established this fact that patients with stage4 and 5 disease are unlikely to avoid developing dementia.[25]

Conclusions

It is concluded from the study that dementia develops in considerable number of patients and is most commonly associated with late onset of disease and with longer duration of PD. Most of the patients had moderate dementia. Therefore, it is recommended that every patient with PD should be assessed for cognitive impairment so as to enable early detection of dementia and to halt the progression of disease in these patients.

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Original Article

Can the Rapidly Evolving Digital Technology be Employed in the Surgical Pathology Lab? The Shifting Paradigm

Ambereen A. Imran

Objective: To evaluate and compare the efficacy of four devices for digital photographing of gross specimens in Surgical Pathology lab. To assess the usefulness of magnifying apps, currently available for mobile phones, in studying details of pathological specimens during their gross examination.

Material and Methods: This comparative study was carried out from Nov. 2012 to Dec. 2012 Fifty specimens were photographed; some of these were received in Department of Pathology, Postgraduate Medical Institute, Lahore, while others were from some private laboratories. Non probability purposive sampling was used to include cases which were likely to reveal interesting and comparable details. Four different devices namely Nikon Coolpix S-80, Apple iPhone 4, Samsung Galaxy S Duos and Samsung Galaxy Note II loaded with "Magnify" app were used. Results were compared subjectively regarding image resolution, sharpness, color accuracy, tone reproduction, contrast, signal to noise ratio and overall usefulness. Nikon Coolpix S-80 served as the reference index against which the other devices were assessed.

Results: All devices gave photographs of quality good enough to be used for scientific purposes. iPhone occasionally surpassed Nikon in spite of its far more humble megapixel "score". Samsung Galaxy Note II with "Magnify" app revealed details that could render the conventional dissecting microscopes obsolete. These findings are supported by other reports comparing different devices, though none of these refers to photographing of pathological specimens.

Conclusion: In view of the widespread availability of digital cameras since their incorporation into cell phones, it has become very feasible to photograph every specimen received in the Surgical Pathology lab. Digital photography has removed, to a substantial extent, the constraints of time, cost, labor and expertise involved in photographing. In conclusion, the causes for conversion to this commandeering, contemporary technique are compelling, convincing and countless.

Key words: Digital imaging, megapixels, specimen photography, dissecting microscope.

Introduction

Pathology has been aptly described as a visual science and this applies to no other branch of Pathology better than Surgical Pathology, being dependent as it is, on imagery for both its gross and microscopic stages.[1] In fact, all the aspects of Surgical Pathology like diagnosis, consultation, education and documentation are critically dependent on morphological findings. Hence, it is not surprising that advances in digital imaging in the last two decades have made major inroads into the routine practice of Surgical Pathology. We are now talking about innovations like telepathology/telemicroscopy, Whole Slide Imaging for archiving and perhaps machine analysis systems that would allow Pathology to become a more "quantitative" science by the introduction of computerized mitotic counts, cytomorphometry and even densitometry.[2,3]

Digital imaging has revolutionized the way we handle images. It offers the advantages of instant gratification (circumventing the time lost in waiting for the prints to arrive in previous systems), almost no running costs, the option of endless copies to be made, and the ease of incorporation into texts, publications, lectures and conference papers. Images are amenable to "photo-shopping" by amateurs greatly enhancing image quality and highlighting areas of interest. And of course they are "backward compatible"; you can always have the more precious ones printed if like me you don't sleep easy unless you have a hard copy resting in your drawer.[4,5] Digital cameras were well received being user friendly as well as cost effective and have gradually replaced the older versions all around the world. Numerous papers were written in the last two decades offering advice on the best camera for use in Pathology lab and how best to use it.[2,4] Parallel to this proliferation of digital cameras was seen the dawning the era of cell phones. These

small hand held devices soon created a niche in our lives to the extent that today we feel as if they are an extension of our selves. These quickly evolved to become more and more capable and the advent of "smartphones" has seen the incorporation of better and better cameras into these amazing devices. The opening of the Apple App Store, then the Google Play Store and now the Windows Store has brought endless opportunities. Thousands of free as well as paid "apps" are available to enhance the functioning of our mobile devices in any direction that we choose. The ability to magnify images is one of these options. Several "apps" like "Magnify", "Your Magnifying Glass" and "Smart Magnifier" are available for free while some like "Your Magnifier Pro" and "Magnify (Ad-Free)" can be downloaded on payment from the Google Play Store.[3] This study was done with a view to explore the wonders of digital photography as they apply to imaging of gross specimens in a Surgical Pathology lab.

Materials and Methods

Fifty specimens were chosen for gross/macroscopic photography. Some of these were received in the Department of Pathology, Postgraduate Medical Institute, Lahore, while others were from some private laboratories. Non probability purposive sampling was used to include cases which were likely to reveal interesting and comparable details. The period of study was from 1.11.2012 to 31.12.2012. The breakdown of specimen types is given in the Table. A mid-range camera Nikon Coolpix S-80 was used as the Reference Index. It served as the yard stick against which the performance of other devices was measured. It is a 14 megapixel camera of the "point and shoot" type. Cameras far simpler than this one have been declared adequate for photographing Surgical Pathology specimens in earlier reports.[2] The macro mode was selected for photographing the specimens. Images taken by this camera were compared subjectively with those taken by two popular cell phone models. The details of these are as follows:

i) Apple iPhone 4 running on iOS 5.Camera 5 megapixel.
ii) Samsung Galaxy S Duos S-7562 running on Android OS (Ice Cream Sandwich) Camera 5 megapixel

In addition, magnified images were taken to assess their utility in

i) Adding to assessment of nature of lesion
ii) Assistance in selection of area to be submitted for blocking

For this purpose the following device was used:
Samsung Galaxy Note II N-7100 running on Android OS 4.1.1 (Jelly Beans) Camera 8 megapixel with "Magnify" app, free to download from the Google Play Store.
Each specimen was photographed with each of these devices. The following precautions were taken during photography:

i) The photos were taken under similar conditions of illumination (even the schedule of load shedding was taken into consideration)
ii) The background was identical throughout.
iii) No image processing or color balancing was done for any photo.
iv) A minimum distance of 10 cm was maintained between the specimen and the device as this was suggested by most devices' Users Manuals.

The images were regularly transferred to a laptop for proper archiving. They were arranged into the following groups:
Group A: Images taken by Nikon Coolpix S-80
Group B: Images taken by Apple iPhone 4
Group C: Images taken by Samsung Galaxy S Duos S-7562
Group D: Images taken by Samsung Galaxy Note II N-7100 with "Magnify" app
The results of Groups A-C were compared regarding image resolution, sharpness, color accuracy, tone

Table-1: The details of the specimens included in the study.

Type of Specimen	Number
Total abdominal hysterectomy	07
Gallbaladder	06
Appendix	06
Fibroadenoma	05
Leiomyoma	04
Invasive ductal carcinoma breast	03
Fallopian ectopic pregnancy	03
Kidney	03
Intestine	03
Transurethral resection prostate	03
Osteochondroma	02
Gynaecomastia	02
Low-grade endometrial stromal sarcoma	01
Fetus	01
Diagnostic D&C	01
Total	50

Results

Some of the results are shown in Fig 1-3. Group A showed satisfactory results in terms of image resolution, sharpness, color accuracy, tone reproduction, contrast, signal to noise ratio and overall usefulness **(Fig 1, 2)**.
Group B gave results which were as good as and

reproduction, contrast, signal to noise ratio and overall usefulness. The results of Group D gave information of a different nature so they were assessed independently. especially excelled in sharpness and color accuracy. Group C lagged behind, though only slightly, in image resolution, sharpness and color accuracy. In absolute terms, results in this group too were good enough to be used for scientific purposes **(Fig 2).** Group D was a class on its own. The details revealed due to magnification were helpful in most cases and enlightening in some. Features like resolution, sharpness and signal to noise ratio were well maintained, though there was a slight fall in color accuracy as well as tone reproduction. The images were especially useful in selection of area to be submitted for blocking. These details also shed light on the nature of lesion as being myxomatous, hyaline, caseous etc., far better than the naked eye examination alone. For example, in cases of Invasive ductal carcinoma breast permeation of tumor into

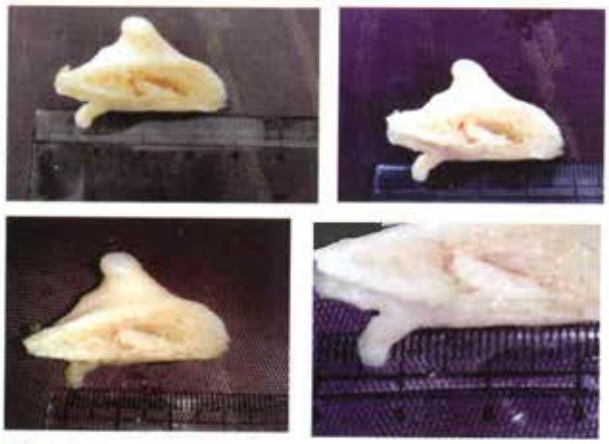

Fig-1: Photographs of an osteochondroma taken by different devices. 1B (taken by iPhone 4) gives good details while 1D (taken by Samsung Galaxy Note II) differentiates the layers apart.

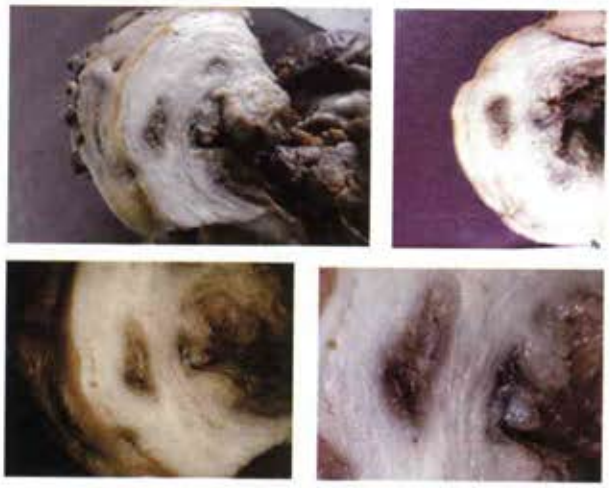

Fig-2: Photographs of a Low-grade Endometrial Stromal Sarcoma. All devices gave satisfactory morphology with additional details being furnished in Group D.

the surrounding tissue could be easily discerned. Another specimen that greatly benefited from this examination was a fetus whose gender determination as well as counting of digits was rendered possible (Fig 3). Specimens like Fallopian ectopic pregnancies also revealed interesting details. Similarly, the whorling and hyaline degeneration of leiomyomas was well shown up. As shown in Fig 1 different layers of osteochondromas could also be discriminated. Similarly, Fig 2 shows almost equivalent performance by the three devices and highlighting of minute details in a case of Low-grade Endometrial Stromal Sarcoma in Group D.

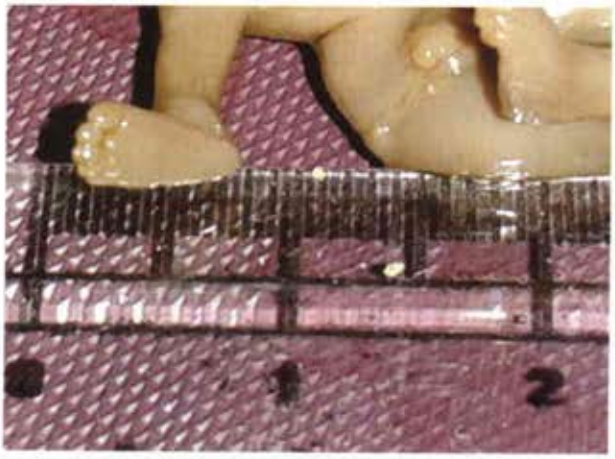

Fig-3: Samsung Galaxy Note II with "Magnify" app enabled one to study the toes and genitilia of a fetus; otherwise impossible with the naked eye.

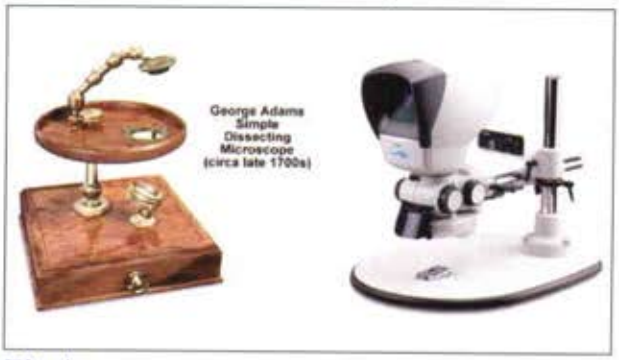

Fig 4: The dissecting microscope has evolved over time and as can be seen above has come a long way.

Discussion

Digital photography has created a new paradigm in which Surgical Pathology is likely to be practiced from now on.[3,6] So far we have depended upon the process of descriptive prose with inevitable variation in expression, vocabulary and style of the person responsible, and these are often considerable. Adoption of digital photography can document the true appearance of the specimen and eliminate much

of the inaccuracies resulting from variation in ndescriptive prowess.[2]

Photographing Surgical Pathology specimens is not a novel idea and has been practiced for a long time.[7,8] But considerations of cost, time, ease and expertise have prevented it from becoming a norm. Adoption of digital photography of gross specimens as a routine would allow us to incorporate these photos into pathology reports as well as have a better archival record. Details of sections submitted could be indicated on these photos.[9] This could dramatically alter the face and format of future pathology reports which could consequently become more accurate and succinct.[4,10]

Though many of us would agree with the idea in theory, they might find the idea of carrying a camera around all the time too cumbersome. So it was thought that the small devices most of us carried in our pockets or bags should be given a try. The results were encouraging.

iPhone 4 gave very high quality images. Most of results were as good as Canon Coolpix S-80, while some were even superior **(Fig 1,2).** This appears paradoxical since iPhone 4 comes with a 5 megapixel camera while the latter boasts of a 14 megapixel one. This can be explained by the fact that the megapixel "score" is only one of the factors determining the quality of image taken.[11] The lens and the camera's image processing capability are also important. Literature abounds with warnings about an over-fascination with megapixels. iPhone is claimed to be loaded with better processors etc. Our results upheld this claim.[2,11,12] Samsung Galaxy S Duos gave images which were only slightly less in quality than those of the other two. The color detail and sharpness was less but even these images were good enough to be used for scientific purposes **(Fig 1,2).**

Samsung Galaxy Note II loaded with "Magnify" app proved to be a tool no pathologist should be ignorant of. It shed light on a lot of specimens already listed (Fig 1-3). In fact, it may perhaps render the dissecting microscope obsolete. These microscopes have long been employed in Surgical Pathology labs to study the gross features of specimens in detail and to select areas to be submitted for microscopic examination (Fig 4). Now, both these purposes may be served by a compact smartphone.[13,14]

In addition, 3-D images of selected cases may be generated for teaching purposes, which may in future prove to be an alternative to our current practice of storing actual specimens in museums. Such novel archives would be practically maintenance free, and would require minimal physical space for storage. They would not be subject to legalities of organ retention and amenable to endless copying.[2,4]

Conclusion

In view of the widespread availability of digital cameras since their incorporation into cell phones, it has become very feasible to photograph every specimen received in the Surgical Pathology lab. Digital photography has removed, to a substantial extent, the constraints of time, cost, labor and expertise hitherto involved in photographing. In conclusion, the causes for conversion to this commandeering, contemporary technique are compelling, convincing and countless.

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Medical News

EMERGENCY ALLERGY NEEDLES TOO SHORT FOR HEAVY PEOPLE?

People with serious allergies who are obese may find out in a moment of crisis their epinephrine injection needles aren't long enough to be effective, according to a new study.

"Epinephrine works best when injected into the muscle," lead author Dr. Mary Colleen Bhalla said. "When it is injected into the fat layer of the skin it takes longer to reach the blood stream."

"When a person is having a severe allergic reaction they need the medicine to work as soon as possible," she told Reuters Health. In an allergy attack, airways constrict and may make breathing impossible. While waiting for emergency responders to arrive on the scene, the victim or a friend may use an autoinjector to deliver epinephrine, or adrenaline - a hormone that constricts blood vessels and relaxes airway muscles - into the thigh. If the injector needle is not long enough to reach muscle tissue, the extra time the drugs take to get into the bloodstream could be the difference between life and death for people with severe allergic reactions, Bhalla, of the Summa Akron City Hospital in Ohio, said. "A bee sting can cause death in 15 minutes," she said. "One study found that the epinephrine got in the bloodstream in an average of 8 minutes when given in the muscle, but an average of 34 minutes when given in the fat layer of the skin."

In an indirect investigation of the problem, Bhalla's team decided to measure the thickness of fat around the thighs of a random sample of patients in an emergency room and compare the measurements to the length of the longest available needle. At the time, the longest needle available was about 16 millimeters, or about two-thirds of an inch. Of 120 emergency room patients, 31 percent had layers of fat thicker than 16 millimeters around the thigh, the usual epinephrine needle injection point. Five percent of men and 54 percent of women in the sample fell into this category, according to the researchers' report in the American Journal of Emergency Medicine.

More than half of the people studied were obese. The results are still hypothetical, since the researchers didn't go as far as trying the injectors on people having allergy attacks to see if they would be effective. An injector with a 25 millimeter needle - about an inch - has been approved and will be available in late 2013 in the UK, Germany and Sweden, which would help solve the problem in the U.S., Bhalla said.

"In our study we found that we would need a needle length of 18mm to get the drug in the muscle in 95 percent of men, however we found that we would need a needle length of 35mm to get the drug in the muscle of 95 percent of women," she said.

But 35 millimeter needles would hit bone for some people and could be dangerous. A wider variety of needle sizes or an autoinjector that automatically adjusts needle length on insertion might be the best solution, she said. Patients should always keep their injector close and use it s soon as they realize they have been exposed to an allergen, and call emergency medical services as soon as possible, she said. Professionals have better ways of delivering the necessary drugs. "This study and several others suggest that the needle length of the autoinjectors may be too short to reach muscle in people with more body fat in the leg," Dr. Scott Sicherer said. "This is an important concern." Sicherer is a professor of pediatrics and a researcher at the Jaffe Food Allergy Institute at Mount Sinai in New York, and was not involved in the study. "Since the injectors forcefully spray the medicine beyond the tip of the needle, and there are insufficient direct studies of how the medications behave in people of different body sizes, the studies like this one looking simply at the anatomy of the leg have practical limitations," he said. "However, an important question is being raised that warrants more study." (This story has been refilled to change headline to remove reference to brand-name device.)

SOURCE: http://bit.ly/16KS1ve American Journal of Emergency Medicine, online October 4, 2013.

Original Article

PROFILE OF MEDICOLEGAL CASES ATTENDING TRAUMA CENTER OF DISTRICT HEADQUARTER TEACHING HOSPITAL, GUJRANWALA

Muhammad Amjad Bhatti, Shahid Mahmood and Shahid Hanif

Objective: To describe demographic characteristics and types of medico-legal cases presenting in trauma center of district headquarter teaching hospital, Gujranwala.

Material and Methods: In this descriptive study, two hundred and thirteen (213) medico-legal cases were studied. These cases visited trauma centre of district headquarter teaching hospital, Gujranwala during the year 2012. Medicolegal records were reviewed retrospectively. Demographic profile included age and sex distribution which was described according to the type of injury. Data was analyzed using SPSS version 18.

Results: Out of 213 cases studied, 182 (85.45%) were males and 31 (14.55%) were females. Majority of patients were between 11-30 years of age (62.91%). Injury was inflicted by blunt weapons in 92(43.19%) of the cases, whereas firearms and sharp edged weapons were responsible for 26.76% and 10.80% of the injuries respectively. On the other hand, total of 38 (17.84%) experienced road traffic accidents and only 1.41% cases suffered burns.

Conclusion: Blunt weapon injury is the most frequently reported medico-legal offense in district headquarter teaching hospital Gujranwala followed by firearm injury. Males are involved in most of these incidences.

Key words: Medicolegal, blunt Weapon, Road traffic accidents, injury, burn, firearm injury.

Introduction

Medicolegal cases constitute a considerable segment of emergencies brought to trauma centers of tertiary care hospitals. A medico-legal case (MLC) is an incidence of injury or ailment about which the attending doctor, after history taking and clinical examination, considers the need for investigations by law enforcing agencies to ascertain legal implications and fix the responsibilities according to prevailing law of the land.[1,2] Common medico-legal cases include alleged cases of assault, accidental injuries, burns, alcoholic intoxications, poisoning and also the cases of negligence by medical professionals.

Number of studies has documented the magnitude and pattern of medico-legal cases in various parts of the world and also in neighboring India, yet scope of medico-legal problems differ by regions based on socio-economic status, cultural variations, performance of law enforcing bodies and level of social services in community. Harish et al.[1] and Agarwal et al. [3] reported that road traffic accidents were the commonest types of medico-legal cases in Indian cities of Bangalore and Patiala respectively, followed by blunt injuries and poisoning. On the other hand, in Quetta Baluchistan, most frequently reported cases were blunt injuries resulting from street fighting followed by road traffic accidents. Interestingly, in both these countries, there was a male predominance and these events occurred mostly in younger age groups (20-29 years).[4] Furthermore, frequency of medico-legal admissions was higher in summer season.[3,4]

Types of medico-legal cases presenting in emergency departments also highlight a snapshot of social problems, level of intolerance and value system among individuals in the community. Thus, studying frequency and pattern of these cases will provide vital data for administrators, philanthropists, social workers and health officials to devise strategies in order to reduce these incidences. Information can also be used by social scientists to probe further into the circumstances which culminated in such events. Aim of existing study is to describe the demographic profile of medico-legal cases in trauma center of district headquarter hospital Gujranwala and characterize the types of weapons with associated injuries.

Material and Methods

In this descriptive study, two hundred and thirteen (213) medico-legal cases were studied retrospectively. All of these cases visited trauma centre of district headquarter teaching hospital, Gujranwala during Jan-December 2012. Individuals of all ages and gender were included and those with no medicolegal perspective were excluded from study. A pre-tested

Structured proforma was used to collect the data regarding demographic profile and types of injuries. Relevant information was collected by reviewing medico-legal records from the register. Data was first manually transferred to the form followed by its entry in SPSS -18 for data editing and analysis which included computation of frequency distribution and percentages. Formal permission was obtained from concerned hospital authority and institutional ethical review committee to conduct this study.

Results

Of the 213 individuals included in the study, 182 (84.45%) were males and proportion of females was 14.55%. Majority of the cases were in the age range of 21-30 years (39.44%), followed by age group of 31-40 years (16.90%). Regarding the types of injury, it was found that blunt injuries 92(43.19%) resulting from street fight was the commonest form of assault in Gujranwala requiring medico-legal investigations followed by firearm injury 57(26.76%) and Road traffic accidents 38 (17.84%). All these three types were predominantly frequent among males comparatively. For instance, proportion of blunt injuries among males were 84.78% as compared to 15.22% in females and that of firearm injury and RTA, it was 87.22% and 84.21% in males respectively. Individuals in age group between 21-30 years were more prone to experience blunt injuries 36(39.13%), Firearm injuries 22(38.60%) and Road traffic accidents 15(39.47%) in comparison to other age groups. Injuries from sharp weapons contributed only 10.80% of cases and mostly among males (86.96%) and these were more pronounced in age group 21-30 years (39.13%). We found less than 2% of the burn cases (mostly males) in the study population which might be an under representation of female cases, attributed to an avoidance of medico-legal proceedings.

Discussion

Medicolegal cases are an integral part of medical practice in emergency departments of major hospitals. Owing to legal implications, these cases also pose an additional work load on staff dealing with these emergencies. An apparently looking trivial trauma may have severe damage to underlying organs and a high index of suspicion is required to make clinically and medico-legally an accurate diagnosis. Organizing statistics about the types of medico-legal insults provide an important insight into the trend of social problem occurring in the community. It has been observed that in Gujranwala region, street fights are more prevalent since we found more blunt injuries

Table-1: Age wise distribution of medico-legal cases presenting in DHQ hospital Gujranwala (n=213).

Age Group	All Cases N (%)	Bunt Injury (Streeet Fight) N (%)	Firearm Injury N (%)	Sharp weapon injury N (%)	RTA* N (%)	Burns N (%)
0-10	10 (4.69)	04 (4.35)	03 (.26)	01 (4.35)	02 (5.26)	0
11-20	50 (23.47)	22 (23.91)	13 (22.81)	05 (21.74)	09 (23.68)	0
21-30	84 (39.44)	36 (39.13)	22 (38.60)	09 (39.13)	15 (39.47)	02 (66.67)
31-40	36 (16.90)	16 (17.39)	10 (17.54)	04 (17.38)	06 (15.79)	01 (33.33)
41-50	20 (9.39)	09 (9.78)	05 (8.77)	02 (8.70)	04 (10.54)	0
51-60	08 (3.76)	03 (3.26)	02 (3.51)	01 (4.35)	01 (2.63)	0
61+	05 (2.35)	02 (2.18)	02 (3.51)	01 (4.35)	01 (2.63)	0
Total	213 (100)	92 (43.19)	57 (26.76)	23 (10.80)	38 (17.84)	03 (1.41)

** RTA : Road Traffic Accidents*

Table-2: Gender wise distribution of medico-legal cases presenting in DHQ hospital Gujranwala (n=213) .

Age Group	All Cases N (%)	Bunt Injury (Streeet Fight) N (%)	Firearm Injury N (%)	Sharp weapon injury N (%)	RTA* N (%)	Burns N (%)
Male	185 (84.45)	78 (84.78)	50 (87.72)	20 (86.96)	32 (84.21)	02 (67.0)
Female	31 (14.55)	14 (15.22)	07 (12.28)	03 (13.04)	06 (15..79)	01 (33.0)
Total	213 (100)	92 (43.19)	57 (26.76)	23 (10.80)	38 (17.84)	03 (1.41)

** RTA : Road Traffic Accidents*

Cases in this study. This is in contrast to the results reported by Harish et al.1 in Bangalore, whereas road traffic accidents were common (75.3%). However, our results are consistent with a study in Quetta Baluchistan.[4] Almost every study pertaining to profiling of medico-legal cases[1,3,5] found male's involvement in these incidences. This may be due to the male dominance in this region and engagements of these men in day to day chores. Females are usually spared in matters of conflicts.[7] Low reporting of road traffic accidents in this study may be due to the settlements among parties outside court of law and not entered into the records. These observations are consistent with other studies.[6,8,9] Young and productive age group has been observed to be affected and the majority of the patients belonged to 11-30 years age group (62.91%). This has great socioeconomic impact as any kind of trauma leading to temporary or permanent physical or psychological disability will not only affect the individual and his family in general but society as a whole.[10,11] Individuals in this age group are vulnerable to homicidal or accidental injuries owing to their exposure to environmental factors at work place, on the roads and recreational areas. This vulnerability is amplified by lack of education, improper socialization and with ego centric personalities.[12,13] Firearm injuries have contributed a great deal in morbidity and mortality around the world especially in Western countries,[14,15] where two third of homicidal injuries and deaths are attributed to these firearms. Yet, only quarter of cases in this study were due to firearms. Reasons for this difference may be the lack of access to these forearms compared to western countries. Furthermore, injuries due to sharp edged weapons were observed in only ten percent patients and this finding is consistent with the reports of shaikh et al.[15] and Tajjamal et al.[16] Some studies have covered the factors like seasonal variation, urban-rural distribution, time of admission of medicolegal cases.

For instance, Gupta et al.[2] found that medicolegal cases are more frequent in summer season (April-June), during office hours, urban areas and along certain highways. Similar issues were missing in existing study. These factors were not included since relevant information was lacking in the records. However, concerned authority should take necessary measure to bridge this gap for future research endeavors.

Conclusion

Blunt weapon injury is the most frequently reported medico-legal offense in district headquarters teaching hospital Gujranwala followed by firearm injury and road traffic accidents. There is a male predominance in all forms of these medico-legal assaults.

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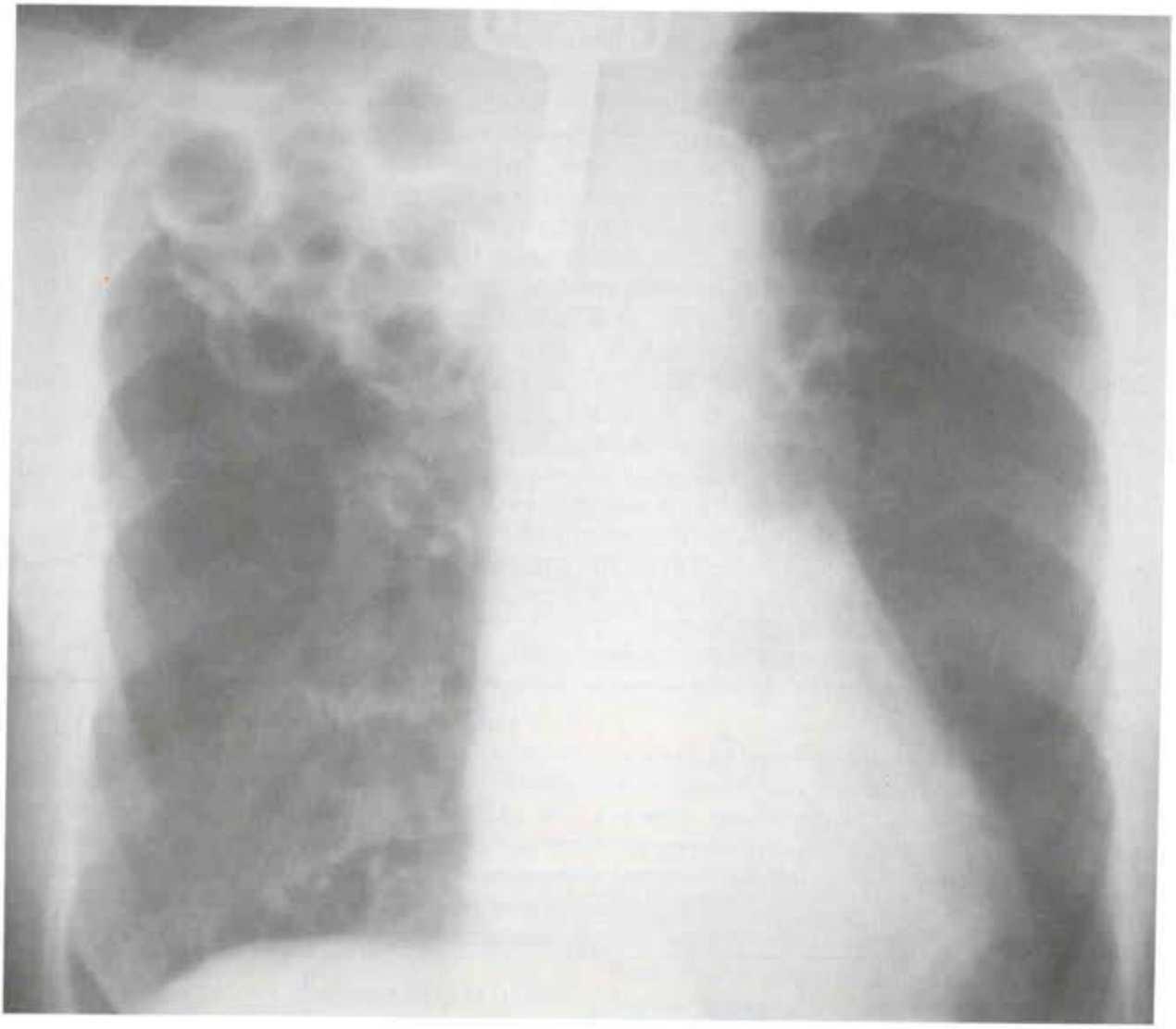
Picture Quiz

What is the finding in this X-ray Chest?



See answer on Page # 158

Original Article

Prevalence of Incidental Sinonasal Diseases on Brain Imaging by Computed Tomography Scan

Mohammad Saleem Shehzad Cheema and Salman Atiq

Objective: The purpose of this study was to investigate the prevalence of incidental sinonasal diseases on CT scan in Pakistani population presenting with neurological signs and symptoms for brain imaging.

Material & Methods: This cross sectional study was conducted in Department of Radiology, Services Institute of Medical Sciences/ Services Hospital, Lahore, between August 2009 and June 2010. All the cases undergoing CT head referred by physicians and neurophysicians presenting with neurological symptoms and signs besides exclusion of the cases of head trauma were included. The study population consisted of 507 patients, including 311 men and 196 women, who were 2-75 years old (mean age, 42 years). Frontal, ethmoid, sphenoid, left and right maxillary sinuses were separately evaluated. The pathological processes included were mucosal thickening, opacification, air-fluid level, retention cysts and polyps.

Results: Out of 507, there were 199 patients (39.25%) in whom sinus pathology was documented. There were no significant gender differences amongst the study population. Most of the patients were adults; pediatric age group consisted 11%. The incidental sinonasal disease was more common in the patients above 30 years of age, with slight predilection toward females (56%). Mucosal thickening was the most common pathology (71.8%); categorization including normal (no mucosal thickening), mucosal thickness of 1 mm (34.6%), 2 mm (24.6%), 3 mm (27.7%), and 4 mm or above (13.1%) was done accordingly. Other abnormalities including sinus opacification (14%), air-fluid level (5.0%), retention cyst (5.5%) and polyp (3.5%) were found uncommon.

Conclusion: The high prevalence of sinonasal disease in general population emphasizes the necessity of clinical correlation, if picked incidentally on cross-sectional brain imaging. Subtle mucosal thickening, in particular to ethmoidal air cells, is a normal variant, most likely due to the physiologic nasal cycle. Incidental findings of paranasal sinus disease without clinical signs and symptoms do not define a diagnosis of sinusitis or a sinonasal disease; adequate clinical information is mandatory prior to starting the treatment. The possible reason of high prevalence of sinonasal disease in Pakistani population could be dust allergy and pollution besides respiratory tract infections and smoking. Future studies are recommended to a larger population to evaluate the significance of these incidental findings.

Key Words: Prevalence, incidental, sinonasal disease, CT scan, brain imaging.

Introduction

Sinonasal disease is a common clinical problem in general practice. Diagnosis of sinusitis is complicated, especially in children because of fewer specific signs and symptoms.[1] Patients who do not respond to medication or are planning surgical treatment need a radiographic examination to confirm the diagnosis.

Plain films are still the most commonly used diagnostic preliminary tool for the investigation of sinusitis. However, CT and MRI are more sensitive modalities. CT scan has the advantage of demonstrating bony abnormalities. MRI is best at revealing the soft tissue changes. Studies previously done on CT and MRI[2] demonstrating changes in the paranasal sinuses of asymptomatic patients were given abnormalities in symptomatic group.

The purpose of this study was to investigate the prevalence of incidental sinonasal disease in Pakistani population presenting with neurological signs and symptoms for brain imaging and its clinical significance.

Material & Methods

This cross sectional study was conducted in Department of Radiology, Services Institute of Medical Sciences/ Services Hospital, Lahore, between August 2009 and June 2010. CT scan was

performed in the patients with neurological symptoms and signs who were referred from the indoors, outpatient department and accidents/ emergency department of Services Hospital Lahore by physicians and neurophysicians. We consecutively included the cases undergoing CT head besides exclusion of all the cases of head trauma from our study, so that any abnormality picked would be purely sinonasal in origin. The patients' medical records were reviewed. The study population consisted of 507 patients, including 311 men and 196 women, who were 2-75 years old (mean, 42 years). CT scanning was done on multidetector Aquilion Multi-Slice CT (Toshiba Medical Co. Ltd, Tokyo, Japan). Axial slices of 2-3 mm thickness were reformatted on 2000-2500 HU window width & 200-350 window level, as to provide bone & soft tissue details in a single set of films. Bony algorithm was utilized. The CT scan covered the skull region from the anterior margins of the frontal sinus to the posterior margins of the sphenoid sinus. The radiation dose was kept minimum by the use of low mA with peak KV around 120. The CT scanning was performed in the supine position. The gantry was angled perpendicular to the hard palate. All CT scans were acquired without intravenous contrast. An experienced radiologist read all non-enhanced CT head images for sinonasal disease. Frontal, ethmoid, sphenoid, left and right maxillary sinuses were separately evaluated. If the sinus was not developed, it was regarded as clear. The pathological processes included in our study were mucosal thickening, opacification, air-fluid level, retention cysts and polyps.

Results

Out of 507, there were 199 patients (39.25%) in whom sinus pathology was documented. There were no significant gender differences amongst the study population undergoing CT head. Most of the patients were adults; pediatric age group consisted 11% in our sample population. **Table-1** shows the prevalence of sinus pathology in different age groups and genders. The incidental sinonasal disease was more common in the patients above 30 years of age, with slight predilection toward females (56%). **Table-2** shows the sinus abnormalities of different paranasal sinus groups. As the major bulk of patients in our study were falling in the category of mucosal thickness, we

Table-1: Prevalence of incidental sinus pathology on NECT head in different age groups and genders.

Sinus Morphorlogy (n=507)	Age Groups (Year)					Gender	
	2-15	16-30	31-45	46-60	>60	Male	Female
Clear / Normal (n=308)	36	48	57	79	88	168	140
Pathological /diseased (n=199)	21	39	58	51	30	87	112
Total	57	87	115	130	118	255	252

Table-2: Percentages of sinus abnormalities of different paranasal sinus groups.

Pathological Changes	Sinuses (n=507)				Total (n=199)
	Frontal (n=15)	Ethmoid (n=68)	Maxillary (n=103)	Sphenoid (n=13)	
Mucosal thickening	13	58	63	9	143(71.9%)
Opacification	2	8	17	1	28 (14%)
Air-fluid level	0	0	8	2	10 (5.0%)
Retention cyst	0	0	11	0	11 (5.5%)
Polyp	0	2	4	1	7 (3.5%)

Table-3: Categories of the mucosal thickening of various groups of paranasal sinuses and their percentages.

Mucosal Thickening	Sinuses				Total (n=143)
	Frontal (n=13)	Ethmoid (n=58)	Maxillary (n=63)	Sphenoid (n=9)	
Minimal (1mm)	0	11	10	0	80 (34.6%)
Mild (2mm)	3	15	17	1	57 (24.6%)
Moderate (3mm)	6	23	12	3	64 (27.7%)
Gross (4mm or above)	4	9	24	5	30 (13.1%)

Categorized the patients according to the maximal mucosal thickening present in any of paranasal sinuses. **Table-3** shows the categories of the mucosal thickening of various groups of paranasal sinuses and their percentages.

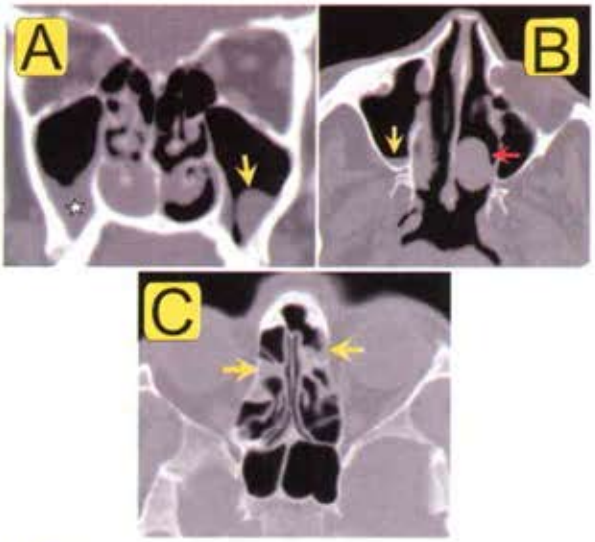


Fig-1: (a). Coronal reformatted NECT head with right maxillary sinus mucosal thickening (star) and left maxillary sinus retention cyst (yellow arrow). (b). Axial NECT section through maxillary sinuses revealing air-fluid level in the right maxillary sinus (yellow arrow) with a left sided nasal polyp (red arrow). (c). Axial NECT section through the ethmoidal cells shows mucosal thickening of these cells (yellow arrows).

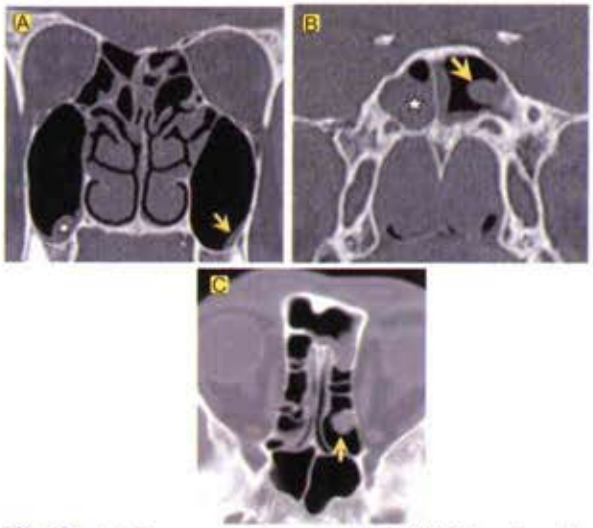


Fig-2: (a) Coronal reformatted NECT head with right maxillary sinus retention cyst (star) and left maxillary sinus mucosal thickening (yellow arrow). (b). Coronal reformatted NECT head through sphenoid sinus revealing mucosal thickening (star) in right sphenoid sinus and a left sided polyp (yellow arrow). (c). Axial NECT section through the ethmoidal cells shows left sided polyp (yellow arrow).

Discussion

It has previously been reported with CT that abnormalities in one or more pananasal sinuses are seen in 42% of asymptomatic adults.[3] Similarly, various degrees of mucosal thickening in the paranasal sinuses are commonly seen during routine MR of the brain. Goal of our study was to investigate the prevalence of incidental sinonasal disease and to delineate the significance of mucosal abnormalities. Such a finding would be of certain clinical value regarding further medical workup and therapy. Glasier et al.[4] examined the cranial CT scans of 101 children and identified paranasal sinus abnormalities in 31% of the upper respiratory inflammation (URI)-positive group and in 26% of the URI-negative group. Diament et al.[5] prospectively studied 137 consecutive paediatric patients referred for a CT of the brain and orbit, and presented that an overall 45% of the patients had incidental sinusitis, with similar findings with Lesserson et al.[6] Choi et al.[7] analyzed CT scans of 162 children who had no signs or symptoms of paranasal sinusitis, and reported that one or more sinus opacifications were found in 47% of the patients. Stankiewicz et al.[8] reported that more than 50% of the patients who met the criteria of a symptom-based definition of rhinosinusitis had a negative CT scan and were treated unnecessarily with antibiotics. They recommended the use of the CT in addition to clinical evaluation to increase the accuracy of the clinical diagnosis. Wald et al.[9] pointed out that sinusitis is a clinical diagnosis which can be ruled out by negative image findings. CT is the most useful imaging tool to diagnose sinusitis.[10,11] However, the main disadvantages of cost and high radiation dosage limit its application.[12,13] The concept of normal nasal cycle is essential for interpreting our study data. Zinneich et al.[14] report that, in a normal adult, changes in the nasal mucosal volume occurs cyclically, alternating from side to side. Mucosal volume changes are observed in the mucosa of the turbinates, the nasal septum, lateral wall and cavity floor, nasolacrimal ducts, and ethmoidal sinuses. The frontal, maxillary, and sphenoidal sinuses are not affected. Mucosal volume changes are observed in the mucosa of the turbinates, the nasal septum, lateral wall and cavity floor, nasobacnimal ducts, and ethmoidal sinuses. The frontal, maxillary, and sphenoidal sinuses are not affected.

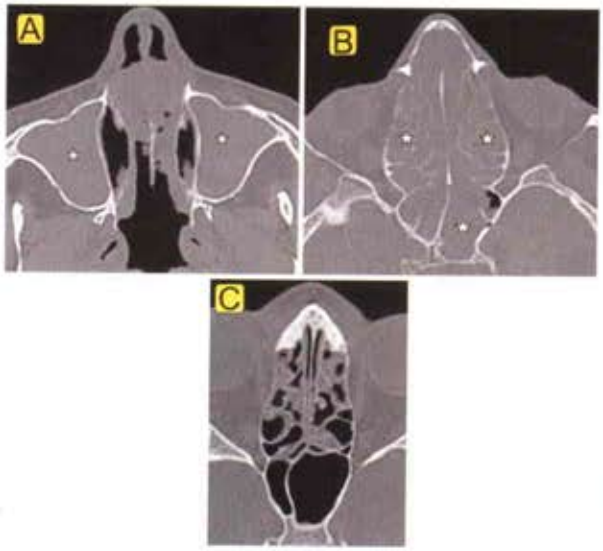


Fig.3: Axial NECT sections through maxillary sinuses (a), ethmoidal cells and sphenoid sinuses (b) show complete opacification of the sinuses. (c). Axial NECT section through the ethmoidal cells shows mucosal thickening of all the cells.

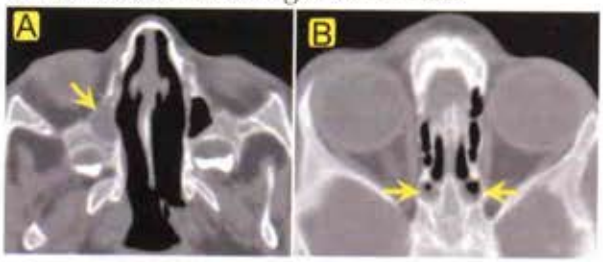


Fig-4: Axial NECT sections of pediatric age through maxillary sinuses (a), ethmoidal cells and sphenoid sinuses (b) show complete opacification of the right maxillary sinus and mucosal thickening of partially pneumatized sphenoid sinuses.

Ethmoidal sinuses are the only pananasal sinuses to undergo cyclical mucosal volume changes. Minimal 1 to 2 mm mucosal thickening in the ethmoidal sinuses are a physiologically normal variant, a function of mucosal volume changes occurring in the nasal cycle. The physiologic ethmoidal mucosal edema may be diffuse or focal. It is commonly bilateral, suggesting that in the nasal cycle, the resolution of mucosal edema may be somewhat delayed, such that edema may persist on one side while the contralateral mucosa has already become edematous.

Sinusitis is a nebulous disease, with subjective symptoms that are commonly vague on nonspecific. Clinical history is essential in the assessment of sinus disease [15], but symptoms may not reflect the true state of the pananasal sinuses.[16] The major limitation o

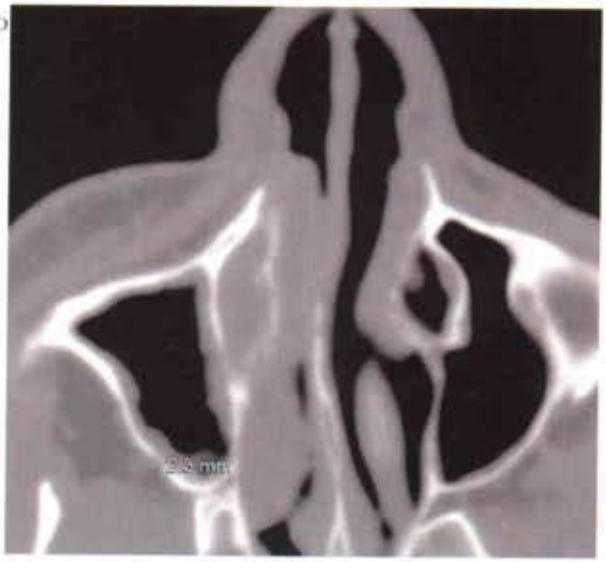


Fig-5: Axial NECT section through maxillary sinuses shows subtle mucosal thickening of the right maxillary sinus walls (measuring 2.3mm in thickness).

Our study was that we relied strictly upon radiological findings and not on clinical history to categorize patients as either symptomatic or asymptomatic. We are not suggesting that mucosal disease of 3 mm or less is not clinically significant; however, the results of previous studies show that up to 3 mm of mucosal thickening may commonly be seen in asymptomatic patients. As such, radiological findings on imaging may not match clinical symptoms. Thus, clinical correlation is required. Retention cysts are due to obstruction and dilatation of a duct of a minor seromucinous gland. They are typically asymptomatic.[15]

Thickening may commonly be seen in asymptomatic patients. As such, radiological findings on imaging may not match clinical symptoms. Thus, clinical correlation is required. Retention cysts are due to obstruction and dilatation of a duct of a minor sero mucinous gland. They are typically asymptomatic.[15]

Inhalant allergic conditions such as seasonal and perennial allergic rhinitis and sinusitis are becoming quite common. The effect of allergy on an individual's quality of life and the extent to which it may restrict daily activities is often overlooked. The triggers that have a large effect on the health of the population sample for allergic rhinitis are respiratory infections, tyre burning and war gases, house dust, strong odours, auto exhaust, smoke and weather changes. According to one survey, allergic rhinitis prevalence rate is 3.1 and the percentage of patients who reported to have allergic rhinitis is 38.1% [17]. The

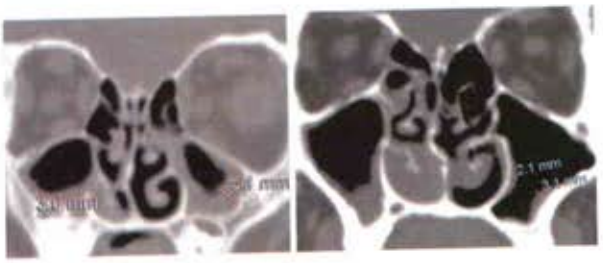


Fig.5: Coronal reformatted NECT section through maxillary sinuses shows subtle to variably gross mucosal thickening of maxillary sinus walls.

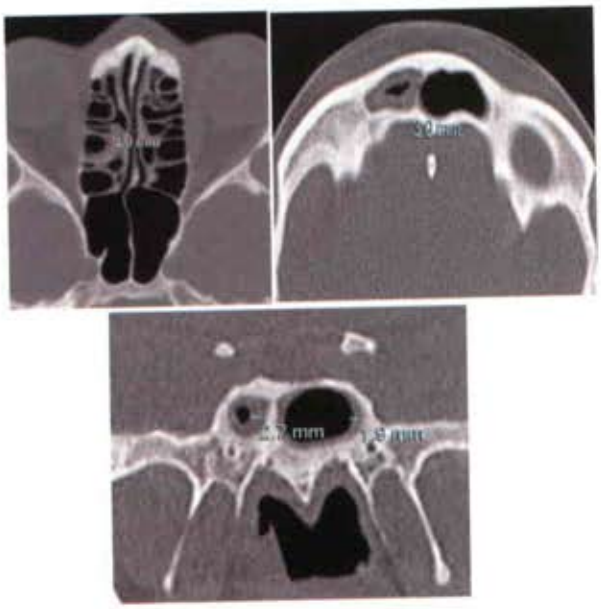


Fig.6: Axial NECT sections through ethmoidal cells and sphenoid sinuses (a) and frontal sinus (b) show subtle mucosal thickening of these sinuses (measuring 3mm each). (c). Coronal reformatted NECT section through sphenoid sinus shows subtle mucosal thickening of sinus walls (measuring 1.9-2.7mm).

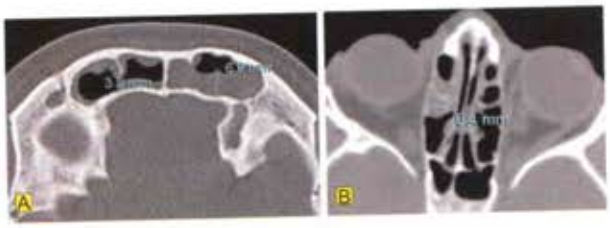


Fig.7: Axial NECT sections through frontal sinuses (a), ethmoidal cells and sphenoid sinuses (b) show subtle to variably gross mucosal thickening of sinus walls (measuring 3.5-6.8mm).

possible reason we concluded from our study of this much high prevalence of sinonasal disease in our population could be dust allergy and pollution besides respiratory tract infections and smoking.

Conclusion

Sinonasal disease is prevalent in general population. This high prevalence emphasizes the necessity of clinical correlation, if picked incidentally on cross-sectional brain imaging. Subtle mucosal thickening, in particular, if only present in ethmoidal air cells, may be normal variant, most likely due to the physiologic nasal cycle. Incidental findings of paranasal sinus disease without clinical signs and symptoms do not define a diagnosis of sinusitis or a sinonasal disease, adequate clinical information is mandatory prior starting the treatment. The possible reason of high prevalence of sinonasal disease could be dust allergy and pollution besides respiratory tract infections and smoking. Future studies are recommended to a larger population to evaluate the significance of these incidental findings.

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we reviewed the literature for the definite management of the bilateral abductor paralysis. Different surgical procedures have been described for this problem like atrynoidectomy, laser cordectomy, lateralization of vocal cord and reinnervation technique. We did partial resection of posterior one third of left vocal cord with the help of diode laser leaving arytenoids **(figure-3).**

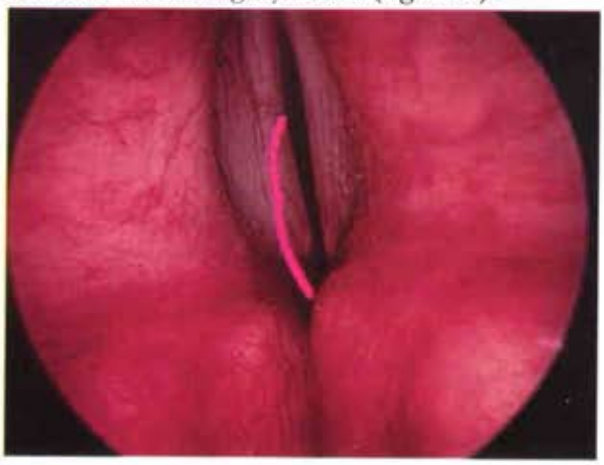

Fig-3: Line diagram showing the incision made for surgery (left vocal cord).

After one week we were able to remove the tracheostomy tube. The patient symptoms improved but there was mild dyspnea during exertion. During time there was some deterioration of symptoms like dyspnea during exertion and stridor during sleep. The patient voice was satisfactory.

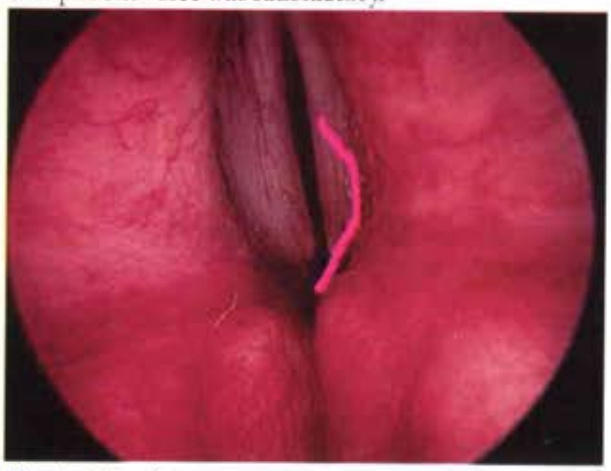

Fig-4: Line diagram showing the incision made for surgery (right vocal cord).

After six weeks, we removed posterior one third of right vocal cord without tracheostomy and symptoms improved without compromising the voice **(fig: 4).** Now the patient is comfortable without dyspnea during exertion and with normal voice.

Discussion

Bilateral vocal card immobility is a broad term that refers to all form of reduced or absent function of vocal cord. Bilateral vocal cord paralysis refers to the neurologic causes of bilateral vocal cord immobility and specifically refers to the reduced or absent function of vague nerve or its distal branch recurrent laryngeal nerve. Bilateral immobile vocal cord due to bilateral abductor palsy leads to respiratory distress that can become life threatening. Vocal cords are immobilized either due to palsy or from mechanical derangement of laryngeal structure such as cricoarytenoid joint. Various etiologies for vocal cord paralysis are neck surgery (predominantly thyroid), trauma, neurological disorders and laryngeal malignancies.[1] According to Benninger's findings in a series of 117 cases of bilateral vocal cord paralysis can be attributed to following causes surgical trauma 44%, malignancy 17%, endotracheal intubation 15%, neurological diseases 12% and idiopathic causes 12%.[2] Idiopathic causes are the second most common cause of child hood BVCP.[3]

Surgeons have long been searching for techniques to safely widen the glottis airway in patients with bilateral vocal cord paralysis without detracting from vocal quality and/or causing aspiration. For last 15 years, transoral carbon dioxide (CO2) laser endoscopic arytenoidectomy has perhaps become the most common method. Oswal et al described their result of endoscopic co2 laser surgery for bilateral immobile vocal cords on the basis of respiration phonation and swallowing.[4] Co2 laser is the most appropriate tool for cordectomy with the advantages of increased precision, better homeostasis and minimal tissue handling. Gandhi described the use of transoral co2 laser for managing cases with compromised airway due to BVCP BY subtotal arytenoidectomy with posterior cordectomy with good result.[5]

Conclusion

When considering the treatment of bilateral abductor paralysis it is important to remember the basic point that patient has good voice but poor airway. Any operative procedure to improve the airway will decrease the quality of voice and on occasion fail to improve the airway. There are chances of recovery in vocal cords in 24 to 36 months, so any surgical procedure should be delayed for two years. Diode laser cordectomy is an alternative option to CO2 laser cordectomy.

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Answer Picture Quiz

Correct Diagnosis:-

Chest Xray shows presence of Ping Pong Balls (Plombage) in Right upper zone. Plombage involved the extra -pleural insertion of a "plombe" to collapse the lung for treatment of Tuberculosis during 19th century.

They included:

- Fat
- Solid paraffin wax
- Lucite spheres
- Plastic ping pong balls

A tracheostomy tube can also be seen.