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INSTRUCTION FOR AUTHORS
NEWER APPROACHES IN ANATOMY TEACHING

Shaileshkumar K Nagar

Is there a need to change teaching methodologies in Anatomy?....

No doubt the older dedicated teachers prefer the ‘Chalk and talk’ method in a year & half course of first MBBS, where students were admitted purely on the bases merit and hence intellect.

But in my opinion acceptance of newer methods of teaching would prove beneficial to students as 1st MBBS is reduced to one year course, the ‘Payment seat’ concept admits ‘Not so bright’ students whose mindset is exam oriented and on top of it there is a dearth of sincere dedicated teachers, who are willing to painstakingly impart their knowledge. Also with the rise of competitive exams for post graduation or USMLE calls for introducing / accepting newer methods.

Most common newer method is use of PPT – where a well organized lecture is imparted and diagrams can be conveyed completely. The lecturer is more at ease and has the flexibility to amplify a particular point. An overlay technique is effective way of ‘Building up’ a diagram (which needs artistic expertise in chalk method). Also use of animation videos makes the students more interested.

A number of studies of senior medical students have revealed a need of clinically oriented Anatomy, Imaging anatomy, surface & living anatomy. Here are a few suggestions

Group project work or problem solving team exercises where research with the help of internet/books and senior residents can be used to complete an assignment would promote cooperative learning.

Computer Assisted Learning (CAL) by visualization of surface & living anatomy where a mummy is not available.

Well developed (radiology) software can be used for teaching sectional or imaging anatomy for better understanding of MRIs, CT scans in coming clinical years. This will act as supplement in understanding relations of various structures, thus adding a radiological perspective to gross anatomy.

Virtual microscopy should be used to teach histology beyond laboratories. Spotting should be promoted as a self directed learning approach.

Appetite for dissection is declining.Use of prosections is a very effective way especially in unfavorable student cadaver ratio and curtailed teaching time. A list of structures are shown to students that are supposed to be seen after a particular class.

CAT (Computer assisted teaching) leaves a lasting impression on the students’ mind.

Use of smart phones & I-Pods for viewing Anatomy videos/text is popular among students.

This self adopted, learn anywhere method can be supported by developing quality videos at our own institutions.

So the days are not far where a web-based interactive 3D visualition will be used for an improved Anatomy learning in this Digital Era. So, curriculum design is the key to promote effective Anatomy education and goal of deep and meaningful learning in preparation of professional practice.

The author, Dr. Shaileshkumar K Nagar is currently working as Professor and Head of Department of Anatomy in GMERS Medical College at Gotri, Vadodara (Gujarat). He has wide experience of teaching undergraduate as well as post graduate students. Apart from the subject he is also interested in Hypnosis, Face reading, Body language, Horoscope and Human psychology. He has many publications in renowned journals to his credit.
ORIGINAL ARTICLE

CLINICAL PROFILE OF INTERSTITIAL LUNG DISEASES CASES

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ABSTRACT

Background: There are very few studies are done on interstitial lung diseases (ILD) in India.

Methods: We conducted a retrospective study of 30 patients of high resolution computed tomography (HRCT) proven interstitial lung diseases in tertiary care centre.

Results: Most common etiological causes of ILD were occupational (46.62%), Rheumatoid Arthritis (13.32%), and idiopathic pulmonary fibrosis (33.33 %). Majority were in age group 40-49 years (mean age-45.23 years) and 66.5% male patients. Common symptoms were breathlessness on exertion (100%), dry cough (43.29%), anorexia (50%) and joint pain (16.65%). Clubbing and bilateral crepitations were present in 50% and 63.27% of patients respectively. X-ray chest showed reticulo-nodular pattern (60%). Restrictive pattern (96.57%) was present in majority patients in spirometry.

Conclusion: Availability of non-invasive investigations like HRCT chest has increased our early recognitions of ILDs. Association of ILD in patients with autoimmune diseases must be ruled out.

Key words: Interstitial lung disease, spirometry, idiopathic pulmonary fibrosis

INTRODUCTION

Common clinical, radiological and pathophysiological features form the basis collectively referring to a complex group of disorders as the interstitial lung diseases 1. The prominent feature in interstitial lung diseases is fibrosis in the interstitium, which produces derangement of alveolar architecture and loss of functional alveolar capillary units. More than 150 known factors are associated with interstitial lung diseases. Diagnosis can be made by the combination of clinical and roentgenographic features and pulmonary function tests. Histopathological confirmation of the diagnosis is not required in most of the cases. There has been a resurgence of interest in the study of these disorders chiefly on account of the availability of less invasive methods. Development of high resolution computed tomography and availability of video-assisted thoracoscopic lung biopsy has added to our diagnostic strategies. Unfortunately effective therapy remains elusive leaving the patient and clinician frustrated as the diseases typically progresses and complications develop from frequent ineffective, non-specific immunosuppressive therapy. There are very few studies are done on interstitial lung diseases. The present study was therefore planned to analyze the spectrum of ILDs. Our aim of the study was to find out common presentations, signs, X-ray findings, spirometry patterns and common etiology of interstitial lung diseases.

MATERIALS AND METHODS

A study of total 30 patients was done. This was a retrospective, observational, epidemiological study. Patients initially suspected to have Interstitial Lung Diseases, undergo high resolution computed tomography (HRCT) chest. Patients who were confirmed by HRCT to have ILDs were included in this study. Careful history, general and systemic examination was done followed by complete hemogram, chest radiography, HRCT chest and spirometry in all cases. Pulmonary function tests were performed on computerized spirometer, through Kit
Microscopy. Sputum examinations including routine microscopy, AFB, gram stain, culture and sensitivity were carried out in patients with history of productive cough. HRCT of chest, immunological tests like ANA, anti-ds DNA were also done in all patients.

RESULTS

The mean age of the patients was 43.57 years. In our study 66.5% male patients, while 33.5% were female patients. Most of patients present with breathlessness on exertion (100%) and cough was usually dry (43.29%) in nature. Dyspnoea in interstitial lung diseases is believed to be due to altered mechanics of breathing involving increased work of ventilation. Cough may be due to that cough receptors in the lung are sensitive not only to mucosal and pleural stimuli, but also changes in the mechanism of lung expansion. Anorexia and weight loss was found in 50% and 33.33% patients respectively. It may be due to chronic hypoxia and its effect on metabolism. Fever was present in a small number (13.32%) of patients. It may be due to associated infection. Skin lesion (6.66%) and joint pain (16.65%) was found mainly in collagen disease group but also in some idiopathic group patients have elevated ESR.

All patients usually presented before 5 years of duration of illness. Major group of patients (33.33%) presented between 1-3 years duration of illness. Patients presented less than 6 months or between 6-12 months duration were same (23.31%) 

Half of patients (46.62%) give history of dust exposure, which was occupational related. Collagen diseases associated with interstitial lung diseases were found in 19.98% patients. Remaining idiopathic group (33.33%) in which specific etiology related to interstitial lung diseases was not found. 

Clubbing was found in half of patients. Pallor was found in 33.30% of cases and it may be due to associated anorexia that leads to nutritional deficiency. Skin lesions found in 2 patients, one was found a case of systemic lupus erythematosus and second was scleroderma.

In respiratory system examination 63.27% cases had bilateral crepitation, which was dry and inspiratory. It might be produced by fluid accumulation in the very small air passages, where drainage was hampered by peribronchial and interstitial fibrosis. Other findings were harsh breathing (6.60%) and rhonchi (3.33%)

In all 30 patients hemogram, renal function tests, liver function tests were done. Renal function tests were normal in all patients. Hemoglobin less than 10% was found in 36.63% and white blood cells more than 11,000/cmm in 6.66% of cases. Leucocytosis may be due to associated infections. Elevated ESR was found mainly in collagen disease group but also in some idiopathic group patients have elevated ESR.

Majority of patients shows reticular (16.65%) or reticulonodular (60%) patterns on chest X-ray. Ground glass (10%) and honey-combing (13.32%) founds in small number of patients. These finding may be related that most patients are referred after alveolitis stage (ground glass appearance) and before honey combing appearance found on lungs.

HRCT of chest was carried out in all cases. A confirmed diagnosis of ILDs made with HRCT chest is based on presence of bilateral, predominantly basal, predominantly subpleural, reticular pattern associated with subpleural cysts (honey-combing) and/or traction bronchiectasis. Consolidation & nodules are absent. When all these radiological changes are present, diagnosis is correct in more than 90% of cases. HRCT chest confirmed interstitial lung diseases in all cases but no additional information available particularly regarding etiology.

Spirometry was done in all 30 patients. In most of patients FVC% of predicted was decreased and in 60% cases below 60% of predicted FVC. FEV1/ FVC ratio was normal and or increased in all cases except 1 case. Decrease in FVC was due to more stiffness of lungs due to fibrosis and resistance to inflation.

DISCUSSION

In present study peak incidence was found between 40-49 years age group and then 30-39 years age group. Jindal et al study also correlate with this study with peak incidence between 30 to 59 years. Male and female incidence was 42.4% and 57.4% in Jindal et al study, while in present study 66.50% male and 33.50% female patients found. As there were more female patients in Jindal et al study, collagen vascular disease group is more (50.8%) compared to present study (20%). In Mahasur et al study out of 161 cases 86 was male and 75 were female. 10% were below 25 years of age and 46% were at least 45 years of age. In M.Turner et al study, 66.8% male patients and 32.2% female patients were found. These findings are closely resembled to present study and male predominance raises possibility of occupational factor in etiology.

Dyspnoea was present in 100% cases in present study which is similar to Jindal et al, Mahasur et al and J. Fulmer et al and closely resemble(92%) in M. Turner et al study. Cough was found in 63.29% cases in present study, which correlate with Jindal et al study (65.6%). Cough was usually dry. In other study slight more incidence of cough (Mahasur at al-82%, M. Turner et al-73%, J. Fulmer at al-86%). Clubbing was found in 50% cases in present study that closely resembles Mahasur et al and Jindal et al study. Bilateral creps were present in 63.27% which resemble’s J. Fulmer et al study, but in other studies by Jindal et al, Mahasur et al high incidence of creps.

Joint pain was present in 16.65% cases that closely resemble M. Turner et al study (21%). In Jindal et al study, more cases of joint pain found which was due to more cases of collagen disease in Jindal et al study. In present study patient present with 1-3 years duration
(33.33%) but many patients also present below 1 year (23.31%) or above 3 year duration (20%). Comparison with Jindal et al study shows similar results. Mahasur et al had find that duration of illness was up to 1 year in 30%, 1-2 year in 18%, 3-5 year in 24% and beyond 5 year in 28%.

Incidence of anemia of present study (36.63%) closely resemble to Jindal et al study (39.30%) study. As compared to present study (6.6%) slight more incidence of leucocytosis was found in Jindal et al (14.70%) study. Rheumatoid factor was positive in 16.65% cases as compared to Jindal et al study (8.4%) and M. Turner et al study (19%) cases have Rheumatoid factor positive.

Honey combing appearance in present study was 13.32% that resemble to Johnston et al 7 study (15.10%). Incidence of Reticular & Reticulonodular patterns were 76.65% in present study as compared to 51% in Johnston et al study. Slight less percentage of cases in Johnston et al may be because of that in present study selection of patient done mainly on typical X ray chest finding while Johnston et al study patient with normal and ill defined opacities on chest X ray also included. Majority of patients have FVC% of predicted between 30-59% in present study and in Mahashur et al studies. In Mahashur et al study, FVC% of predicted below 30% was found in 27% as compared to 10% in present study, which may be related to early refers or early diagnoses of interstitial lung diseases due to more advance in non-invasive investigation of interstitial lung diseases. FEV1/FVC ratio was more than 60% in most cases in present study (96.57%) and also in Mahashur et al studies (94%). Mean FVC (% of predicted) was 53.28% in present study and closely resemble to Jindal et al (60.90%) study. FEV1/FVC % was normal or increased in both studies.

CONCLUSIONS

Our study suggests that interstitial lung diseases are not uncommon in India. Interstitial lung disease must be suspect with specific symptoms, signs and further investigations like chest X-ray, HRCT chest and blood investigations should be done. Detailed occupational history, family history and drug history should be taken and specific tests must be done to rule out autoimmune diseases which may be culprit for this disease. A good clinician can make accurate diagnosis of Interstitial pulmonary fibrosis without a surgical lung biopsy and with a high specificity (>90%) 8, 9 following detailed clinical assessment. Larger clinical studies also require to establish the true incidence and spectrum of diseases. Increased awareness would serve to provide early diagnosis and this may impact on high mortality rate of this disease.

REFERENCES

ORIGINAL ARTICLE

BUPIVACAINE INFILTRATION VERSUS DICLOFENAC SUPPOSITORY FOR POST-TONSILLECTOMY PAIN RELIEF IN PAEDIATRIC PATIENTS

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ABSTRACT

Background: Pain management after tonsillectomy in children remains a dilemma for anaesthesiologist. The study was designed to compare the effect of pre-incisional infiltration of Bupivacaine (0.25%) versus Diclofenac suppository on postoperative pain relief in children.

Methodology: Fifty patients of American Society of Anaesthesiology grade – I, aged between 1 and 15 years undergoing elective tonsillectomy were selected. They were randomly divided equally into group A and B. Five minutes before incision, peritonsillar fossa were infiltrated with 5 ml Bupivacaine(0.25%) in group A patients. Group B received Diclofenac suppository 2mg/kg after induction. Intra operatively all patients were observed for vital parameters. Post-operatively all the patients were observed for 24 hours for analgesia using observer pain scale, analgesic requirement, vital data and other complications.

Result: Diclofenac suppository is a better option for post-operative analgesia in paediatric patients undergoing tonsillectomy as compared to bupivacaine infiltration as there were significant difference in pain score (P<0.05) after two hours onwards post operatively. Complications like bradycardia, hypotension, allergic reaction and convulsion were not found in either group.

Conclusion: Diclofenac suppository is a better option as compared to pre-incisional bupivacaine infiltration because of its convenience and duration of analgesia.

KEYWORDS: Tonsillectomy, Postoperative analgesia, Diclofenac, Bupivacaine

INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Modern anaesthesiologists are not only concerned about pre-operative and intra operative care of the patient but also with postoperative welfare of the patient. Tonsillectomy is one of the most commonly performed paediatric surgery. With the improvement of surgical techniques; complications have been decreased but still complications like post-operative pain and nausea are cause of concern.

In present study we have compared the efficacy of injection Bupivacaine 0.25% infiltration versus Diclofenac suppository for post tonsillectomy pain relief in paediatric patients.

METHODS

Fifty children aged 1 to 15 years, of both sex and different weight and American Society of Anaesthesiology (ASA) risk I undergoing tonsillectomy were studied.

All patients were assessed and examined one day prior to surgery. History of major illnesses like tuberculosis, bronchial asthma, drug sensitivity, hospitalization and history of any operation were asked. Children with positive history of these were excluded from the study. Preoperative visit was done to allay anxiety and to establish good rapport with the patient.

After clinical evaluation and routine investigations, all patients were pre-medicated with injection Glycopyrrolate 3-5 microgram/kg intravenously. Pre-induction vitals were noted. Pre-oxygenation was done for 3 minutes. General anaesthesia was induced with injection Thiopentone sodium 5-7 mg/kg intravenously and naso-tracheal intubation was facilitated with nasal cuffed endotracheal tube with injection suxamethonium chloride 1.5-2 mg/kg intravenously.

For present study, total 50 patients were divided randomly into two equal groups, A and B. Group A: Injection Bupivacaine (0.25%), 5 ml, 5 minute before surgery in both tonsillar bed. Group B: Diclofenac suppository 2mg/kg after induction.
Anaesthesia was maintained with O₂ : N₂O (50:50), intermittently intravenous vecuronium bromide and Isoflurane. Ventilation was controlled throughout surgery. Intraoperatively, Pplse,blood pressure, SpO₂ and electrocardiograph were continuously monitored. After surgery, residual neuromuscular block was reversed with injection Glycopyrrolate 6-8 microgram/kg nd Neostigmine 40-70 microgram/kg intravenously. Patients were extubated after thorough oral and nasopharyngeal suction.

Observer pain scale (OPS) score was recorded at 1, 2, 3, 6, 12 and 24 hours after surgery. Whenever the child had OPS score ≥ 4, a rescue dose of analgesic syrup Paracetamol 15mg/kg was administered orally. Thus duration of analgesia was calculated from end of surgery to the first dose of rescue analgesic given.

Table 1: Observer Pain Scale (OPS)

<table>
<thead>
<tr>
<th>Observations</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laughing, Euphoric</td>
<td>1</td>
</tr>
<tr>
<td>Happy, Contended</td>
<td>2</td>
</tr>
<tr>
<td>Calm or Asleep</td>
<td>3</td>
</tr>
<tr>
<td>Mild to moderate Pain; Crying, Grimacing,</td>
<td>4</td>
</tr>
<tr>
<td>Restlessness, Can distract with toy, food or parental presence</td>
<td></td>
</tr>
<tr>
<td>Crying / Screaming / Inconsolable</td>
<td>5</td>
</tr>
</tbody>
</table>

RESULTS

Table 2: Demographic data and duration of surgery of studied groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group A (n=25)</th>
<th>Group B (n=25)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>09.08 ± 2.8</td>
<td>09.68 ± 2.8</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>18.72 ± 4.6</td>
<td>20.48 ± 4.6</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Duration of surgery in minute</td>
<td>48.40 ± 2.4</td>
<td>48.00 ± 2.5</td>
<td>&gt; 0.05</td>
</tr>
</tbody>
</table>

Both the groups were similar with respect to demographic data and duration of surgery in minutes (p >0.05).

Table 3: Pre-operative and intra-operative pulse rate per minute of studied groups

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Gr-A(n=25) Mean ± SD</th>
<th>Gr-B(n=25) Mean ± SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-operatively</td>
<td>99.2 ± 9.18</td>
<td>101.4 ± 10.4</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Intra-operatively</td>
<td>100.88 ± 8.72</td>
<td>106.64 ± 9.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>101.68 ± 8.12</td>
<td>106.8 ± 8.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>100.08 ± 7.34</td>
<td>106.72 ± 7.87</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>101.28 ± 6.85</td>
<td>106.24 ± 7.80</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>101.6 ± 5.83</td>
<td>105.84 ± 7.57</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>100.16 ± 6.48</td>
<td>105.2 ± 7.55</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Table 4: Post operative pulse rate per minute of studied groups at different time

<table>
<thead>
<tr>
<th>Time (Hours)</th>
<th>Group A(n=25) Mean ± SD</th>
<th>Group B(n=25) Mean ± SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>97.92 ± 6.82</td>
<td>98.48 ± 7.88</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>2</td>
<td>98.72 ± 7.61</td>
<td>97.6 ± 8.02</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>3</td>
<td>100.32 ± 6.24</td>
<td>97.84 ± 7.91</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>6</td>
<td>104.96 ± 6.22</td>
<td>97.52 ± 7.31</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>12</td>
<td>104.72 ± 6.13</td>
<td>98.72 ± 7.44</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>24</td>
<td>103.84 ± 6.14</td>
<td>98.96 ± 7.14</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Table 3 shows that there was no difference preoperatively in pulse rate between both groups. However, intra-operatively pulse rate was statically significant higher in Diclofenac suppository group (P<0.05).

Table 4 shows that there was no difference in pulse rate between both groups at 1, 2 and 3 hours post operatively. However, pulse rate was statically significant lower in Diclofenac suppository group at 6, 12 and 24 hours post-operatively (P<0.05).

Table 5: Observer Pain Scale (OPS) score post operatively of studied groups

<table>
<thead>
<tr>
<th>Duration (hours)</th>
<th>Group A (n=25)</th>
<th>Group B (n=25)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.84 ± 0.3</td>
<td>2.96 ± 0.2</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>2</td>
<td>2.84 ± 0.3</td>
<td>3 ± 0.0</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>4</td>
<td>2.76 ± 0.4</td>
<td>3 ± 0.0</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>8</td>
<td>3.96 ± 0.7</td>
<td>3 ± 0.4</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>12</td>
<td>4.0 ± 0.65</td>
<td>3.4 ± 0.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>24</td>
<td>3.5 ± 0.5</td>
<td>3.2 ± 0.4</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

we observed that at and after 2 hours post operatively, the difference in OPS score in group A (0.25% Bupivacaine injection) and group B (Diclofenac suppository 2mg/kg) became significant (P<0.05). Thus group B showed statically significant longer duration of analgesia than group A (Table 5).

Moreover, group A had 76% of patients with pain while in group B, none of the patient had pain at 8 hours post operatively. At 12 hours postoperatively, 80% of patients in group A, while 40% of patient in group B had pain and at 24 hrs, 66% of patients had pain in group A compared to 32% of patients in group B.
Nausea occurred in 2 patients in both groups. Vomiting occurred in 2 patients in both groups. It was treated with injection Ondansetron. Bleeding occurred in 4 patients in group A and in 3 patients in group B which was treated conservatively.

**DISCUSSION**

Tonsillectomy is one of the most commonly performed paediatric surgical procedure. Many patients experience pain and nausea postoperatively. Early postoperative pain following tonsillectomy remains a significant obstacle to speedy recovery and smooth convalescence. So, adequate pain relief is required not only on humanitarian ground but also to ameliorate harmful effect.

In present study, we have demonstrated the efficacy of diclofenac suppository (Group B) over Bupivacaine infiltration (Group A) in providing effective and long duration post-operative analgesia for post tonsillectomy pain relief. The OPS score of both groups was equal at 1, 2 and 4 hours post operatively and till that no patient in either group had perceived pain. But at 8, 12 and 24 hours, the OPS score of Group B was lower than Group A. This could be because of rapid onset of action with diclofenac suppository and slower absorption, which prolongs its duration and its anti-inflammatory action, which may exert tissue reaction to surgery resulting in a lesser degree of perceived pain. In comparison to diclofenac suppository, analgesic effect of bupivacaine lasts only for 3-4 hours which explained by higher OPS score of Group A at 8, 12 and 24 hrs postoperatively (p< 0.05).

C.H. Watters et al1 in 1987 assessed Diclofenac sodium as an analgesia for post-operative pain following paediatric tonsillectomy in a random double blind trial. In a comparison made with pethidine, diclofenac was shown to be an effective analgesia. Patients received diclofenac 1mg/kg and concluded that children who received diclofenac were more co-operative and less drowsy post-operative than those given pethidine.

Moores M. A. et al2 in 1990 did a study on comparison of rectal diclofenac with caudal bupivacaine after inguinal herniotomy. They concluded that caudal bupivacaine provided more pain free patients at first but later the incidence of pain was similar in the two treatment groups. Rectal diclofenac is a useful alternative to caudal block in this age group of patients. This was similar to our study where in bupivacaine infiltration group patients; pain was not there in all patients up to 4 hours post-operatively. In our study none of the patients had postoperative pain in either group in contrast to Moores’ study where caudal bupivacaine was better than rectal diclofenac in early post-operative period. This difference could be because of the dose of diclofenac suppository 2mg/kg in our study, as compared to 0.25mg/kg in study of Moores.

Johansen M at al3 in 1996 carried out study and evaluated the effect of pre-incisional infiltration with bupivacaine in tonsillectomy and conclusion was that pre-operative blocking of nociceptive impulses reduced prolonged post operative pain.

Leont D V4 in 2004 suggested that NSAIDs in children for pre-operative and post operative analgesia essentially improves post operative course and contributes to fast rehabilitation of patients.

Ejnell at al5 demonstrated in their study that diclofenac sodium is the only NSID for postoperative pain relief, which is safe to administer in its therapeutic range with least or no side effects. Our study also suggested significant analgesia activity of diclofenac and it was also free from major side effects.

**CONCLUSION**

Diclofenac suppository is a better option as compared to pre-incisional bupivacaine infiltration because of its convenience, efficacy equivalent to that of bupivacaine infiltration and duration of analgesia more than bupivacaine infiltration. Complications like bradycardia, hypotension, allergic reaction and convulsion were not found in either group.

**REFERENCE**


COMPARISON BETWEEN CAUDAL BUPIVACAINE AND CAUDAL MIDAZOLAM FOR POST OPERATIVE ANALGESIA IN PEDIATRIC PATIENTS

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ABSTRACT

Objective: To evaluate the efficacy and side effect of caudal Bupivacaine as compared to caudal Midazolam for providing post operative analgesia in children.

Material and method: It was a prospective, open label, randomized study on 50 patients aged between 1-12 yrs of American society of anesthesiologist (ASA) grade I and II posted for below umbilical surgery under standardized general anesthesia. After induction, patients were allocated randomly into two groups. Group-1 received caudal block with inj. Bupivacaine (0.25%) 1ml/kg and Group-2 received caudal block with inj. Midazolam 50 µg/kg+ saline 1ml/kg. Children were continuously observed in recovery room for 20 minutes after which they were shifted to general ward. In ward OPS (observer pain scale) score was recorded at 0.5,2,4,8,12 and 24 hours after surgery.

Result: Pain score was comparable for initial half an hour post operatively for both the groups but at 2, 4, and 8 hrs postoperatively Group-1 had low OPS compare to Group-2. The overall need for rescue analgesic was lower in Group-1 compare to Group-2.

Conclusion: We concluded that analgesic effect was longer and lesser need for rescue analgesic in the postoperative period in Bupivacaine group compare to Midazolam group.

KEY WORDS: Bupivacaine, Midazolam, caudal analgesia, anesthesia

INTRODUCTION

Pain is an unpleasant subjective sensation which can only be experienced and not expressed, especially in children who rely completely on their parents or care givers for their well being. The concept of post operative pain relief and its utilization in the pediatric age group has improved dramatically over the recent years. Till date various methods have been evaluated for providing post operative pain relief in pediatric population, nonetheless having some side effects which prohibit their use in children. For e.g. narcotics could cause respiratory depression and fear of needle stick injury in the case of parenteral analgesics.

The regional anesthetic technique significantly decreases the post operative pain and systemic analgesic requirements. Caudal route is one of the simplest and safest way in pediatric surgery with a high success rate¹ Caudal block is usually placed after the induction of general anesthesia and is used as an adjuvant to both intra operative and post operative analgesia in children undergoing surgical procedure below the level of umbilicus. Caudal analgesic could reduce the amount of inhaled and intravenous anesthetic administration, alter the stress response to surgery and facilitate a rapid and smooth postoperative analgesia. In order to decrease intra and post operative analgesic requirements several drugs have been investigated for caudal anaesthesia. For e.g neostigmine, Bupivacaine, Midazolam, Ketamine, Ropivacaine and Dexmedetomidine.² Bupivacaine, a long acting local anesthetic agent has been used for pediatric caudal anesthesia. It provides prolong pain relief compare to Lignocaine and Ketamine. Midazolam an Imidazabenzodiazepine derivative causes antinociceptive effect by GABA mediation (GABA has been shown to have analgesic property) when injected intrathecal or epidurally. Highest density of binding sites was found within lamina of dorsal horn region.

The objective of this study was to compare the effect of Bupivacaine along with Midazolam to provide...
MATERIALS AND METHODS

This was a prospective, open label, randomized study conducted among fifty children.

Inclusion criteria:
ASA grade I/II patients between ages 1-12 years undergoing surgical procedure below the level of umbilicus were included in the study.

Exclusion criteria:
Subjects were excluded if they had allergy to study drug, bleeding diathesis, infection on back, pre existing neurological disease and congenital anomalies of lower back. Patients received opioids preoperatively were also excluded.

Pre-operative evaluation:
Age, body weight and base line vital parameters were recorded for all the children preoperatively. History regarding previous anaesthesia, surgery, any significant medical illness, medications and allergy was recorded. Complete physical examination and airway assessment were done. Hemoglobin percentage, blood sugar, urea, serum creatinine and urine analysis were done to rule out any pathological condition.

Written consent of all children was obtained from parents preoperatively. All children were kept nil by mouth for 4-6 hrs. Intravenous line was secured and injection isolyte-p was started. In operation theatre, standard monitor like ECG and pulse oxymeter were placed. All patients were given inj. Glycopyrolate 4µg/kg as a premedication. General anesthesia was induced with inj. Thiopental sodium 5-7 mg/kg by I.V route and otoracheal intubation was facilitated with inj. Suxamethonium chloride 2 mg/kg by I.V route. After induction patients were allocated randomly in Group-1 and Group-2. Group-1 received caudal block with inj. bupivacaine (0.25%) 1ml/kg in group-1 and Group-2 received inj. Midazolam 50 µg/kg +saline 1ml/kg.

Anesthesia was maintained with O2:N2O (50:50), isofluorane and vacuronium bromide 80-100 µg/kg. Controlled ventilation was maintained throughout surgery. Intra operatively, no opioids or other drugs which affect the central pain processing were used. During entire procedure heart rate, oxygen saturation (SPO2) and ECG were continuously monitored. Residual neuro muscular block was reversed with inj. Glycopyrolate 8µg/kg and inj. Neostigmine 50 µg/kg I.V after surgery.

Children were continuously observed in recovery room for 20 mins. After which they were shifted to general wards where OPS score was recorded at 0.5,2,4,8,12 and 24 hrs after surgery. Whenever child had OPS score of > 5, rescue dose of analgesic (syrp. Paracetamol 15mg/kg) was administered orally. This duration of analgesia was calculated from end of the surgery to the first dose of rescue analgesic given. Any local or systemic complications throughout the study were recorded. The data was collected and analyzed using SPSS version 13.0 computer software.

Observer pain scale (OPS)

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Pain</td>
<td>1</td>
</tr>
<tr>
<td>Laughing Euphoric</td>
<td>1</td>
</tr>
<tr>
<td>Happy Contented</td>
<td>2</td>
</tr>
<tr>
<td>Calm or Asleep</td>
<td>3</td>
</tr>
<tr>
<td>Mild-Moderate Pain</td>
<td>4</td>
</tr>
<tr>
<td>Crying Grimacing, Restless Can distract with toy or parental presence</td>
<td>4</td>
</tr>
<tr>
<td>Severe Pain</td>
<td>5</td>
</tr>
<tr>
<td>Crying Screaming, Inconsolable</td>
<td>5</td>
</tr>
</tbody>
</table>

RESULT

A total of 50 patients were enrolled in the present study and were randomized into two groups of 25 each. Both the groups were comparable with respect to age, sex, weight, duration of surgery and type of surgery with no statistical difference (Table 1).

Table 1: Demographic data of patients in two groups

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Bupivacaine) (n=25)</th>
<th>Group 2 (midazolam) (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>3.4±1.52</td>
<td>3.4±1.52</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>11.92±3.37</td>
<td>11.92±3.09</td>
</tr>
<tr>
<td>Duration of surgery (min)</td>
<td>41±3.53</td>
<td>38.8±5.45</td>
</tr>
<tr>
<td>Sex</td>
<td>Male 25</td>
<td>Female - 1</td>
</tr>
<tr>
<td>Type of surgery</td>
<td>Inguinal hernia 17 (68%)</td>
<td>16 (64%)</td>
</tr>
<tr>
<td></td>
<td>Circumcision 3 (12%)</td>
<td>5 (20%)</td>
</tr>
<tr>
<td></td>
<td>Hypospadas 4 (16%)</td>
<td>2 (8%)</td>
</tr>
<tr>
<td></td>
<td>Orchidopexy 0 (0%)</td>
<td>1 (4%)</td>
</tr>
<tr>
<td></td>
<td>Lt. Adductor tenotomy 1 (4%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Analgesic effect was evaluated by OPS score in group-1 and group-2 at 0.5,2,4,8,12 and 24 hrs after surgery (Table-2).

1) Evaluation of pain after 0.5 hours of surgery: Patients in both the groups had good analgesia in the first half an hour post awakening with an average observer pain score was around 2. None of the patients required rescue analgesic in both groups.

2) Evaluation of pain after 2 hours of surgery: The average pain scores in both the groups- 1 & 2 were 2.24(± 0.43) & 3.4(±0.70) respectively. Two patients in group- 2 required rescue analgesic (syrp. Paracetamol
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15mg/kg). None of the patients in group -1 required rescue analgesic.

3) Evaluation of pain after 4 hours of surgery: The patients in group- 1 displayed a mean observer pain score of 3.16 (±0.47) at 4 hours post awakening while patients in group- 2 displayed a mean observer pain score of 4.0(±0.64). Three more patients in group- 2 required rescue analgesic (syrp. Paracetamol15mg/kg). None of the patients in group -1 required rescue analgesic.

4) Evaluation of pain after 8 hours of surgery: The patients in group -1 demonstrated an average observer pain score of 4.16(±0.47) whereas patients in group- 2 demonstrated an average observer pain score of 4.68(±0.47). Another twelve patients in group- 2 required rescue analgesic (syrp. Paracetamol 15mg/kg). In group -1 only five patients required rescue analgesic.

5) Evaluation of pain after 12 hours of surgery: The patients in group -1 had an average observer pain score of 4.84(±0.37) whereas patients in group- 2 had an average observer pain score of 4.96(±0.2).Another seven patients in group- 2 required rescue analgesic (syrp. Paracetamol 15mg/kg) whereas in group -1 sixteen patients required rescue analgesic.

6) Evaluation of pain after 24 hours of surgery: Group -1 and group-2 patients had similar average observer pain score of 5.0 (±0.0). Rest of the patients in both the groups required rescue analgesic.

The requirement of rescue analgesic after 8 hours in group- 1 was noted in 20% of the patients while in group -2 this requirement was noted in 68% of the patients. Similarly, after 12 hours rescue analgesic was required in 84% of patients in group -1 whereas it was 96% in group- 2. The reduced incidence of need for rescue analgesic at the end of 8 hours post surgery was statistically significant i.e. (p< 0.05) in group- 1.

We concluded from our study that duration of analgesia was longer with Bupivacaine compared to Midazolam. However, post operative sedation was

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.3 The current trend is to prefer a regional anaesthetic technique for lower abdominal as well as limb surgery in pediatric patients. The popularity of this technique is due to its simplicity and frequent success.4,5 Post operative pain management should be an essential and integral part of the care given to the pediatric patients.

Table-2: Post operative OPS score

<table>
<thead>
<tr>
<th>Post-operative duration (hrs)</th>
<th>Group-1 (Bupivacaine)</th>
<th>Group-2 (midazolam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=25) Mean (SD)</td>
<td>(n=25) Mean (SD)</td>
</tr>
<tr>
<td>0.5</td>
<td>2.16 (0.37)</td>
<td>2.72 (0.79)</td>
</tr>
<tr>
<td>2</td>
<td>2.22 (0.43)</td>
<td>3.4 (0.70)</td>
</tr>
<tr>
<td>4</td>
<td>3.16 (0.47)</td>
<td>4.0 (0.64)</td>
</tr>
<tr>
<td>8</td>
<td>4.16 (0.47)</td>
<td>4.68 (0.47)</td>
</tr>
<tr>
<td>12</td>
<td>4.84 (0.37)</td>
<td>4.96 (0.2)</td>
</tr>
<tr>
<td>24</td>
<td>5 (0.0)</td>
<td>5 (0.0)</td>
</tr>
</tbody>
</table>

Complication rates were slightly higher in group-1 patients than in group-2. 5 patients had motor weakness and 3 patients had vomiting in group-1 whereas 1 patient had vomiting in group-2. (Table-3)

In our study, we observed that caudal Bupivacaine and caudal Midazolam were equally effective in controlling postoperative pain in children in the first half an hour of the postoperative period. However significantly lower pain scores were observed in children receiving Bupivacaine at 2, 4 and 8 hours post operatively. The overall need for rescue analgesic was significantly lower in the Bupivacaine group. It suggests that bupivacaine provides longer duration of postoperative analgesia compared to Midazolam. At 12 and 24 hrs, OPS score of both the groups were almost equal.

Similar study conducted in 1998 by Gulec et al.6 with caudal 0.25% Bupivacaine (group-A), 0.25% bupivacaine-midazolam (group-B), 0.25% bupivacaine-morphine 0.05mg/kg (group-C) showed that duration of analgesia was 8.15±1.3 hrs in group-A which was almost similar with our study.

Pradhan B et al.7 in 2008 concluded that recovery to first analgesic time was longer in Bupivacaine group (9.65 hrs) compare to Midazolam group (7.32 hrs).

In 1998 Nishiyama et al.8 concluded that 5-10 ml saline is the optimum volume for epidural injection when using Midazolam 50µg/kg for postoperative analgesia for upper abdominal surgery. While in our study, Midazolam 50µg/kg with 1ml/kg volume was optimal for analgesia without sedation, amnesia and urinary retention.

Mohamed Naguib et al.9 conclude that caudal midazolam in a dose of 50µg/kg provides equivalent analgesia to bupivacain 0.25% when administered postoperatively in a volume of 1ml/kg for children following unilateral inguinal herniotomy.

CONCLUSION

We concluded from our study that duration of analgesia was longer with Bupivacaine compared to Midazolam. However, post operative sedation was
present with Midazolam while motor weakness was seen with Bupivacaine.

REFERENCE


CLINICAL CHARACTERIZATION OF H1N1 INFLUENZA TAQMAN REAL TIME PCR POSITIVE CASES

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ABSTRACT

Background: A novel swine origin influenza virus (H1N1) is spreading worldwide and become the first pandemic of the 21st century. The currently circulating strain of swine origin influenza virus of the H1N1 strain has undergone triple reassortment and contains genes from the avian, swine and human viruses. H1N1 critical illness mostly affects young patients and it is often fatal.

Aim: The aim of the present study is to evaluate the clinical characteristic of H1N1 infection in a tertiary care institute.

Material & Methods: A total of 251 pharyngeal and nasal swabs from suspected cases of swineflu were processed by TaqMan real-time PCR (CDC protocol). Clinical co-relation with presenting sign and symptoms and analysis was done.

Results: 36 (14%) were confirmed as positive. The clinical picture was characterized by fever (88%), cough (94%), sore throat (35%), nasal catarrh (51%), chest pain (0.4%). Chest X-ray findings suggested association of consolidation with positive cases (47%).

Discussion: Strong clinical association is seen in those who were It was also noted that 2009 H1N1 influenza illness predominantly affects young patients.

Conclusion: The knowledge and technology translation previously acquired through courses by health care providers were the key in controlling the first influenza A (H1N1) 2009 cases. Hospitalized cases of H1N1 influenza should be monitored carefully and vaccination is a good alternative to control such pandemic.

Keywords: H1N1 influenza, real-time PCR, swineflu, respiratory tract infection

INTRODUCTION

Swine influenza virus (SIV) is an infection caused by any strain of the influenza family of viruses that is usually prevalent in pigs¹. Actually, swine influenza (swine flu) is a common respiratory disease of pigs caused by type “A” influenza viruses. The Swine “2009 flu pandemic” is a global out break of a new strain of influenza A virus H1N1 that is highly contagious disease of respiratory tract and has become a public health problem. The new strain is thought to be the result of reassortment of strains of influenza A virus subtype (H1N1). The new reassorted strain has acquired two new capabilities; human to human spread and enhanced virulence.¹,²,³

On 24 April, the WHO issued an official statement declaring a public heath emergency of international interest. On 11 June, the pandemic alert level increased to phase 6, indicating that the human-to-human transmission of the virus had occurred in at least two countries of two different WHO regions.² Pregnant women, younger children, and people of any age with certain chronic lung or other medical conditions are appear to be at high risk of more complicated or severe illness. Many of these patients required intensive care.

MATERIALS AND METHODS

A total of 251 patients who visited outpatient department & admitted in the hospital from October 2009 to December 2010 were studied. These patients with clinical features of novel H1N1 Influenza virus, according to national guidelines comprising into category C, were tested and characterized. In India, revised guidelines on categorization of Influenza A H1N1 cases during screening for home isolation, testing, treatment & hospitalization was given by
Ministry of Health & Family welfare according to which all suspected cases were categorised into 3:

**CATEGORY A:**
Patients with mild fever plus cough/sore throat with or without body ache, headache, diarrhoea, and vomiting.

**CATEGORY B:**
B1. In addition to above signs & symptoms Patient has high grade fever & severe sore throat.
B2. Patient has 1 or more of the following high risk conditions:
- children with mild illness but with predisposing risk factors.
- pregnant women.
- persons aged more than 65 years or older.
- patients with lung disease, heart disease, liver disease, kidney disease, blood disorder, diabetes, neurological disorders, cancer & HIV/AIDS.
- patient on long term steroid therapy.

**CATEGORY C:**
In addition to the above signs & symptoms, patient has breathlessness, chest pain, drowsiness, fall in B.P, sputum mixed with blood, bluish discolouration of nails, worsening of underlying chronic conditions.

Specimen of throat swab and nasal swab were taken in viral transport media for the testing. All samples were tested by TaqMan real-time PCR (CDC protocol) for detection of novel H1N1 infection. Clinical co-relation with presenting sign and symptoms and test positivity was done. Clinical features which were studied are fever, cough, sore throat, difficulty in breathing, nasal catarrh and chest pain.

**RESULTS**
Total 251 patients were admitted as suspected cases for infection with the novel H1N1 virus, of which 36(14%) were confirmed as positive. They were positive for 4 markers; Inluenza A, Swine A, Swine H1 and Ribonuclease P (RNAse P) used in real time PCR.

In total 251 patients 91 were female (36%) and 160 were male (64%) patients. In these 36 positive patients 10 were female (28%) and 26 were male (72%) patients. So M:F ratio in positive cases is 2.6:1.

According to age wise distribution in 36 positive cases, <14 years of age group comprises 12 cases (33%) and >14 years of age group comprises 24 cases (67%).

The clinical picture was characterized by fever (88%), cough (94%), sore throat (35%), nasal catarrh (51%), chest pain (0.4%). In chest X-ray of positive cases, most common finding was consolidation in 17 patients (47%). Consolidation was bilateral in 9 cases (53%), left sided in 5 cases (29.4%) and right sided in 3 cases (17.6%). Left lower zone was most common finding.

**DISCUSSION**
The H1N1 has caused pandemic alert all over the world since March 2009. In our study total of 251 patients were admitted during this period, out of which 36 cases were confirmed positive by TaqMan real-time PCR (CDC protocol). The findings showed that the common features with which the patients were presented were same as those of seasonal influenza. So it is important to rule out common influenza from the outbreak. In present study, fever (88%), cough (94%), sore throat (35%), nasal catarrh (51%) and chest pain (0.4%) were common presentations.

Srinivasa R. 2011 et al. has showed that predominant complain was productive cough, fever with chills and rigors and breathlessness. The maximum number of positive cases were in the age group of 21-30 years (60%) followed by 31-40 years (30%). They are comparable to our study. Radiological examination showed 30% with ARDS and 30% with bronchopneumonia.

In one study by Felicia 2009 et al.; total 76 patients were admitted as suspected cases; out of which 13(17.1%) were confirmed as positive. In that study fever (100%), cough (92.3%), rhinorrhea (69.2%), malaise (53.8%), headache (53.8%), and only one case presented gastrointestinal symptoms (diarrhoea). The male: female ratio was 1:2.2.

Khalid M. 2010 et al. showed that out of 121 suspected cases total 6 cases were positive. 100% patients presented with cough, fever and sore throat. Male to female ratio was 1:2.5 so from this comparison we can see that in our study male were affected more than female, may be due to higher risk of exposure as they are more involved in fieldwork. We can also see that in the present study percentage of cases with fever and nasal catarrh was less in comparison with the other two studies. All other features were almost comparable. It is also seen that number of patients in less than 14 year age group were also more than other study.

This type of study will help in doing comparison of various clinical presentations of Novel H1N1 cases in...
CONCLUSION

Symptoms in most of the patients were in accordance with those described in the literature and were similar to those observed in seasonal influenza. So during clinical evaluation it is important to rule out the outbreak cases from seasonal viral infection. So if the seasonal influenza testing is also done along with this, it is possible to find out the incidence in the population. Clinician should include swine flu influenza A in the differential diagnosis of patients with acute febrile respiratory illness who have been in contact, or visit the community having positive cases of influenza. Treatment must be started without wasting much time in suspected patients to achieve maximum recovery. All the presenting clinical features were comparable with other studies except fever which was less common in present study.4,6,7,8

REFERENCES

ASSESSMENT OF BIOFILM FORMATION BY THE CAUSATIVE ORGANISMS OF VENTILATOR ASSOCIATED PNEUMONIA AT INTENSIVE CARE UNIT OF A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: The endotracheal tube participates in the pathogenesis of ventilator-associated pneumonia by the elimination of natural defense mechanisms, thereby allowing the entry of bacteria by the aspiration of subglottic secretions and ultimately these all will play role in the formation of biofilm on the endotracheal tube.

Aims and objectives: Present study was done to assess biofilm formation by bacterial clinical isolates from endotracheal tube of ventilator associated pneumonia patients and to assess drug resistance in association with biofilm.

Material and method: All isolates are identified by standard biochemical reaction and antibiotic susceptibility testing was done as per CLSI guidelines. Detection of biofilm is done by using tissue culture plate method.

Results: Total 56 isolates are recovered from 42 patients of ventilator associated pneumonia; from it 34 (65.4%) isolates are strongly positive by tissue culture plate method. Most common organisms isolated which producing strong biofilm are Pseudomonas aeruginosa and Acinetobacter spp.

Conclusion: The presence of an endotracheal tube in the airway, although critical for the management of the mechanically ventilated patient, also contributes to the development of ventilator associated pneumonia by disrupting normal protective mechanism which is associated with the intraluminal formation of biofilm by multidrug resistant organisms.

Keywords: Antibiotic resistance, Biofilm, Multidrug resistant organisms, Tissue culture plate method, Ventilator associated pneumonia.

INTRODUCTION

Ventilator-associated pneumonia (VAP) is a major healthcare-associated complication with considerable attributable morbidity, mortality and cost. Inherent design flaws in the standard cuffed tracheal tubes form a major part of the pathogenic mechanism causing VAP. The formation of folds in the inflated cuff leads to micro aspiration of pooled oropharyngeal secretions into the trachea and biofilm formation on the inner surface of the tracheal tube helps to maintain bacterial colonization of the lower airways. By the elimination of natural defence mechanisms, thereby allowing the entry of bacteria by the aspiration of subglottic secretions or the formation of biofilm on the endotracheal tube. Common nosocomial pathogens like Pseudomonas aeruginosa are known to produce exopolysaccharide and generate the complex biofilm structure, which allows adhesion to abiotic surfaces and protection against antibiotic action. Multiple studies have identified bacterial biofilm on the inner lumen of endotracheal tubes, which represents a permanent source of infectious material.1

We aimed this study to assess biofilm formation by bacterial clinical isolates from endotracheal tube of Ventilator associated pneumonia patients and to assess drug resistance in association with biofilm.

MATERIAL AND METHOD

This was a prospective study done at Intensive care unit of a tertiary care hospital during May 2011 to October 2011. Diagnosis of VAP patients has done as per CDC criteria.4 In this study we have included only those patients whose ET aspirate and ET tube culture results were grown phenotypically similar pathogens.
These samples were processed as per standard diagnostic practice. The medical devices were directly cultured by roll plate method on blood agar, MacConkey agar & chocolate agar. The observation was done after 24 hour of incubation for any isolation. The isolates were further identified to the species level using phenotypic tests as per standard protocols. All the organisms were subjected to antimicrobial susceptibility testing including detection of various resistance mechanisms like ESBL, Carbapenemase resistance, Inducible clindamycin & MRSA (in case of Gram positive organisms) by manual methods as per recent CLSI guidelines. We screened all isolates for their ability to form biofilm by TCP/ microtitre plate method as described by Christensen et al with a modification in duration of incubation. Incubation period of 20 hours was studied.

The following pathogens were considered as MDR: Methicillin resistant Staphylococcus aureus (MRSA), extended-spectrum β-lactamase producing Gram-negative Enterobacteriaceae (ESBL), Pseudomonas aeruginosa and other non-fermenting organisms (Acinetobacter baumannii, Stenotrophomonas maltophilia) resistant for three or more of the following antibiotic classes: Antipseudomonal cephalosporins or penicillins, carbapenems, fluoroquinolones and aminoglycosides (MDR NF). VAP episodes caused by MDR organism plus non-MDR organism were classified as ‘MDR’ episodes.

**RESULTS**

Total 104 patients included in this study, 68 (65.4%) were males & 36 (34.6%) were females. The mean age was 43.8 years. The incidence of VAP in our study was 49.03%, with 51 of 104 patients developing VAP. From these 51 patients of VAP 42 patients whose ET aspirate and ET tube culture results were grown phenotypically similar pathogens. Total 56 isolates were recovered from 42 patients. Distribution of causative organisms of VAP is demonstrated in Figure 1.

**Table 1: Antibiotic susceptibility pattern in gram negative organisms (% sensitive)**

<table>
<thead>
<tr>
<th>Organism</th>
<th>CPZ</th>
<th>CPM</th>
<th>PIT</th>
<th>IPM</th>
<th>MRP</th>
<th>GEN</th>
<th>AK</th>
<th>NT</th>
<th>LE</th>
<th>PB</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acinetobacter spp</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>13</td>
<td>17</td>
<td>13</td>
<td>13</td>
<td>30</td>
<td>17</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>41</td>
<td>41</td>
<td>35</td>
<td>76</td>
<td>76</td>
<td>59</td>
<td>47</td>
<td>47</td>
<td>24</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>E-coli</td>
<td>22</td>
<td>22</td>
<td>33</td>
<td>100</td>
<td>100</td>
<td>67</td>
<td>89</td>
<td>61</td>
<td>17</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>57</td>
<td>57</td>
<td>57</td>
<td>71</td>
<td>48</td>
<td>19</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

CPZ= Ceftazidime, CPM= Cefepime, PIT= Piperacillin/Tazobactam, IPM= Imipenem, MRP= Meropenem, GEN= Gentamicin, AK= Amikacin, NT= Netilmicin, LE= Levofloxacin, PB= Polymyxin B and CL= Colistin.

In this study 4 isolates of Staphylococcus aureus were isolated and all strains were methicillin resistant (MRSA) and only sensitive to vancomycin, linezolid and teicoplanin.

In our study we found that from 56 isolates 37 (66.1%) isolates were MDR and from them 27 (48.2%) isolates were associated with strong biofilm formation. Acinetobacter spp. was the most common organism isolated (26.8%) and also associated with strong biofilm formation (33.3%). It was also the most common multidrug resistant organism (35.1%) followed by Pseudomonas aeruginosa (18.9%), Klebsiella pneumoniae (18.9%), E-coli (13.5%) and Staphylococcus aureus (10.8%) in our study.

**DISCUSSION**

VAP pathogenesis is a dynamic process, involving a wide spectrum of pathogens and complex interactions with host defenses. Bacteria causing VAP usually originate in the oropharynx. The endotracheal tube increases the risk of VAP 6- to 20-fold, facilitating bacterial access to the lung and providing a nidus for the growth of biofilm-encased bacteria. Poor patient outcomes are associated with late-onset disease (> 5 d) and infections caused by multidrug-resistant bacteria, such as Pseudomonas aeruginosa, Acinetobacter species, or methicillin-resistant Staphylococcus aureus.
In a study, it was documented that the interior of the ETT of patients undergoing mechanical ventilation rapidly became colonized with Gram-negative microorganisms which commonly appeared to survive within a biofilm. While it appears that colonization of the ETT may begin from as early as 12 h, it is most abundant at 96 h. This investigation further suggests that the common sequence of bacterial colonization of patients undergoing mechanical ventilation is firstly the oropharynx/upper gastrointestinal tract, followed by the lower respiratory tract, leading on to ETT colonization. Colonization of the ETT with microorganisms commonly causing nosocomial pneumonia appears to persist in many cases despite apparently successful treatment of the previous pneumonia. The organisms isolated (sometimes multiple) in secretions obtained by suctioning of the lower respiratory tract of these cases and deemed to be the likely cause of the pneumonia were 

<table>
<thead>
<tr>
<th>Organism</th>
<th>No. of organism</th>
<th>Assessment of Biofilm formation results</th>
<th>Drug resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Strong biofilm production</td>
<td>Moderate biofilm production</td>
</tr>
<tr>
<td><strong>Acinetobacter spp.</strong></td>
<td>15</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td><strong>Pseudomonas aeruginosa</strong></td>
<td>12</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td><strong>Klebsiella pneumoniae</strong></td>
<td>12</td>
<td>7</td>
<td>--</td>
</tr>
<tr>
<td><strong>E. coli</strong></td>
<td>11</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td><strong>Enterobacter cloacae</strong></td>
<td>1</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td><strong>Staphylococcus aureus</strong></td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Stenotrophomonas maltophilia</strong></td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>56</td>
<td>27</td>
<td>6</td>
</tr>
</tbody>
</table>

Table-2: Results of biofilm detection and their association with drug resistance

In conclusion, it has been noted that endotracheal tube colonization and biofilm formation may in many cases precede the development of nosocomial pneumonia, and perhaps more importantly, represent a persistent source of organisms causing recurrent infections. Further studies are needed to clarify the exact role of endotracheal tube colonization in the pathogenesis of nosocomial pneumonia. Similar findings are from the study of Timothy et al being *Pseudomonas aeruginosa* and members of the family Enterobacteriaceae (including *Escherichia coli*, *Enterobacter cloacae*, *Klebsiella pneumoniae*, *Proteus mirabilis,* and *Providencia stuartii*) were isolated from 13 (29%) of 45 inner surfaces of tracheal tubes. We have shown that a layer of biofilm accumulates on the inner surfaces of tracheal tubes and that contaminated particles can be detached from this layer during mechanical ventilation.

Acinetobacter as strong biofilm producer was described by R Shrinivasa Rao et al in 62% cases that correlating with present study. In study by Marta M. Wroblewska et al demonstrated 12% of A. baumannii strains as strong producers, 41% – medium producers and 47% low producers of biofilm.

Strains of Acinetobacter spp., mainly Acinetobacter baumannii, are very important nosocomial pathogens, contributing significantly to morbidity and mortality of patients, particularly hospitalized in intensive care unit. Moreover, recent emergence of carbapenem resistance among these isolates further stresses their importance in etiology of hospital-acquired infections. Infections of hospitalized patients with Acinetobacter spp., often preceded by colonization, are frequently associated with invasive procedures and implantable medical devices. The ability of a strain to form a biofilm may be a significant factor facilitating this process. However, there are only scarce reports on biofilm formation by clinical strains of A. baumannii isolated from hospitalized patients and the numbers of tested isolates were 20. In our study we have correlated the ability of biofilm formation of an organism with multidrug resistance.
CONCLUSION

The presence of an endotracheal tube in the airway, although critical for the management of the mechanically ventilated patient, also contributes to the development of VAP by disrupting normal protective mechanism which is associated with the intraluminal formation of biofilm by multidrug resistant organisms.

Acronyms

CDC Centers for Disease Control and Prevention
CLSI Clinical & Laboratory Standards Institute
ESBL Extended spectrum of β-lactamase
ET/ETT Endotracheal tube
MDR Multidrug resistant
MDR Multidrug Resistant Non-Fermenter
NF Multidrug Resistant Non-Fermenter
MRSAMethicillin resistant Staphylococcus aureus
Non-MDR Non Multidrug Resistant
TCP Tissue Culture Plate method

REFERENCES

5. Clinical and Laboratory Standards Institute (CLSI) 2011; Performance Standards for Antimicrobial Susceptibility Testing; Twenty first Informational Supplement. M100-S21; 31(1).
ABSTRACT

Objectives: To study the overall and individual incidence of clinically detectable congenital malformations in newborns delivered at a tertiary hospital and to find out the associated maternal factors.

Methodology: The present study is a prospective study of all the newborns delivered at Obstetrics and Gynecology Department, SSG Hospital, Baroda for a period of one year in which total 4058 consecutively born babies were examined for all visible structural anomalies and associated maternal factors were studied.

Results: Incidence of malformed babies was 1.53% (62 malformations out of 4058 babies) of which the anomalies of CNS were the most frequent. In associated maternal factors, anaemia and diabetes were found to be relevant.

Conclusion: The incidence of congenital anomalies of CNS was highest amongst all types of congenital anomalies (neural tube defects being the commonest). More stress should be laid on prevention by regular antenatal care and avoidance of known teratogens and probable teratogenic agents.

Keywords: Congenital Malformations, Maternal factors, Preconceptional counselling

INTRODUCTION

A large number of malformations are incompatible with life and they involve one system or multiple systems of the fetus. A common example is central nervous system malformations which are usually incompatible with life. In the early part of the 19th century the percentage of deaths from congenital anomalies was relatively low. This was because, preventive medicine, immunology and antibiotics were not in usage. Now, number of deaths from infections, metabolic and endocrinial disorders has decreased and so birth defects as a cause of perinatal mortality have come to the forefront. Also, increased use of irradiations, alkylating agents, antimetabolites, smoking, and alcohol consumption has contributed to increased incidence of congenital anomalies. Congenital malformations often cause mental trauma to the parents since it puts the entire life of child with congenital malformations into jeopardy. A ray of hope has come in the form of prenatal diagnosis of congenital anomalies. It has now become an integral part of modern obstetrics. Preconceptional counselling is the rule of the day. Screening programmes for patients at high risk for anomalies is the latest trend. Procedures like genetic amniocentesis and chorionic villus sampling (CVS) are employed in high risk mothers to diagnose such malformations at early gestational age.

Therefore, not only can we prevent the birth of such deformed children by judicious counselling, but even if such a child is conceived, early detection of the anomaly can help in deciding whether the pregnancy should be terminated or whether prenatal fetal therapy can be employed and if pregnancy is to be continued, the optimum time and modes of delivery can be decided before hand.
etiological factors which seems to have a causal relationship.

To cover all the findings of relevant history and of examination, a performa was predesigned. According to it a complete medical history and family history for any congenital malformation, antenatal history for exposure to infection, drugs and irradiation, maternal history for age, consanguinity and parity and personal history was taken. High risk neonates were examined in detail by a neonatologist. All the babies were examined within 12 hours of birth. Thorough physical examination of newborn babies was done.

Immediate outcome of all the malformed babies was recorded during the period of mother’s hospital stay and attempt was made to find out any history of congenital malformations in other family members.

Any malformed baby suspected of having syndromic congenital malformation was also confirmed by investigations e.g. ultrasonography, x-ray, echo and also by taking expert opinions of pediatrician.

**OBSERVATION & RESULTS**

In the present study, we studied the total numbers of babies born in SSG Hospital in one year, i.e., from 1st April 2009 to 31st March 2010. A total of 4058 babies were born out of which 35 were twins and two were triplet deliveries. Total numbers of malformed babies were 62, so total point incidence of congenital anomalies turned out to be 1.53%.

### Table 1: Systemic Distribution of Congenital Malformed Babies

<table>
<thead>
<tr>
<th>System</th>
<th>Malformed babies</th>
<th>Live born babies</th>
<th>Still born babies</th>
<th>Incidence/1000 births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Nervous System</td>
<td>26</td>
<td>6</td>
<td>20</td>
<td>6.40</td>
</tr>
<tr>
<td>Multiple congenital anomalies</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>2.0</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>1.50</td>
</tr>
<tr>
<td>Gastro Intestinal System(GIT)</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>1.75</td>
</tr>
<tr>
<td>Cardiovascular System(CVS)</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>2.25</td>
</tr>
<tr>
<td>Genito Urinary System(GUT)</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0.98</td>
</tr>
<tr>
<td>Chromosomal</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0.49</td>
</tr>
</tbody>
</table>

As far as systemic distribution of congenital malformed babies is concerned, in the present study, it was observed that out of total 4058 babies, 26 were having central nervous system malformations making its incidence of 6.4/1000 live births which turned out to be highest.

### Table 2: Maternal Factors and Incidence of Malformed Babies

<table>
<thead>
<tr>
<th>Maternal Factors</th>
<th>Cases</th>
<th>Malformed babies (%)</th>
<th>Incidence per 1000 births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnutrition with anaemia</td>
<td>3200</td>
<td>31 (0.96)</td>
<td>7.6</td>
</tr>
<tr>
<td>Previous Abortion</td>
<td>151</td>
<td>3 (1.98)</td>
<td>0.73</td>
</tr>
<tr>
<td>Drugs during First Trimester</td>
<td>206</td>
<td>1 (0.48)</td>
<td>0.24</td>
</tr>
<tr>
<td>Maternal Diabetes</td>
<td>7</td>
<td>2 (28.5)</td>
<td>0.49</td>
</tr>
<tr>
<td>Pre-eclamptic Toxemia</td>
<td>201</td>
<td>8 (3.9)</td>
<td>1.97</td>
</tr>
<tr>
<td>Antepartum Haemorrhage</td>
<td>56</td>
<td>3 (5.35)</td>
<td>0.73</td>
</tr>
<tr>
<td>Oligohydramnios</td>
<td>39</td>
<td>2 (5.12)</td>
<td>0.49</td>
</tr>
<tr>
<td>Polyhydramnios</td>
<td>51</td>
<td>6 (11.7)</td>
<td>1.47</td>
</tr>
<tr>
<td>Exposure to radiation</td>
<td>8</td>
<td>1 (12.5)</td>
<td>0.24</td>
</tr>
<tr>
<td>Tobacco/Drug abuse</td>
<td>1731</td>
<td>12 (0.69)</td>
<td>2.95</td>
</tr>
</tbody>
</table>

In the present study we studied the history of all 4021 mothers and found anaemia, malnutrition and diabetes as important and quite preventable associated factors. Maternal diabetes as evident is an important associated factor which can be easily diagnosed and prevented beforehand.

**DISCUSSION**

In the present study, attempts have been made to find the total and individual systemic incidence of anomalies in hospital deliveries and to find causal relationship and association, if any, between various etiological factors and congenital anomalies.

Total number of 4058 consecutive births was studied in the perinatal period from 1st April 2009 to 31st March 2010. Incidence of malformed babies was 1.53% (62 malformations out of 4058 babies).

The anomalies of CNS (6.4/1000 births) were the most frequent, multiple congenital anomalies (2/1000), musculoskeletal system (1.5/1000), gastro intestinal system (1.75/1000), cardiovascular system (2.25/1000), genitourinary system (0.98/1000) and chromosomal disorders (0.49/1000).
Neural tube defects were most common among all individual anomalies. Incidence was 6.4/1000 babies followed by acyanotic heart defects (1.72/1000 births). Maximum mortality was seen in live births with CNS anomalies. Meningocele, meningomyelocele and anencephaly (3.85/1000 births) accounted for more number of anomalies in CNS. The anomalies of CNS were more common in still born and there was gross difference in the incidence in male to female babies (3:10). Ratio of live born to still born was 5:8. The anomalies were more common in still born and in male babies with multiple congenital. In the present study, we studied all the 4021 mothers for any risk factors and found that 3200 mothers were anaemic and had 31 malformed babies with percentage of 0.96%. 3 mothers out of 151 with history of previous abortions gave birth to anomalous babies i.e. 1.98%. Out of 4021 mothers 206 had history of drugs during first trimester in form of some analgesics. 0.48% of them had anomalous child. 28.5% of the diabetic mothers had anomalous babies i.e. with cardiovascular malformation. 3.9% of the pre eclamptic mothers gave birth to anomalous babies. Only 5.35% of the mothers with antepartum haemorrhage give birth to anomalous babies. Percentage of anomalous babies in mothers with oligohydromnious, polyhydromnious, exposure to radiation and drug abuse was 5.12, 11.7, 12.5 and 0.69% respectively.

As compare to the Department of Atomic Energy project (1998), this present study has shown an increase of 0.14% in CNS malformations whereas an apparent decrease of 4.1% and 2.9% in musculoskeleton and gastrointestinal malformations respectively. This difference can be attributed to various factors. The true incidence of congenital malformation depends upon several factors and therefore two studies are never strictly comparable. Studies depend upon population sample, nature of study, whether minor defects included or not, diagnostic facility etc. As the diagnostic facilities are advancing, intra-uterine congenital malformation detection is more accurately diagnosed.

CONCLUSION

The present study gave us an idea regarding incidence and distribution of congenital anomalies and also its relation with associated maternal and fetal factors. From present study we conclude that incidence of congenital anomalies of CNS was highest amongst all types of congenital anomalies (neural tube defects being the commonest).

More stress should be laid on prevention by regular ante natal care and avoidance of known teratogens and probable teratogenic agents. Antenatal diagnosis, genetic counselling, better diagnostic and management facilities should be provided to improve the outcome.

REFERENCES

ORIGINAL ARTICLE

OCULAR INFECTIONS: RATIONAL APPROACH TO ANTIBIOTIC THERAPY

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ABSTRACT

Background: Isolation of common pathogens involved in ocular infection and their in-vitro susceptibility to commonly used ocular antibiotics, as well as the trends in antibiotic resistance developed by these pathogens were investigated.

Material/Methods: All patients with suspected bacterial ocular infections presenting between March 2010 and February 2011 were examined under slit lamp microscope and samples were collected by using aseptic techniques. All samples were processed for direct microscopy, culture and identification by standard methods. Susceptibility testing was done by Kirby-Bauer method as per CLSI guideline.

Results: Out of 116 patients with ocular infections, 130 samples were collected, from which 38 different organisms were isolated. Gram-positive cocci 21 (55%), gram-negative coccobacilli 5 (31%) and gram-negative bacilli 12 (32%) were isolated. Coagulase negative Staphylococci (37%) and Pseudomonas species (21%) were the most commonly-isolated. Gatifloxacin has highest efficacy (89%) against all isolates. Majority of gram positive cocci were susceptible to vancomycin, gatifloxacin, cefazolin, gram negative coccobacilli to amikacin, tobramycin, fluoroquinolone and gram negative bacilli to gatifloxacin.

Conclusion: Majority of ocular infection is caused by gram positive organisms which were susceptible to vancomycin followed by gram negative organisms susceptible to amikacin, fluoroquinolone, gram negative coccobacilli to amikacin and tobramycin, and gatifloxacin effective against both type of organisms. The information provided in this article help the clinician in formulating rationale-based empirical antibiotic treatment of bacterial ocular infections.

Keywords: antibiotic susceptibility pattern, bacteria, ocular infection.

INTRODUCTION

Infection of the eye leads to conjunctivitis, keratitis, endophthalmitis, dacrocystitis, blephritis, infections of eye lid, microbial scleritis, canalicularitis, preseptal cellulitis, orbital cellulitis, endophthalmitis and panophthalmitis etc., which are responsible for increased incidence of morbidity and blindness worldwide.1,2,3 Normally the eye is impermeable to most environmental agents. Continuous tear flow, aided by the blink reflex, mechanically washes substances from the ocular surface and prevents the accumulation of microorganisms. In addition, lysozyme, lactoferrin, secretory immunoglobulins, and defensins, which are present at high levels in tears, can specifically reduce bacterial colonisation of the ocular surface.3,5

However in some circumstances, infectious agents gain access to the posterior segment of the eye following one of three routes: (i) as a consequence of intraocular surgery6,7 (ii) following a penetrating injury of the globe;8 or (iii) from haematogenous spread of bacteria to the eye from a distant anatomical site. Although uncommon, endophthalmitis can also result from keratitis, an infection of the cornea with potential complications.9 Bacterial keratitis is one of the most threatening ocular infections. Pseudomonas aeruginosa and Staphylococcus aureus frequently cause severe keratitis that may lead to progressive destruction of the corneal epithelium and stroma.10,11 Successful treatment of ocular infection, including bacterial keratitis, requires multiple administrations of antibacterial agents to maintain drug concentration in the corneal tissue high enough and for a sufficient period of time to have a useful antibacterial effect.12 Besides, in the case that the pathogen is not yet known, the choice of antimicrobial agents is commonly made empirically. Where there is access to microbiology facilities are available and organism has been identified, the effective
antimicrobial should be chosen according to susceptibility testing.

**MATERIAL & METHODS**

130 samples were collected from patients having ophthalmic infections attending ophthalmic OPD and admitted in ophthalmic ward in tertiary care hospital during March 2010 to Feb 2011. They were examined clinically for presence of ophthalmic infection, followed by the slit-lamp examination. After ocular examinations using standard techniques specimens were collected. Swabbing the lid margins with sterile broth-moistened cotton swabs in cases of eyelid infections, corneal swab and corneal scraping in case of corneal ulcer, conjunctival swab by wiping a broth-moistened swab across the lower conjunctival cul-de-sac in case of conjunctivitis, purulent fluids were collected in case of dacryocystitis. The obtained specimens were inoculated directly onto the blood agar (Aerobic incubation), chocolate agar (5-10% CO₂), nutrient agar, macconkey agar, liquid media such as brain heart infusion broth. Primary inoculation was done at the site of sample collection in OPD or ward. Culture media were kept in an incubator at 37°C for 18-24 hr. Gram's staining was performed from all samples for presumptive diagnosis. In vitro susceptibility testing was performed by Kirby-Bauer disc diffusion method and interpreted using Clinical and Laboratory Standards Institute's. The antibacterial agents (Hi-media Laboratories Pvt. Ltd., Mumbai, India) used were amikacin, tobramycin, gentamicin, ceftazolin, cefotaxime, ceftazidine, ciprofloxacin, norfloxacin, ofloxacin, gatifloxacin, chloramphenicol and vancomycin. The standard American Type Culture Collection (ATCC) bacteria (Staphylococcus aureus ATCC 25923, Ps. aeruginosa ATCC 27853, Escherichia coli ATCC 25922) were used for quality control.

**RESULTS**

Of the 38 isolated organisms, gram-positive cocci accounted for 21 (55%), gram-negative cocci-bacilli for 5 (31%) and gram-negative bacilli for 12 (32%). Coagulase-negative Staphylococci (37%), Pseudomonas spp. (21%), Acinetobacter spp and Staphylococci aureus were 13%, Klebsiella spp. 7%, Enterococci spp., Streptococci spp. and E. coli were 3% were the common isolated organisms.

Gatifloxacin had highest efficacy (89%) against all isolates, 90% of gram-positive cocci, 80% of gram negative cocco-bacilli, 92% of gram negative bacilli. The coverage of vancomycin against gram-positive was 95%. Amikacin had good coverage against gram-negative bacilli 83%. Gram negative cocco-bacilli have 80% susceptibility to all fluoroquinolone, amikacin and tobramycin. Susceptibility of other bacterial isolates were shown in table 1.

**DISCUSSION**

In present study Coagulase-negative staphylococci were predominant isolates followed by Pseudomonas aeruginosa, Staphylococcus aureus, Acinetobacter spp. In studies conducted by Savitri Sharma et al, Usha Gopinathan et al and B L Sherwal et al. has shown similar results. Among the other gram negative bacilli E. coli and Klebsiella spp. contributes 3% and 7% respectively.
tobramycin for gram negative cocco-bacilli 80%. Staphylococci aureus had 100% susceptibility to vancomycin and 80% to the cefazolin, cefotaxime, amikacin, tobramycin, gentamicin and gatifloxacin, chloramphenicol and 60% to ciprofloxacin and ofloxacin in present study. Whereas in the study done by Khosravi A D et al\textsuperscript{23} all the isolates of S. aureus were resistant to Vancomycin. Coagulase negative staphylococci was mostly susceptible (93%) to vancomycin and gatifloxacin in present study. Whereas in the study done by Khosravi A D et al amikacin had excellent coverage against S. aureus and coagulase negative staphylococci. Pseudomonas aeruginosa was mostly susceptible (88%) to amikacin and most of fluoroquinolone followed by cefazidime 75%. Whereas in the study done by Khosravi A D et al\textsuperscript{23}, Tobramycin was the most effective antibiotic against Pseudomonas spp.

Vancomycin is a glycopeptide; it inhibits early stages in cell wall mucopeptide synthesis and it exhibited greatest potency against ocular gram-positive isolates. We found greatest coverage of gatifloxacin and amikacin against gram-negative isolates. Ciprofloxacin and ofloxacin were introduced earlier and have been widely used since 1990, whereas gatifloxacin's usage has started in recent years. In addition to methoxy side chain at the C-8 position, gatifloxacin carries a methyl group on the piperazinyl ring. There was a slight decrease in all pathogens' susceptibilities to ciprofloxacin and ofloxacin, with a subsequent increase in the efficacy of gatifloxacin. The relationship between antibiotic use and resistance is complex. Improper selection of antibiotics, inadequate dosing and poor compliance to therapy may play as important a role in increasing resistance.\textsuperscript{24} Pattern of antibiotic susceptibility may be various in different geographical areas. So an attempt should be made to identify the ocular pathogen and performing susceptibility testing. It should be borne in mind that these are in-vitro results and do not always mirror the clinical response to antibiotics due to a variety of reasons including direct topical delivery, corneal penetration of an antibiotic and host factors.\textsuperscript{20}

CONCLUSION

Majority of ocular infections are associated with bacterial etiologies, which was more due to gram-positive organisms than gram negative organism. Most of the gram-positive organisms were susceptible to vancomycin and cefazolin, whereas gram-negative organisms were susceptible to amikacin and gatifloxacin. Gatifloxacin also had good coverage against both the type of bacterial isolates also. So the information provided in this article would aid the clinician in formulating rationale-based decisions in the empirical antibiotic treatment of bacterial ocular infections that cause major public health problems.

REFERENCES

ORIGINAL ARTICLE

PREVALENCE OF ENTEROCOCCI WITH HIGHER RESISTANCE LEVEL IN A TERTIARY CARE HOSPITAL: A MATTER OF CONCERN

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ABSTRACT

Aims: Enterococcus species are major nosocomial pathogen and are exhibiting vancomycin resistance with increasing frequency. Continuous monitoring and determination of antimicrobial susceptibility pattern is a necessity. The present study aims to determine the prevalence and susceptibility pattern of Enterococci in tertiary care hospital.

Methods and Material: Total of 92 enterococcal strains isolated from various samples were identified and speciated as per scheme of Facklam and Collins. Antibiotic susceptibility was determined for various drugs by Kirby bauer disc diffusion method. Results were interpreted as per CLSI guidelines and were even compared with Vitek2 automated system.

Results: 69 strains were E.faecalis, 21 were E.faecium and two were E.gallinarum. High level resistance to penicillin, ampicillin, gentamicin and streptomycin were observed. All strains were sensitive to linezolid and teicoplanin. 8% strains showed vancomycin resistance which was detected by Vitek2 automated system.

Conclusions: High rate of resistance to penicillin and amino glycosides is observed in our tertiary care hospital and emergence of VRE has further worsened this situation. So, there is an urgent need for more rational and restricted use of antimicrobials.

Keywords: Antimicrobial susceptibility, VRE

INTRODUCTION

Enterococci have become increasingly important not only because of their ability to cause serious infections but also because of their increasing resistance to many antimicrobial agents. Serious enterococcal infections are often refractory to treatment and mortality is high.1 Infections by Enterococci have traditionally been treated with cellwall active agents in combination with an aminoglycosides however emergence of high level resistance to aminoglycosides, β-lactam antibiotics and to vancomycin by some strains together with association of HLAR with multidrug resistance has led to failure of synergistic effects of combination therapy.1,2,3

Since the advent of VRE by Utley et al 5 in 1988, enterococcal infections have been a cause of great concern among the health professionals. Therefore, VRE along with HLAR is making the treatment of such infections extremely difficult and pose a great challenge to clinicians.

Although 12 species in genus Enterococcus have been recognized, most common species is E.faecalis followed by E.faecium. E.faecium predominantly is more resistant species than E.faecalis and emergence of vancomycin resistance in it has caused an increase in frequency of its isolation.6

Considering these, the present study was conducted in tertiary care hospital to determine the susceptibility pattern of enterococcal strains.

METHODOLOGY

The present study was conducted in department of microbiology. Total of 92 enterococcal strains were isolated from various clinical samples (urine, blood, csf). The strains were identified and speciated according to standard laboratory procedures as per the scheme of Facklam and Collins.7
Antimicrobial susceptibility was determined by Kirby Bauer disc diffusion method. Various antibiotics tested were: Penicillin (10U/disc), Ampicillin (10μg), High level gentamicin (120μg), High level streptomycin (300μg), Ciprofloxacin (5μg), Vancomycin (30μg), Teicoplanin (30μg) and Linezolid (30μg). The minimum inhibitory concentrations of vancomycin were detected by automated Vitek2 system.

The source of media and antibiotic discs were Hi-media ltd. Standard strains E. faecalis ATCC 29212 was used as control.

RESULTS

Total 92 enterococcal strains isolated, 69 strains were E. faecalis, 21 were E. faecium and 2 were E. gallinarum. Antibiotic susceptibility tests showed high level resistance to various antibiotics tested.[Table 1] all the strains were sensitive to linezolid and teicoplanin. 8% strains showed vancomycin resistance which were even compared with Vitek2 automated system. Similar results were observed in study by Anbumani et al.16

Table 1: Antimicrobial susceptibility pattern of Enterococci by Kirby bauer disc diffusion method

<table>
<thead>
<tr>
<th>Antibiotic tested</th>
<th>% Sensitive</th>
<th>% Resistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penicillin</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Gentamicin [HLR]</td>
<td>47</td>
<td>53</td>
</tr>
<tr>
<td>Streptomycin [HLR]</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>38</td>
<td>62</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>Teicoplanin</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Linezolid</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

DISCUSSION

Recent years have witnessed increased interest in Enterococci not only because of their ability to cause serious infections but also because of their increasing resistance to many antimicrobial agents,1,2,3

Table 2: Comparison of resistance pattern with other similar study

<table>
<thead>
<tr>
<th>Antibiotics tested</th>
<th>Anbumani study (n=360)</th>
<th>Present study (n=92)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penicillin</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>31</td>
<td>40</td>
</tr>
<tr>
<td>Gentamicin [HLR]</td>
<td>56</td>
<td>53</td>
</tr>
<tr>
<td>Streptomycin [HLR]</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>58</td>
<td>62</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Teicoplanin</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Linezolid</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

In the present study, E. faecalis (75%) was predominant isolate. E. faecium (23%) in our tertiary care hospital. Most of the studies done on Enterococci support the same findings. Reason could be predominance of E. faecalis in the endogenous flora of the body.9

Table 3: Total VRE isolation from different samples

<table>
<thead>
<tr>
<th>Sample</th>
<th>Total No.</th>
<th>No. of VRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine</td>
<td>54</td>
<td>5</td>
</tr>
<tr>
<td>Blood</td>
<td>23</td>
<td>2</td>
</tr>
<tr>
<td>CSF</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Pus/Swab</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Ascitic fluid</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Penicillin along with amino glycosides considered as treatment of choice. Therefore resistance of Enterococci against these antibiotics has important clinical implications. Present study showed 41% resistance to penicillin due to resistance mechanism involving low affinity penicillin binding proteins or production of β lactamases. Resistance to amino glycosides in Enterococci is with multidrug resistance.1

Table 4: Comparison of VRE isolation with other studies

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total samples</td>
<td>443</td>
<td>52</td>
<td>685</td>
<td>92</td>
</tr>
<tr>
<td>VRE (%)</td>
<td>5(1%)</td>
<td>12(23%)</td>
<td>10(1.4%)</td>
<td>8(8%)</td>
</tr>
<tr>
<td>Sample (positive)</td>
<td>Blood(3), Urine(1),</td>
<td>Blood*, Tissue*,</td>
<td>Urine(5),</td>
<td>Blood(2), CSF(1)</td>
</tr>
<tr>
<td></td>
<td>soft tissue(1)</td>
<td>Blood*</td>
<td>Urine*,</td>
<td>CVP tip*</td>
</tr>
<tr>
<td>Phenotype</td>
<td>Van A, Van B</td>
<td>Van B</td>
<td>Van A</td>
<td>Van A, Van B</td>
</tr>
<tr>
<td>MIC values (µg/ml)</td>
<td>26-512</td>
<td>&gt;4</td>
<td>62-256</td>
<td>8-32</td>
</tr>
</tbody>
</table>

*Sample size not mentioned.

In present study, HLAR was seen in 53% of the strains for gentamicin (High level) and 40% for streptomycin (High level). HLAR was more in E. faecium than E. faecalis. These finding also reported in some study.10,12 HLAR in these strains can well nullify the efficacy of combination therapy. Therefore, distinguishing HLAR
from simple intrinsic resistance is important and should be adopted as a part of routine microbiology laboratory.

Present study showed 8% vancomycin resistance. Table 36% strains were E. faecalis and 2% were E. faecium. Results were also compared with automated Vitek2 system which is based on MIC values. VanA and VanB phenotype were found to be predominant with MIC value 8-32 µg/ml. Previously from India, there are few reports of emergence of VRE strains with increased MIC values.12,13,14,15[Table 4]

All isolates were susceptible to linezolid and teicoplanin. So; these drugs are choice of treatment.

CONCLUSION

High rate of resistance to penicillin and amino glycosides along with increased MIC values is observed in our tertiary care Hospital and emergence of VRE strains has further worsened this situation. Prompt diagnosis and efficient infection control measures can restrict its spread. There is a need to study the antibiogram of enterococcal strains in order to minimize the selection and spread of such strains.

REFERENCES

ORIGINAL ARTICLE

STUDY OF ANATOMICAL VARIATIONS AND INCIDENCE OF MENTAL FORAMEN AND ACCESSORY MENTAL FORAMEN IN DRY HUMAN MANDIBLES

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ABSTRACT

Objectives: To provide anatomical information on the position, morphological variations and incidence of mental foramen and accessory mental foramen as they are important for dental surgeons, anaesthetists in nerve block and surgical procedures to avoid injury to neurovascular bundle in mental foramen area.

Method: The present study was conducted using 120 dried human mandibles of both sexes. Size, shape and position of mental foramen and accessory mental foramen were determined using digital vernier calliper.

Results: Mental foramen was present in all observed mandibles and it was bilateral in position. Accessory mental foramen was present in 8 mandibles and was unilateral in position.

Conclusion: The knowledge about variation in size, shape and position of mental foramen and presence of accessory mental foramen may be helpful to the dental surgeons to achieve full anaesthesia after nerve block.

Key words: mental foramen (MF), accessory mental foramen (AMF), mandible, premolar tooth

INTRODUCTION

Mental foramen is a small foramen situated in anterolateral aspect of the body of the mandible. Normally, mental foramen is located below the interval between the premolars. It transmits mental nerve, artery and vein. Mental nerve is a branch of inferior alveolar nerve which supplies sensation to lower lip and the labial mucosa and lower canines and premolars. The most useful injection for anaesthetising the mandibular teeth is the inferior alveolar nerve block. To anaesthetise the anterior teeth, including the premolars and canines, it is possible to avoid giving inferior alveolar nerve block by injecting anaesthetic solution adjacent to the mental foramen. So the study of position and morphological variation of mental foramen is very important because it will be helpful to localise the important neurovascular bundle passing through the mental foramen.

Any foramen in addition to mental foramen in the body of the mandible is known as accessory mental foramen. Accessory mental foramen transmits the accessory branch of mental nerve. So the knowledge of its position and incidence is helpful to dental surgeons to achieve complete anaesthesia because if this nerve is not blocked, anaesthesia will be incomplete. This knowledge will also helpful to prevent accessory nerve injury during periapical surgery.

MATERIAL AND METHODS

This study was carried out using 120 dried human mandibles of both sexes in department of anatomy, Medical College, Baroda and GMERS Medical College, Gotri, Baroda to determine the position, size, shape and number of MF and AMF. Digital vernier calliper was used to measure the dimensions and position of MF and AMF. The relation of MF with lower teeth and its position in relation to the symphysis menti, the posterior border of ramus of the mandible and the lower border of the body of mandible was observed. The position of AMF in relation with MF was observed.

RESULTS

Position of MF in relation with lower teeth

MF was situated below the apex of 2nd premolar tooth as shown in Figure 1 in 75.8% of mandibles, whereas in 12.2% of mandibles it was situated between 1st and 2nd premolars. In 8.3% of mandibles it was situated...
below the apex of 1st premolar tooth and in 3.33% of mandibles it was situated below the 1st molar tooth.

Relation of MF with other parameters is as follows:

Table 1: Relation of Mental Foramen with other parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Mean distance of MF from parameters in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symphysis menti</td>
<td>29.12</td>
</tr>
<tr>
<td>Posterior border of ramus of mandible</td>
<td>76.16</td>
</tr>
<tr>
<td>Lower border of body of mandible</td>
<td>14.45</td>
</tr>
</tbody>
</table>

Position of AMF

AMF as shown in Figure 2 was present in 8 out of 120 mandibles. Positions of AMF with relation to MF were variable. It was observed that AMF were situated below the premolars and 1st molar. Average distance between AMF and MF was 4mm. AMF was unilateral only; it was situated on right side in 5 mandibles and on left side in 3 mandibles.

Shape and size of MF

240 sides of 120 mandibles were observed. Round shape of MF was observed in 89% of sides while rest were oval in shape. Average size of MF was 2.62mm i.e. maximum diameter, whereas average size of AMF was 1mm.

Incidence of MF and AMF

MF was present in all 120 observed mandibles and was bilateral in position whereas AMF was present in 8 out of 120 observed mandibles, i.e. 6.6% of the mandibles and was unilateral in position.

DISCUSSION

In the present study, the most common position of MF was below the apex of 2nd premolar tooth in 75.8% mandibles. Comparison of most common location of mental foramen with other studies is as follows:

Table 2: Comparison of location of mental foramen with other studies

<table>
<thead>
<tr>
<th>Authors</th>
<th>Location of MF</th>
<th>% of most common location of MF</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wang et al.(1986)</td>
<td>Below the apex of 2nd premolar</td>
<td>58.98%</td>
<td>Chinese</td>
</tr>
<tr>
<td>Santini &amp; Land et al.(1990)</td>
<td>Below the apex of 2nd premolar</td>
<td>52.90%</td>
<td>British</td>
</tr>
<tr>
<td>Olasoji et al.(2004)</td>
<td>Between 1st &amp; 2nd premolar</td>
<td>-----</td>
<td>Nigerian</td>
</tr>
<tr>
<td>Apinhasmit et al.(2006)</td>
<td>Below the apex of 1st premolar</td>
<td>-----</td>
<td>Thais</td>
</tr>
<tr>
<td>Singh &amp; Srivastav et al.(2010)</td>
<td>Below the apex of 2nd premolar</td>
<td>68.8%</td>
<td>Indian</td>
</tr>
<tr>
<td>Present study</td>
<td>Below the apex of 2nd premolar</td>
<td>75.8%</td>
<td>Indian</td>
</tr>
</tbody>
</table>

In British mandibles, MF was situated below the apex of 2nd premolar in 52.90% by Santini & Land et al.(1990). Wang et al.(1986) mentioned that MF was located below the apex of Chinese in 58.98%. According to Olasoji et al.(2004) MF was situated between 1st and 2nd premolar in Nigerian. Apinhasmit et al.(2006) observed that MF was below the apex of 1st premolar in Thais. Position of MF was also observed below the apex of 2nd premolar in 68.8% on mandibles in Indian race by Singh & Srivastav et al.(2010) In present study, shape of MF was round in most of the mandibles. According to Singh & Srivastav et al.(2010) the most common shape of MF was round in 94% mandibles. Al-khateeb et al.(2007) observed that majority of MF were round in shape similar to the present study. In present study, there were 8 mandibles with AMF so the incidence was 6.6%. According to
Gershenson et al. (1986), AMF was present in 2.8% Israeli mandibles. Highest incidences of AMFs were reported in Negros and Maori mandibles.

The position of AMF was variable in relation with regular MF. In one mandible it was just superior to the regular MF at 5mm distance. One of the AMF was 4mm behind the regular MF. One AMF was superolateral to the MF at 4.5mm distance. AMF were smaller in size than regular MF.

Comparison of the results of parameters of this study with the other studies is as follows:

Table: 3- Comparison of the results of parameters with the other studies

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Symphysis menti</td>
<td>28.83mm</td>
<td>26.52mm</td>
<td>29.12mm</td>
</tr>
<tr>
<td>Posterior border of ramus of mandible</td>
<td>68.88mm</td>
<td>65.38mm</td>
<td>74.16mm</td>
</tr>
<tr>
<td>Lower border of body of mandible</td>
<td>14.88mm</td>
<td>12.25mm</td>
<td>14.45mm</td>
</tr>
</tbody>
</table>

In an adult with the advancement of age mental foramen is moved towards the superior border of mandible. This is mainly because of the loss of teeth and alveolar bone resorption. There is a significant variation of the position of mental foramen seen with age.

CONCLUSION

The anatomical variability of the position of the mental foramen should always be considered when performing periodontal or endodontic surgery in the area from canine to root of first molar tooth.

The knowledge about variability in position of mental foramen and presence of accessory mental foramen is important in order to avoid nerve damage in connection with surgical procedure and to achieve complete effect of anaesthesia after mental nerve block.

REFERENCES

ORIGINAL ARTICLE

PATTERN OF SUICIDAL DEATHS IN FEMALES OF SOUTH GUJARAT REGION

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ABSTRACT

Background: Pattern of suicidal deaths is a reflection of the prevailing social set up and mental health status of the region. Many cultural and socio-economic factors of a country are responsible for the causation of such deaths in females. Suicidal deaths happen almost everywhere in the world.

Objective: The current study was conducted with an objective to find out the causes of suicidal deaths in females and the various reasons associated with them.

Methodology: The present study is hospital based cross-sectional study in which 138 autopsy cases of suicidal deaths in females were taken out of total 1983 autopsies conducted in the mortuary of Government Medical College and New Civil Hospital, Surat (South Gujarat) during the period from May 2009 to April 2010.

Results: The most common cause of death in majority of the deaths was poisoning (35.51%) followed by hanging (31.16%) and burns (27.54%) while common motive behind them was mental stress due to unknown reasons (51.45%).

Conclusions: Most of the causes are preventable The result of this study indicates that, by not only a strong legal support network but also opportunities for economic independency, essential education and awareness, alternative accommodation and a change in attitude and mindset of society, judiciary, legislature, executive, men and the most importantly woman herself can lower or prevents the such suicidal deaths.

Keywords: suicidal deaths, autopsy, mortuary

INTRODUCTION

Suicidal death is one type of violent death which is caused by a deliberate act of the decedent with the intent to kill himself.¹ Data on such suicidal deaths in a particular geographic area can give the reflection of social and mental status of females. Suicidal deaths of married women have been an increasing trend in Indian society during the recent past years.

The most obvious reason behind such deaths is unending demands of dowry (cash / kinds) by their husbands and / or in laws, for which they torture the bride in such a way that she commits suicide, either by burning, poisoning, hanging, jumping from terrace or by some other means. Besides this, family quarrels due to ill-treatment by in-laws, rash and negligent behaviour or extra-marital affairs of husband and mal-adjustment and infertility in wives are other reasons behind such deaths. Its increasing incidence is symbolic of continuing erosion and devaluation of women’s status in independent India.

By this study, we can know the various causes of suicidal deaths in females and the various motives behind them.

MATERIALS AND METHODS:

The present study is hospital based cross-sectional study which was carried out during the period of May 2009 to April 2010 in the Department of Forensic Medicine and Toxicology at Government Medical College and New Civil Hospital, Surat.

The materials comprised 138 autopsy cases of suicidal deaths of females of all ages, out of total 1983 autopsies done in our mortuary. The cases included not only Surat city but also from surrounding areas of South Gujarat region. These 138 autopsy cases of suicidal deaths had taken as study population irrespective of race, religion and caste after taking detailed informed written consent from next to kin of the deceased. Information regarding the name, age,
address, occupation, education, socio-economic status, marital status, history of death, apparent motive and the circumstances leading to such deaths of deceased were collected from the relatives / friends of the deceased, hospital records and the concerned investigating agencies. Other information like cause of death from the autopsy reports and final cause of death formed from the reports of samples and viscera, subjected to chemical analysis, histopathological examination and other investigations.

Proforma for study was prepared and all collected data were put into the master-chart, which was prepared and then feed into the computer in Excel worksheet and then analyzed.

**OBSERVATION**

The present study comprised 138 (6.96%) autopsy cases of suicidal deaths of females out of total 1983 autopsies.

Maximum cases (36.23%) were seen in age group of 21 – 30 years followed by 26.81% and 20.29% cases in age group of 11 – 20 and 31 – 40 years respectively. Minimum cases (4.45%) were seen in fifth decade while no case recorded in child below 10 years. There were more cases seen in urban region (68.84%) than rural (31.16%).

Housewives constituted the largest single category amounting nearly 71.74% and after that students (20.29%) and labourer (5.80%) were involved. Only 1 and 2 cases were seen in employed women and old age respectively. Most of females were literate (89.13%) who become victims in such deaths in which 30.44% studied up to secondary school, 25.36% up to higher secondary, 25.36% up to graduation and only 7.97% were primary education. Rest victims were illiterate (10.87%).

### Table 1: Distribution according to apparent motive

<table>
<thead>
<tr>
<th>Apparent Motive</th>
<th>cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental stress due to unknown reasons</td>
<td>71</td>
<td>51.45</td>
</tr>
<tr>
<td>Family quarrel</td>
<td>15</td>
<td>10.87</td>
</tr>
<tr>
<td>Mental illness</td>
<td>14</td>
<td>10.15</td>
</tr>
<tr>
<td>Chronic illness</td>
<td>11</td>
<td>07.97</td>
</tr>
<tr>
<td>Failure in love</td>
<td>10</td>
<td>07.25</td>
</tr>
<tr>
<td>Maladjustment in marriage life</td>
<td>9</td>
<td>06.52</td>
</tr>
<tr>
<td>Failure in Exam</td>
<td>5</td>
<td>03.62</td>
</tr>
<tr>
<td>Financial problem</td>
<td>3</td>
<td>02.17</td>
</tr>
<tr>
<td>Cruelty by husband &amp; in-law</td>
<td>3</td>
<td>02.17</td>
</tr>
<tr>
<td>Dowry</td>
<td>2</td>
<td>01.45</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>04.35</td>
</tr>
</tbody>
</table>

Highest numbers of cases (40.58%) were seen in class II (upper - middle) followed by 36.96% and 13.04 % cases in class III (middle) and class IV (lower-middle) respectively. Only 3 cases were present in class V (lower) while class I (upper) was also involved in 12 cases.

Hindus (89.86%) comprised the single largest category followed by Muslims (9.42%). Only 1 case was belonging to the Christian. Out of total number of cases, more than half of victims were married (69.57%) while 25.36% were unmarried and 5.07% were widow.

In the total 138 suicidal cases, most common motive for suicidal deaths was mental stress due to unknown reasons (51.45%) followed by family quarrel (10.87%), mental illness (10.15%), chronic illness (7.97%), failure in love (7.25%), mal-adjustment in marriage life (6.52%). In some cases there was more than one motive for suicide.

### Table 2: According to Cause of death

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poisoning</td>
<td>49</td>
<td>35.51</td>
</tr>
<tr>
<td>Hanging</td>
<td>43</td>
<td>31.16</td>
</tr>
<tr>
<td>Burns</td>
<td>38</td>
<td>27.54</td>
</tr>
<tr>
<td>Drowning</td>
<td>5</td>
<td>03.62</td>
</tr>
<tr>
<td>Multiple injuries</td>
<td>2</td>
<td>01.45</td>
</tr>
<tr>
<td>Abdominal injury</td>
<td>1</td>
<td>00.73</td>
</tr>
<tr>
<td>Head injury</td>
<td>1</td>
<td>00.73</td>
</tr>
</tbody>
</table>

Poisoning (35.51%) was most common cause of death in the total deaths. After that hanging and burns which caused the death in 31.16% and 27.54% cases respectively. Drowning comprised only 5 cases (3.62%) while in remaining cases multiple injuries (1.45%), head injury (0.73%) and abdominal injury (0.73%) were present. In one case there were two causes of death present.

**DISCUSSION**


With the belief that age of marriage in most of the urban, metropolitan and sub-urban societies had certainly gone up to somewhere near twenty, the married female if falling prey to this social devil would in all probability lie in age group of 21 - 30 years if the incidence occurs in initial few years of her married life. The cases were less after 30 years, probably as the age advances, the girls become mature and handle the situation in much efficient manners in life. Bhattacharjee J et al (1996) in their study had however showed that age group most vulnerable was 30 – 39, which was slightly in disagreement with those of present study.
Region wise distribution: There were more cases seen in urban region (68.84%) than rural (31.16%). This finding was consistent with the findings of Sharma BR et al (2004)7. In the study of authors6,11, most cases were from rural region, which was totally in disagreement with those of, present study.

Occupation wise distribution: Housewives constituted the largest single category amounting nearly 71.74%. This finding was consistent with the findings of others6,4,10,11,13 and Statistics of NCBI 200815. Majority of victims were housewives that were dependant on their husbands or in-laws.

Education wise distribution: Most of females were literate (89.13%) who become victims in such deaths in which 30.44 % studied up to secondary school, 25.36% up to higher secondary, 25.36% up to graduation and only 7.97% were primary education. Rest victims were illiterate (10.87%). This finding was consistent with the findings of Kailash UZ et al (2009)13 in which 72.35% of cases were educated less than metric and 12% were illiterates.

This finding was inconsistent with the Statistics of NCBI 200815 in which the maximum number of suicide victims was educated up to Primary level (25.3%). Illiterate and Middle educated persons accounted for 20.7% suicide victims and 23.7% respectively. Only 2.6% suicide victims were graduates and post-graduates.

This change may be because of change in life style, socio-economic conditions and population affected in the region of South Gujarat. For the fact, that the mostly affected were immigrants from neighbouring states and belonged to lower socioeconomic strata and were from major constituent of labourer class, low literacy rate could have been evident. Authors4,6,10,11, in their study had however showed that illiterate women were most vulnerable, which was totally disagreement with those of, present study.

According to Kulshrestha P et al (2001)4 about half of victims were found to be illiterate and among those who literate, non-matriculates formed more than half of the graduate and technical/professional combined constituted merely 9.39% of total.

Socioeconomic Status wise distribution: Highest numbers of cases (40.58%) were seen in class II (upper - middle) followed by 36.96% and 13.04 % cases in class III (middle) and class IV (lower-middle) respectively. Only 3 cases were present in class V (lower) while class I (upper) was also involved in 12 cases. This finding was not consistent with the findings of Srivastava AK et al (2007)10 which showed majority of the victims were belonging to class III (middle) or class IV (lower-middle) socio-economic groups.

Kulshrestha P et al (2001)4 and Kailash UZ et al (2009)13 in their study had however showed that class IV (lower – middle) socioeconomic class was most vulnerable while in the study of Mohanty MK et al (2004)6, Sharma BR et al (2007)7 and Geeta S et al (2008)11, class V (lower) socio-economic class were mostly involved, which was in disagreement with those of, present study. The reason for the above said findings may be due to economic instability leading to violence against women in the form of dowry deaths.

Religion wise distribution: Hindus (89.86%) comprised the single largest category followed by Muslims (9.42%). Only 1 case was belonging to the Christian. This finding was consistent with the findings of authors6,4,11,13,15. We believed that marital / family discards and dowry problems were less in Muslim due to simple rituals and practice of "Mahr" / "dower" instead of evil practice of "dowry". Very low population and higher and professional qualification and cultural differences may be responsible for only 1 case having been reported from Christian religion. Rahim M et al (1996)3 in their study had however showed that 95.47% of the unnatural deaths were the Muslims, 4.25% were Hindu and 0.14% was Christians, which was slightly in disagreement with those of, present study. Reason behind such finding, Bangladesh was Islamic country.

Marital Status wise distribution: Out of total number of cases, more than half of victims were married (69.57%) while 25.36% were unmarried and 5.07% were widow. This finding was consistent with the findings of authors6,11,13,15.

Distribution according to apparent motive: In the total 138 suicidal cases, most common motive for suicidal deaths was mental stress due to unknown reasons (51.45%) followed by family quarrel (10.87%), mental illness (10.15%), chronic illness (7.97%), failure in love (7.25%), mal-adjustment in marriage life (6.52%). Srivastava AK et al (2007)10 in their study had however showed that Ill-treatment by the in-laws, excessive pressure for dowry and negligent behaviour of the husband were the main reasons behind suicidal deaths, which was slightly in disagreement with those of, present study.


According to Kailash UZ et al (2009)13, dowry was the most common motive for suicidal deaths. According to Statistics of NCBI 200815, Family Problems and Illness, accounted for 23.8% and 21.9% respectively, were the major causes of suicides among the specified causes. Love Affairs (3.0%), Bankruptcy, Dowry Dispute and Poverty (2.4% each) were the other causes driving people towards suicides.

According to Cause of death: Poisoning (35.51%) was most common cause of death in the total 138 suicidal deaths. After that hanging and burns which cause the death in 31.16% and 27.54% cases respectively. Drowning comprised only 5 cases (3.62%) while in remaining cases multiple injuries (1.45%), head...
injury (0.73%) and abdominal injury (0.73%) present. In one case, there were two cause of death present.

This finding was consistent with the statistics of NCBI 2008\textsuperscript{3,15}, suicide by consuming poison (34.8%), hanging (32.2%), burns (8.8%) and drowning (6.7%) were the prominent means of committing suicides. Due to easy availability of poison materials, poisoning was preferred method for suicide. Hanging as we think was not due to awareness of the people. Kerosene oil, match sticks, and other cooking material, being easily available in houses so burns was also preferred by Indian women to commit suicide.

Authors\textsuperscript{3,7,10,11,12}, in their study had however showed that hanging was most common cause of death, which was slightly in disagreement with those of, present study. According to Sharma BR et al (2004)\textsuperscript{7}, females preferred self-immolation (burns) to end their own lives. According to Eilertsen HH et al (2007)\textsuperscript{16}, drowning and drug intoxication was the most common cause of death in elderly people while in my study there was poisoning. According to statistics of NCBI 2008\textsuperscript{3,15}, the pattern of suicides reported from 35 cities included Surat showed that Hanging (45.7%), Poisoning (21.3%) and burns (13.2%) were the prominent means adopted by the suicide victims in the cities.

CONCLUSION

The cause of death profile is an important set of public health information and forms the cornerstone of the health information system. At provincial level it is needed for health planning and deciding on intervention strategies. A low incidence of suicidal deaths in female should be described in favor of peace, harmony and happiness in society, state as well as in country. In present study, most of the victims were literate hindu-married females of 21 - 30 years of age belonging to upper-middle socio-economic class and majority of women were died due to poisoning.

The result of this study indicates that, by not only a strong legal support network but also opportunities for economic independency, essential education and awareness, alternative accommodation and a change in attitude and mindset of society, judiciary, legislature, executive, men and the most importantly woman herself can lower or prevents the such suicidal deaths.

REFERENCES

ABSTRACT

Aims: To study the socio-demographic profile of tuberculosis patients put on DOTS at surveyed Diagnostic Microscopic centres in district Jhansi and review the program in terms of monetary losses caused by indirect cost to patients on DOTS.

Settings and Design: A descriptive study design was used.

Materials & Methods: The present study was carried out in two Tuberculosis units of district Jhansi, and the information was collected by taking the exit interviews of the patients on DOTS.

Statistical analysis: The results are expressed in terms of percentages.

Results: Maximum number of tuberculosis cases (43.18%) in both the sexes were found in age group 26-45 years. Sixty three percent cases were from Urban areas as compared to 37.27% who belonged to Rural areas. TB cases were found to be more common in SC/ST population and in poor socio-economic group. In present study 36.37% patients had to spend the money on investigations, 48.18% had to cover 2-3 Kms for availing treatment facilities and 56.37% were spending money for reaching the DOTS centre.

Conclusions: Appraisal of RNTCP program should be done at micro level considering these indirect costs so that compliance of treatment increases decreasing the incidence of MDR and XDR cases.

Keywords: RNTCP, DOTS, Indirect cost

INTRODUCTION

Tuberculosis (TB) is one of India's biggest public health problems – a problem that India can ill afford. India accounts for one-fifth of the global TB burden, with 2 million people estimated to develop TB every year i.e. more than 2000 a day, half of whom have infectious and fatal TB.

The prevalence of TB in India was estimated to be 249 per 100,000 populations, and the mortality due to TB is 23 per 100,000 populations. It is not just the death figures that are startling, TB causes huge economic loss with about 17 crores workdays lost due to the disease. Studies suggest that the direct and indirect cost of TB to India amounts to an estimated $23.7 billion annually and “Indirect” costs include: loss of employment, travel to health facilities, costs incurred in investigations done outside DMCs, sale of assets to pay for treatment-related costs, funeral expenses and lost productivity from illness and premature death.

It is not enough to view program, from provider's perspective only. But it is equally important, to consider the views and experience of patients undergoing treatment. The rationale of present study is to review the program at micro level and to study the burden of indirect costs on patients in availing treatment facilities.

Specific objectives

➢ To study the socio-demographic profile of tuberculosis patients put on DOTS at surveyed Diagnostic Microscopic centres (DMC) in district Jhansi.
➢ To review the program in terms of monetary losses caused by indirect cost to patients in availing treatment under RNTCP.

MATERIALS AND METHODS
A descriptive study design was used in the study. Study was conducted from Jan 2009 to March 2009.

**Sampling procedure:** The present study on implementation of RNTCP – DOTS strategy was conducted in the District Jhansi (Uttar Pradesh). District Jhansi has a population of approx. twenty lakhs (20,079,89). It has 4 Tuberculosis Units (TU) covering a population of approximately 5 lakhs each: TU – DTC Jhansi, TU – Moth, TU – Mauranipur and TU – Gursarai. To select study unit two stage sampling technique was used. In the first stage of sampling out of 4 Tuberculosis Units (TU), one Urban and one rural Tuberculosis unit (TU) was selected. Since there is only one TU (TU District tuberculosis centre DTC) functional in urban area so it was selected and out of three rural TU, TU – Moth was selected by simple random sampling technique. Selected DMCs were

1. TU – DTC --- District Tuberculosis Clinic Jhansi and Medical College Jhansi
2. TU – Moth --- PHC Baragaon and PHC Chirgaon.

To ascertain the socio-demographic profile of patients, and the burden of indirect cost in availing treatment for TB, exit interview of all the patients who were diagnosed as tuberculosis cases and put on DOTS during the first quarter of 2009 (i.e., subjects registered from 1st January 2009 to 31st March 2009) at four selected DMCs, DTC Jhansi, Medical college Jhansi, PHC Baragaon and PHC Chirgaon were taken on pretested questionnaire. Total patients put on DOTS during this period in study area were 220. Data was analyzed and results recorded in terms of percentages.

**ETHICAL ISSUES**
A verbal informed consent was taken from all the patients and confidentiality of patients was maintained at all the time and all the level.

**RESULTS**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>6-15 (n=10) (%)</th>
<th>16-25 (n=56) (%)</th>
<th>26-45 (n=95) (%)</th>
<th>&gt;45 (n=59) (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4 (1.81)</td>
<td>33 (15)</td>
<td>68 (30.9)</td>
<td>55 (25)</td>
<td>160 (72.7)</td>
</tr>
<tr>
<td>Female</td>
<td>6 (2.72)</td>
<td>23 (10.5)</td>
<td>27 (12.27)</td>
<td>4 (1.8)</td>
<td>60 (27.2)</td>
</tr>
<tr>
<td>Place of Residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>5 (2.27)</td>
<td>18 (8.18)</td>
<td>31 (14.09)</td>
<td>28 (12.72)</td>
<td>82 (37.27)</td>
</tr>
<tr>
<td>Urban</td>
<td>5 (2.27)</td>
<td>38 (17.27)</td>
<td>64 (29.09)</td>
<td>31 (14.09)</td>
<td>138 (62.72)</td>
</tr>
</tbody>
</table>

Table 1: Socio-demographic Profile of Tuberculosis Patients (n=200)

<table>
<thead>
<tr>
<th>Religion &amp; Caste</th>
<th>Cases (n=220) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindu General</td>
<td>17 (7.72)</td>
</tr>
<tr>
<td>OBC</td>
<td>87 (39.54)</td>
</tr>
<tr>
<td>SC/ST</td>
<td>91 (41.36)</td>
</tr>
<tr>
<td>Total</td>
<td>195 (88.63)</td>
</tr>
<tr>
<td>Muslim General</td>
<td>13 (5.90)</td>
</tr>
<tr>
<td>OBC</td>
<td>11 (5.00)</td>
</tr>
<tr>
<td>Total</td>
<td>24 (10.90)</td>
</tr>
<tr>
<td>Christian</td>
<td>1 (0.45)</td>
</tr>
</tbody>
</table>

Table 2: Distribution of Tuberculosis Cases by Religion and Caste

Tuberculosis is the disease of poor proving the fact, maximum cases belonged to poor socio-economic status and 32% were of Below poverty line. (Table 3)

<table>
<thead>
<tr>
<th>Socio-economic class</th>
<th>Tuberculosis cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>II</td>
<td>2 (0.90)</td>
</tr>
<tr>
<td>III</td>
<td>8 (3.63)</td>
</tr>
<tr>
<td>IV</td>
<td>10 (4.54)</td>
</tr>
<tr>
<td>V</td>
<td>130 (59.09)</td>
</tr>
<tr>
<td>Below Poverty Line (BPL)</td>
<td>70 (31.81)</td>
</tr>
</tbody>
</table>

Table 3: Tuberculosis cases by Social Class (Modified Prasad’s Classification) (n=220)

<table>
<thead>
<tr>
<th>Money spent on investigation (Rs.)</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>140 (63.63)</td>
</tr>
<tr>
<td>Upto 100 Rs.</td>
<td>9 (4.09)</td>
</tr>
<tr>
<td>100 – 200</td>
<td>8 (3.63)</td>
</tr>
<tr>
<td>200 -300</td>
<td>13 (5.90)</td>
</tr>
<tr>
<td>&gt; 300</td>
<td>50 (22.72)</td>
</tr>
</tbody>
</table>

Table 4: T.B patients by money spent on investigations done outside the DMC (n=220)

Thirty six percent of cases had to bear the expenses for investigation of disease, the cost of expenses ranging...
from less than Rs.100 to more than Rs. 300 for 22.7% cases. (Table 4)

Table 5: T.B patients according to sex and distance travelled to reach Centre (n=220)

<table>
<thead>
<tr>
<th>Distance travelled</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 km</td>
<td>52 (23.63)</td>
</tr>
<tr>
<td>1-2km</td>
<td>28 (12.72)</td>
</tr>
<tr>
<td>2-3km</td>
<td>106 (48.18)</td>
</tr>
<tr>
<td>&gt; 3km</td>
<td>34 (15.45)</td>
</tr>
</tbody>
</table>

Majority of patients (48.18%) had to cover almost 2-3 Kms to avail the treatment facilities and 15.45% patients had to cover >3kms to reach the centre (Table 5)

Table 6: T.B patients according to expenditure to reach Diagnostic Microscopic Center (n=220)

<table>
<thead>
<tr>
<th>Money spent to reach centre (Rs.)</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>96 (43.63)</td>
</tr>
<tr>
<td>&lt; 10</td>
<td>55 (25.00)</td>
</tr>
<tr>
<td>10-20</td>
<td>33 (15.00)</td>
</tr>
<tr>
<td>20-30</td>
<td>19 (8.63)</td>
</tr>
<tr>
<td>&gt; 30</td>
<td>17 (7.72)</td>
</tr>
</tbody>
</table>

For 43.63% cases the DOTS Centre was approachable, and reaching there was approachable to them without bearing any travel expenditure but 56.37% patients were bearing the indirect costs of travelling for availing the DOTS treatment and the money spent for this travel ranged from less than Rs10 for 25% cases to more than Rs. 30 for almost 8% patients. (Table 6)

DISCUSSION

Appraisal of any program is important both at macro & micro levels; macro level helps in enabling major policy decisions while operational efficiency of any program is judged by micro level evaluation.

The present study was conducted with the aim of micro-level performance appraisal of RNTCP at Diagnostic Microscopy Centres (DMC) of District Jhansi to focus on some of the important aspects of program which are quite overlooked majority of times and from patients perspectives they matter a lot. So the present study was done keeping in view the fact that in spite of tremendous efforts by the Government of India to increase the compliance for DOTS, there are still quite high prevalence of defaulters, one of the important reasons for this in background is the indirect costs the patients are forced to bear even for availing the free of costs DOTS treatment.

In this study, the most affected age group was 26-45 years. According to report of DGHS also, 75% of tuberculosis cases were in the most economically productive age group (15-60years). Present study shows that males were more affected by tuberculosis than the females. Out of all selected cases, more than 2/3rd cases were males. Study conducted by National Tuberculosis Institute Bangalore, also showed that the tuberculosis cases were more prevalent among young male population than the females. A study carried out by Stead WW (1983) also found that risk of tuberculosis is more in males than females.

In this study it was found that most tuberculosis case belonged to SC/STs, followed by OBCs. The factor behind this is that tuberculosis is the disease of poverty. It affects socially and economically poor people of our society because of their poor nutritional status, unhygienic living condition and overcrowding which are very much responsible for disease transmission. According to Social assessment of RNTCP report findings also, there were maximum cases reported from SC/ST population.

On analysis of data in present study it was found that 59% of the patients belonged to (class V) and 32% were Below Poverty Line (BPL) thus proving that tuberculosis cases are more common among lower class than the upper and middle class. Study at TRC Chennai by M.Muniyandi et.al found that the living status of two thirds of the TB patients registered under TB control program was low.

According to study carried out by Mohanarani Suhadev et.al in rural Tamil Nadu 73% of the respondents came from rural areas with the mean distance of 245 kms from the health centre spending approximately Rs 80/- towards their transport charges, however it is encouraging to note that in the present study on an average almost (50%) patients had to cover a distance of approx. 2-3 km.

Mohanarani Suhadev et.al found that 54% percent of working patients did not lose workdays on account of illness. He observed that 26% of patients lost less than 30 days of work, costs for transportation (range Rs 0-372) during treatment. In the present study it was found that 36% patients had to spend the money on investigations ranging from Rs.100-300, 48.18% had to cover 2-3 Kms for availing treatment facilities and 56.37% were spending money for reaching the DOTS centre varying from less than Rs.10 to more than Rs.30.

CONCLUSION AND RECOMMENDATIONS

Though DOTS treatment is claimed to be free of cost but poor patients had to bear the scounge of indirect costs in availing the treatment as the cost incurred on the investigations done outside DMCs and the costs for travelling up to DOTS centre thus it is concluded that DOTS alone is a sufficient solution to the tuberculosis problem, but the implementation should be more patient-centered , as well as more customized approaches with adequate support and resources for the peripheral levels of health care are avenues to be explored.

REFERENCES


ORIGINAL ARTICLE

PSYCHOSOCIAL VARIABLES OF HIGHLY MOTIVATED VOLUNTARY BLOOD DONORS AT BLOOD BANK OF A MEDICAL COLLEGE

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ABSTRACT

Background: The adequacy of blood depends on blood donation rates and numbers of blood donors. To prepare adequate blood supplies, it is essential to investigate the factors that motivate individuals from donating. This study aimed to identify the character of highly motivated donors. This study was undertaken to study the motivational factors leading to voluntary blood donation and understanding the psychosocial variables of blood donors.

Methodology: We selected 50 regular blood donors who have donated blood five or more than five times.

Results: It was observed that most of the voluntary donors were males (94%) and belonged to age group 41-50 years (42%). Most of the donors (86%) had studied up to graduate and above. 70% donors have donated up to 30 times and 88% donors have started their first donation before 25 years of age. 94% donors have donated blood first time in voluntary blood donation camp.

Conclusion: Motivation, recruitment and retention of voluntary blood donors are important criteria to achieve safe blood donation.

Keywords: Voluntary Blood Donors, Motivation, Psychosocial characteristics

INTRODUCTION

In medical emergencies, blood transfusions are often the only way to save an individual’s life. A sufficient supply of donated blood is thus literally a matter of life and death. Blood cannot yet be produced artificially, and some components of blood can only be stored for a short period of time. Moreover, the amount a single individual can donate is limited. Thus, in order to meet the need for blood, a wide and healthy base of donors, willing to give blood when required, is needed.

Historically, many blood donation services have relied on voluntary, non-remunerated donations and thus on the prosocial motivation of their donors.1 Despite the inherent free-rider problem of this policy, the arrangement seems to have worked satisfactorily most of the time. Three problems have, however, emerged recently that increase the risk of blood shortages in the future. First, innovations in surgery and oncological therapies have led to more aggressive medical treatments in cases that were previously thought inoperable or incurable, increasing the number of transfusions, and requiring larger amounts of blood.

Second, there is a general tightening of donation eligibility criteria, such as stepped-up travel restrictions or restrictions on past blood recipients because of Creutzfeldt-Jakob disease. Third, there are widespread seasonal shortages due to reduced supply, particularly in summer and early winter.1

The safest donors are found among people who donate their blood voluntarily once or twice a year, purely out of altruism, and are self-aware of their unsuitability to serve as blood donors where there might be a slightest risk of causing health damage for blood recipients.2 Donation of blood is a behavioral phenomenon and is always considered a humanitarian act. During national emergencies like the Gujarat earthquake, there was no dearth of voluntary donors. What is not realized perhaps is that, there is a necessity for blood even otherwise and hence there is a need for motivation to donate blood voluntarily. The decision to donate blood is motivated by a host of factors including altruism, social behavior, social pressure and replacement. Recruitment and retention of donors to sustain and increase the donor base are critical for blood banks. This study was undertaken with the objective of
studying the psychosocial variables and motivational factors of voluntary blood donors. The fragile balance between blood supply and demand forces blood banks to constantly search for more efficient ways to recruit blood donors. If blood collection agencies are to continue meeting the demand for a safe and adequate blood supply, communication professionals must find ways to recruit more donors to give blood more times. One possible demographic to target is young people, who could supply blood for years to come if they became regular donors.

**MATERIAL AND METHODS**

The study was carried out in the Blood Bank associated with a Medical College. 50 voluntary blood donors are included in the study who has donated blood 5 or more than five times. The study questionnaire was prepared to know the age, sex, level of education, number of donation, age of first donation and to know that the first donation was voluntary or replacement. Finally the cause of Motivation to donate multiple times is asked. The responses of the subjects were recorded as narrated by them.

**Selection of the donors:** All donors coming and seeking to donate blood were subjected to a preliminary rapid medical examination to detect any obvious disease. Donor whose weight was more than 50 kg was selected for donation. The provisionally selected donors were subjected to hemoglobin estimation by specific gravity method. Hemoglobin less than 12.5 is rejected for donation.

**RESULTS**

A total of 50 voluntary donors were interviewed out of which 94% were males and 6% females (Table 1). 42% donors belonged to the age group 40-50 and 24% donors belonged to age group 30-40 years. The youngest donor was aged 19 years and the oldest was 65 years of age.

<table>
<thead>
<tr>
<th>Age of donor</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>1(2)</td>
<td>0(0)</td>
<td>1(2)</td>
</tr>
<tr>
<td>21-30</td>
<td>9(18)</td>
<td>0(0)</td>
<td>9(18)</td>
</tr>
<tr>
<td>31-40</td>
<td>10(20)</td>
<td>2(4)</td>
<td>12(24)</td>
</tr>
<tr>
<td>41-50</td>
<td>20(40)</td>
<td>1(2)</td>
<td>21(42)</td>
</tr>
<tr>
<td>51-60</td>
<td>6(12)</td>
<td>0(0)</td>
<td>6(12)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>1(2)</td>
<td>0(0)</td>
<td>1(2)</td>
</tr>
<tr>
<td>Total</td>
<td>47(94)</td>
<td>3(6)</td>
<td>50(100)</td>
</tr>
</tbody>
</table>

86% donor had studied up to graduate level and above, 14% donors have education of high school level. No donor was illiterate. (Table: 2)

80% donors have donated blood up to 30 times. Two donors have donated blood more than 100 times. (Table 3)

**Table 2: Literacy level of Donor**

<table>
<thead>
<tr>
<th>Literacy level</th>
<th>No. of Donor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>0(0)</td>
</tr>
<tr>
<td>Primary</td>
<td>0(0)</td>
</tr>
<tr>
<td>High school</td>
<td>7(14)</td>
</tr>
<tr>
<td>Graduate</td>
<td>34(68)</td>
</tr>
<tr>
<td>Post graduate</td>
<td>9(18)</td>
</tr>
<tr>
<td>Total</td>
<td>50(100)</td>
</tr>
</tbody>
</table>

Most of the donors (88%) has initiated blood donation at younger age, between 18 to 25 years of age and continued donation. Only six percents of donor had initiated donation after the age of thirty.

**Table 3: Number of time blood donated previously**

<table>
<thead>
<tr>
<th>Number of Donation</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-10</td>
<td>12(24)</td>
<td>0(0)</td>
<td>12(24)</td>
</tr>
<tr>
<td>11-20</td>
<td>12(24)</td>
<td>3(6)</td>
<td>15(30)</td>
</tr>
<tr>
<td>21-30</td>
<td>13(26)</td>
<td>0(0)</td>
<td>13(26)</td>
</tr>
<tr>
<td>31-40</td>
<td>3(6)</td>
<td>0(0)</td>
<td>3(6)</td>
</tr>
<tr>
<td>41-50</td>
<td>1(24)</td>
<td>0(0)</td>
<td>1(2)</td>
</tr>
<tr>
<td>51-60</td>
<td>3(2)</td>
<td>0(0)</td>
<td>3(6)</td>
</tr>
<tr>
<td>61-70</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
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<tr>
<td>71-80</td>
<td>1(2)</td>
<td>0(0)</td>
<td>1(2)</td>
</tr>
<tr>
<td>81-90</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>91-100</td>
<td>1(2)</td>
<td>0(0)</td>
<td>1(2)</td>
</tr>
<tr>
<td>&gt;100</td>
<td>1(2)</td>
<td>0(0)</td>
<td>1(2)</td>
</tr>
<tr>
<td>Total</td>
<td>47(94)</td>
<td>3(6)</td>
<td>50(100)</td>
</tr>
</tbody>
</table>

Most of the donors have their first donation at voluntary blood donation camp. Only 6% donors have donated first time for replacement of blood. Majority of donors have donated blood for a good cause and to save life. Very few have donated for a new experience and to get blood when needed.

**Table 4: Age at the time of first donation**

<table>
<thead>
<tr>
<th>Age</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>26(52)</td>
<td>0(0)</td>
<td>26(52)</td>
</tr>
<tr>
<td>21-25</td>
<td>16(32)</td>
<td>2(4)</td>
<td>18(36)</td>
</tr>
<tr>
<td>26-30</td>
<td>3(6)</td>
<td>0(0)</td>
<td>3(6)</td>
</tr>
<tr>
<td>31-35</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>36-40</td>
<td>0(0)</td>
<td>1(2)</td>
<td>1(2)</td>
</tr>
<tr>
<td>&gt;40</td>
<td>2(0)</td>
<td>0(0)</td>
<td>2(4)</td>
</tr>
<tr>
<td>Total</td>
<td>47(94)</td>
<td>3(6)</td>
<td>50(100)</td>
</tr>
</tbody>
</table>

94% donors have their first donation at voluntary blood donation camp. Only 6% donors have donated first time for replacement of blood. Majority of donors have donated blood for a good cause and to save life. Very few have donated for a new experience and to get blood when needed.
blood is unrelenting. As Royse and Doochin note, the donate blood in times of crisis, but the demand for group as had been reported in various studies. In our the voluntary blood donors be long to the younger age stay of blood banks across the nation. Yet who are few committed multi-gallon blood donors are the main existing donors are essentia l to ensure an adequate volume of tools (e.g. telephoni c or electronic reminders, more methodical and accomplished through a wider range of tools (e.g. telephonic or electronic reminders, via television, advertisements and letters). In our study the donors arrange blood donation camps in their society every three months and all donors are informed about the date and time of camp by camp organizer. In our study 12% donors have donated 50 or more times.

DISCUSSION

Recruiting first-time donors and maintaining the existing donors are essential to ensure an adequate blood supply. In spite of the eligibility of a large number of individuals in a given population for donation, only a small proportion of the population donates regularly. Since the prevalence of transfusion-transmitted disease is lower among repeat donors, increasing the number of repeat donors improves blood safety. Much of the population may willingly donate blood in times of crisis, but the demand for blood is unrelenting. As Royse and Doochin note, the few committed multi-gallon blood donors are the main stay of blood banks across the nation. Yet who are these individuals and what is their motivation? Through studying the characteristics of multi-gallon blood donors we can get idea of valuable starting point for examination of the factors that underlie a continued commitment to blood donation.

Data generated through the WHO Global Database on Blood Safety (GDBS) reveal that 20% of the global population residing in the developed countries has access to 80% of safe blood supply, whereas 80% of the population inhabiting the developing countries has access to only 20% of safe blood.

It was found that there were 47(94%) males and 3(6%) females donating blood. The dominance of males in this study could be due to that low hemoglobin level and menstruation in female make them unfit for blood donation so chances of female to donate more than 4 times are less. Many women do not volunteer to donate because they think they are ineligible or have actually been rejected once because of low body weight and because they are prone to anemia, especially during their childbearing age due to their increased need for iron. In India as well as in USA and Europe, most of the voluntary blood donors belong to the younger age group as had been reported in various studies.

In our study 60% donors were in age group of 31-50 years. It is because that they have stated donation at younger age between 18-25 years and continued donating up to current age. Education creates awareness and change in attitude. This conforms to the present study where 80% donors had studied up to graduation and above.

The large proportion of replacement donors means everyday difficulties in managing blood reserves that, in turn, translates into psychological pressure on the relatives of patients to locate donors so that their relative/friend can be transfused. In addition, replacement donors may increase the risk of transfusion-transmitted diseases in the blood supply. In our study 80% donors have donated blood for 5 to 30 times, which make them exposed to testing for all transfusion transmitted diseases every time and they become safe donors. It is clear that a much larger number of regular, voluntary donors are required to ensure and manage an adequate and safe blood supply in the country. The results of the present study reveal interesting facts regarding public behavior and perception towards blood donation and blood transfusion. If used effectively, such results can ultimately help in the effort to attract and retain more voluntary donors in general, and to convert the currently large pool of replacement donors into voluntary donors. This will enable correct scheduling and adequate supplies of safer blood and blood products. One way to increase the frequency of donations is through more effective communication with donors. Our current efforts must be rendered more methodical and accomplished through a wider range of tools (e.g. telephonic or electronic reminders, via television, advertisements and letters).

In our study the donors arrange blood donation camps in their society every three months and all donors are informed about the date and time of camp by camp organizer. In our study 12% donors have donated 50 or more times.

CONCLUSION

The results provide useful insights that can be used to form plans to encourage current donors to donate more often, to motivate people eligible to donate to support the nation’s transfusion needs and to convert the existing body of replacement donors into voluntary donors.

REFERENCES

OUTBREAK SURVEILLANCE REPORT ON PULMONARY LEPTOSPIROSIS AFTER A HEAVY FLOODS DURING 2006 IN SOUTH GUJARAT

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ABSTRACT

Background: During the heavy rainfall season in the Surat district of South Gujarat India, from July to October 2006 an outbreak of leptospirosis occurred.

Aim: This article reports the exposure of leptospirosis in this post flood outbreak. In total 1,258 patients of New Civil Hospital in Surat were included, based on their clinical signs and symptoms for leptospirosis. Severe pulmonary hemorrhages were observed in the imperative form in most cases encountered during this season.

Method: Laboratory investigation was carried out using rapid diagnostic tests like Leptocheck WB, Serion IgM ELISA and real-time PCR and they were evaluated for the outbreak investigation in comparison with the microscopic agglutination test (MAT)

Observation and Results: The predominant serovars encountered by the gold standard MAT were autumnalis(46%), australis(38%), pyrogenes(30%), cystoperi(20%), icterohemorrhage(8%) and grippotyphosa(1.6%). Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of rapid tests were analyzed, Leptocheck WB (91%, 78.4%, 83% & 88.3%), Serion IgM ELISA (92.2%, 89.4%, 90.3% & 91.6%) and Real time PCR (90.3%, 91.6%, 96.02% & 96.02%) using statistica (6.0). The incidence of the disease was greater during the month of August (41.41%) and September (52.94%) with a relative risk of 33.5 in Surat.

Conclusion: This implicates the impact of the heavy rainfall and flood as the cause for severe outbreak of leptospirosis among the urban population of Surat district. Frequently contaminated environmental exposures due to urbanization and industrialization were speculated as major cause for this severe epidemic during heavy floods, which entails preventive strategies and prompt treatment against leptospirosis under such outbreak circumstances.

Keywords: Leptospirosis, outbreak, MAT, Real time PCR, Leptocheck, IgMELISA

INTRODUCTION

Leptospirosis is a zoonotic disease having worldwide distribution and is caused by Genus *Leptospira*. The causative agent *Leptospira* is mainly transmitted to humans through the environment or direct contact with urine from infected animals¹. Infections with pathogenic *Leptospira* are increasingly recognized as a common cause of acute febrile illness in tropical environments². The incidence of pulmonary involvement in Leptospirosis has been reported to be increasing and among 70% of the patients, alveolar hemorrhages dyspnea and hemoptysis are the predominant manifestations³. It is most common in tropical countries like Nicaragua ⁴, ⁵, India⁶ and Thailand⁷. Pulmonary involvement in leptospirosis was first observed in India during outbreaks in Andaman Islands⁸. In Australia also pulmonary hemorrhage has been reported in patients with leptospirosis⁹. In past two decades, there is an increase in the number of cases of leptospiral pulmonary hemorrhages especially from Southeast Asia. This is mainly due to longer survival of *Leptospira* in environments with warm and humid conditions. Leptospirosis is a seasonal disease and the incidences mainly occur during the rainy season. The usual portal of entry is through abrasions or via the conjunctiva or intact skin after prolonged immersion in water ¹⁰,¹¹. Water-borne transmission has been documented in outbreak situations of Leptospirosis, usually after flooding. Apart from seasonal epidemics, the flood related outbreaks have increased the attentiveness of the epidemiologists to identify the cause and source of Leptospirosis¹²,¹³.

Leptospirosis is a disease with protean manifestations, ranging from subclinical cases in the anicteric form to...
the severe icteric form known as Weil’s disease are characterized by a fulminating course with rapid onset of hepatic and renal failure and high mortality. Incubation period varies from 7 to 12 days but may range from 2 to 20 days. Leptospirosis classically presents as a biphasic illness. The first phase of the disease is commonly referred to as the septicemic phase. It is characterized by fever, headache, myalgia, conjunctival congestion and a host of non-specific features that may include mild cough, lymphadenopathy, rash, anorexia, nausea, and vomiting. This phase is followed by a brief febrile period of variable duration that, in turn, is followed by the immune phase of the illness.1, 9 The common organs involved during this phase are the liver, lungs and kidneys. Both organ derangements are reversible.14,15

Leptospirosis diagnosis mainly rely on serological methods, Microscopic Agglutination Test (MAT) which remains useful for epidemiologic studies, identification of strains, assessment of the probable infecting serovar and confirmation of illness for public health surveillance.16 In this report we discussed our experience of 2006 post flood Leptospirosis outbreak in Surat and the clinical presentation of the cases. The rapid diagnostic tests like Leptocheck WB, Serian IgM ELISA and real time PCR were evaluated in comparison with Microscopic Agglutination Test (MAT) during this severe disaster condition.

MATERIALS AND METHODS

Surveillance site

The City of Surat is located in the Southern part of Gujarat at 21° 15’ N latitude and 72° 52’ E longitude on the Southern bank of Tapti River, where the total population of Surat is approximately 4 million. During summer the temperatures range from 37.78°C to 44.44°C. The climate is pleasant during the monsoon season, while autumn is temperate. The winters are not very cold but the temperatures in January range from 10°C to 15.5°C. The average annual rainfall of the city has been 1143 mm. During August 2006 there was heavy rainfall all over India, but it was heavier in Madhya Pradesh state. The sudden release of a huge amount of water from the Ukai dam led to over 80 per cent of Surat going under water. More than 2 million people were trapped in their houses without food and drinking water for four days and four nights. The floods that ravaged Surat on 7th August left millions of people homeless and marooned thousands of animals. The rains disrupted communications, power and water supplies to the city. The transport system between Surat and other districts were cut off because of the raging waters from the Tapti river. As water receded in Surat the entire city was transformed into a garbage dump, with two feet of mud and muck on the streets. Hundreds of Leptospirosis cases were reported during the subsequent weeks which accounted for the large epidemic.

Patients and criteria used for clinical diagnosis

All the 1258 patients admitted, with clinical suspicion for Leptospirosis was included in the investigation. Among them 744 were males and 614 were of females. Investigations were carried out during the outbreak and observed that all patients had a high grade fever, headache and generalized body aches, associated with at least any one of the following sets of signs and symptoms. They included, according to criteria laid down by Indian Leptospirosis Society, a) jaundice, b) oliguria, c) cough, hemoptysis and breathlessness, d) neck stiffness with altered sensorium, and e) hemorrhagic tendencies including conjunctival suffusion and others.

Case confirmation by serological examination

As a part of the surveillance protocol, acute and convalescent- phase serum samples were obtained from suspected patients within 24 hours of admission. Among the cases, 675 paired sera were possible and they were collected in a mean interval of (> 14 days). Patients fulfilling any of the following criteria were considered as cases of leptospirosis: i) positive isolation of leptospire from blood or urine, ii) seroconversion or four fold titer in MAT for those with paired samples, iii) A titer of 1:80 or more with a positive IgM ELISA (titer of 1:80).

Serovar Specific microscopic agglutination test (MAT)

MAT was performed on the samples using eleven live leptospiral strains as antigens. The strains belonged to the serovars australis (JezBratislava), autumnalis (Bankinang) ballum (Mus127), seymensis (Hardjoprajitno), grippotyphosa (Moskva), canicola (HondUtrechIV), hebdomadis (Hebdomadis), pomona (Pomona), patoc (PatocI), pyrogenes (Perepelician),icterohaemorrhagiae (RGA). All the strains were obtained from Leptospira WHO Reference Centre, Port Blair and maintained with periodical subculture in Ellinghausen McCullough Johnson and Harris (EMJH) medium (Difco) at Department of Microbiology, Government Medical College, Surat. The seven days old cultures having a concentration of 1-2x10⁸ were used as antigen as per standard procedures.17

Rapid genus specific tests

Rapid genus specific tests like Leptocheck-WB (Zephyr Biomedicals, India) and Serion IgM ELISA (Serion GmbH, Germany) were performed as per the manufactures instructions.

Real Time PCR assay

Total DNA from human serum (200 μl) was prepared using QIAamp DNA Mini Kits (QIAGEN, USA) according to the manufacturer’s instructions. The primers and probes were designed from alignments of available Leptospira spp. LipL41 sequences obtained from the GenBank nucleotide sequence database. The program used was Primer Express™ (Applied Bionsystems, USA). For real time PCR, 5 μl of DNA

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was added to the 45 μl TaqMan Universal PCR Mastermix Mix (Applied Biosystems, USA) in a final concentrations of 3 pmol/μl of each primer and 2 pmol/μl of the FAM-TAMRA labelled probe. A negative control without added template in the above reaction mixture, was used as a control to detect the presence of contaminating DNA. Amplification and fluorescence detection was conducted in an ABI Prism 7700 sequence detector (Applied Biosystems, USA) with a program of 40 cycles, each cycle consisting of 95°C for 15 seconds and 60°C for one minute as per the manufacturer’s instructions.

RESULTS

This study has been conducted to investigate the post-flood prevalence of human Leptospirosis in and around Surat. Of the 1,258 suspected cases from Surat, Navsari and Valsad highest incidence 1103 (87.6%) was observed from Surat. In total cases about 801 patients were confirmed with Leptochek (63.6%), 690 by IgM ELISA (54.8%), 702 by Real Time PCR (55.8%) and 675 MAT (53.6%). The 121 patient's deaths that were reported caused a mortality of 9.61%.

Table 1: Frequency of clinical signs among the suspected cases of leptospirosis from Surat, Navsari and Valsad

<table>
<thead>
<tr>
<th>Clinical signs</th>
<th>Surat</th>
<th>Navsari</th>
<th>Valsad</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>1010 (92%)</td>
<td>98 (89%)</td>
<td>36 (80)</td>
<td>1144 (91)</td>
</tr>
<tr>
<td>Myalgia</td>
<td>980 (89%)</td>
<td>98 (89%)</td>
<td>34 (76)</td>
<td>1112 (88)</td>
</tr>
<tr>
<td>Headache</td>
<td>988 (79%)</td>
<td>95 (86%)</td>
<td>32 (71)</td>
<td>1125 (89)</td>
</tr>
<tr>
<td>Jaundice</td>
<td>450 (41%)</td>
<td>32 (29%)</td>
<td>18 (40)</td>
<td>500 (40)</td>
</tr>
<tr>
<td>Nausea/Vomiting</td>
<td>972 (88%)</td>
<td>65 (59%)</td>
<td>29 (64)</td>
<td>1066 (85)</td>
</tr>
<tr>
<td>Meningeal signs</td>
<td>210 (19%)</td>
<td>30 (27%)</td>
<td>12 (27)</td>
<td>252 (20)</td>
</tr>
<tr>
<td>Conjunctival suffusion</td>
<td>740 (67%)</td>
<td>28 (25%)</td>
<td>8 (18)</td>
<td>776 (62)</td>
</tr>
<tr>
<td>Pneumonial/respiratory</td>
<td>326 (30%)</td>
<td>14 (13%)</td>
<td>8 (18)</td>
<td>348 (28)</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>678 (61%)</td>
<td>28 (25%)</td>
<td>16 (36)</td>
<td>722 (57)</td>
</tr>
<tr>
<td>Hemoptyysis</td>
<td>320 (29%)</td>
<td>11 (10%)</td>
<td>9 (20)</td>
<td>340 (27)</td>
</tr>
</tbody>
</table>

The most frequent symptom encountered was fever in all the three places; nearly 91% of total cases had fever. Apart from this myalgia, nausea and vomiting, headache and conjunctival suffusion were other common symptoms observed among the patients. Icteric type of illness was associated with 40% of the patients and 57% of patients were reported with severe pulmonary hemorrhages (Table 1).

Table 2: Age and sex wise distribution among the leptospirosis cases during outbreak investigation

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>17</td>
<td>11</td>
<td>28</td>
<td>2.22</td>
</tr>
<tr>
<td>10-19</td>
<td>164</td>
<td>74</td>
<td>238</td>
<td>18.91</td>
</tr>
<tr>
<td>20-29</td>
<td>214</td>
<td>144</td>
<td>358</td>
<td>28.45</td>
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<tr>
<td>30-39</td>
<td>189</td>
<td>192</td>
<td>382</td>
<td>30.28</td>
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<td>40-49</td>
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<td>7.47</td>
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<td>41</td>
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<td>60-69</td>
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<td>70-79</td>
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<td>1.27</td>
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<tr>
<td>80-89</td>
<td>11</td>
<td>3</td>
<td>14</td>
<td>1.11</td>
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</tbody>
</table>

Age and sex distribution of the patients were analyzed and it revealed most of the patients were in the age group of 10-59 and predominantly males (Table 2). Seven hundred and forty four (59%) were males and five hundred and fourteen were (41%) were females. In this current outbreak situation, the relative risk was estimated to be higher in Surat (33.50), followed by Navsari (19.3) considering the Valsad with minimum number of observed cases as a reference group (Table 3). Seasonal distribution of the cases observed exhibited September (666) as a predominant month followed by August (521), July (30) and October (21) (Table 4). Incidence of leptospirosis observed was higher during heavy rainfall (July-October) in Surat compare to Navsari and Valsad. Crystalline Penicillin 20 lac IU I/V 6 hourly / Rantac I/V 12 hourly was practiced for the treatment of the suspected cases for leptospirosis and it has responded well.

Table 3: Relative risk among the leptospirosis cases of Surat, Valsari and Navsad

<table>
<thead>
<tr>
<th>Area</th>
<th>No. of cases (%)</th>
<th>Relative risk</th>
<th>Death reported</th>
<th>% Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surat</td>
<td>1103 (87.6%)</td>
<td>33.50</td>
<td>85</td>
<td>6.75</td>
</tr>
<tr>
<td>Navsari</td>
<td>110 (8.74%)</td>
<td>19.30</td>
<td>29</td>
<td>2.30</td>
</tr>
<tr>
<td>Valsad</td>
<td>45 (3.57%)</td>
<td>1.0</td>
<td>7</td>
<td>0.55</td>
</tr>
<tr>
<td>Total</td>
<td>1258 (100)</td>
<td></td>
<td>121</td>
<td>9.61</td>
</tr>
</tbody>
</table>

Table 4: Month wise distribution of leptospirosis cases during the outbreak investigation

<table>
<thead>
<tr>
<th>Months</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surat</td>
<td>22</td>
<td>453</td>
<td>614</td>
<td>14</td>
</tr>
<tr>
<td>Navsari</td>
<td>21</td>
<td>54</td>
<td>31</td>
<td>04</td>
</tr>
<tr>
<td>Valsad</td>
<td>07</td>
<td>14</td>
<td>21</td>
<td>03</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>521</td>
<td>666</td>
<td>21</td>
</tr>
</tbody>
</table>
The predominant serovars encountered for the outbreak was determined by MAT. Serovars like *auffunalis* (46%), *austrialis* (38%) and *pyrogenes* (30%) were observed as the predominant circulating serovars with a highest titre of 1:1280 (Table 5). Rapid tests like Leptocheck, Serian IgM ELISA and real time PCR were evaluated in an outbreak situation for leptospirosis (Table 6).

The performances of the rapid test were evaluated based on their sensitivity and specificity of each test in comparison with the gold standard Microscopic Agglutination Test. For Leptocheck WB sensitivity and specificity observed was 91% and 78.4% with a positive and negative predictive value of 83% and 88.3%. For IgM ELISA it was observed as 92.2% sensitivity and 89.4% specificity along with positive and negative predictive value of 90.3% and 91.6%. Among all the three tests the performance of real time PCR was admirable with a sensitivity of 96.5% and specificity of 95.5% and its positive and negative predictive value were determined as 96% and 96%.

**Table 5: Distribution of predominant leptospiral serovars among the leptospirosis cases during outbreak investigation**

<table>
<thead>
<tr>
<th>Serovar</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumnalis</td>
<td>357</td>
<td>46</td>
</tr>
<tr>
<td>Australis</td>
<td>298</td>
<td>38</td>
</tr>
<tr>
<td>Pyrogenes</td>
<td>238</td>
<td>30</td>
</tr>
<tr>
<td>Icterohaemorrhagiae</td>
<td>66</td>
<td>8</td>
</tr>
<tr>
<td>Cynopteri</td>
<td>158</td>
<td>20</td>
</tr>
<tr>
<td>Grippotyphosa</td>
<td>13</td>
<td>1.6</td>
</tr>
<tr>
<td>Patoc</td>
<td>13</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Table 6: Evaluation of various diagnostic methods among the Leptospirosis cases during outbreak situation**

<table>
<thead>
<tr>
<th>Tests</th>
<th>Positive cases (%)</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>PPV (%)</th>
<th>NPV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Leptocheck WB</td>
<td>801 (63.6)</td>
<td>91</td>
<td>78.4</td>
<td>83</td>
<td>88.3</td>
</tr>
<tr>
<td>SERION IgM ELISA</td>
<td>690 (54.8)</td>
<td>92.2</td>
<td>89.4</td>
<td>90.3</td>
<td>91.6</td>
</tr>
<tr>
<td>Real Time PCR</td>
<td>702 (55.8)</td>
<td>96.5</td>
<td>95.5</td>
<td>96</td>
<td>96</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The diagnosis of acute undifferentiated febrile illness is difficult in tropical settings where many possible agents can be responsible for infectious disease outbreaks. Such was the case with the outbreak of leptospirosis in Andaman Islands and Nicaragua during the year 1995

4,5, when thousands of patients developed acute undifferentiated febrile illness and several dozen died of severe pulmonary hemorrhages as the predominant signs and symptoms. Surat is a densely populated area with urbanization combined with industrial developments and prone to garbage and urban wastes that posed a severe impact after this heavy flood. As water receded the entire city was stinking with mud heaps and soon rotten household perishables were also dumped on the streets. The contact between the infectious agent and susceptible individuals can occur distant from the supported foci or the case residence because of rodent and human circulation especially during floods. During the dry periods, high leptospirosis concentrations in the soil are limited to few meters around the waste accumulation sources. But during the heavy flood conditions it increased the possibilities for the infectious agent to spread and reach a distant area caused by the movement of water. At the same instance, this same flood dilutes both the agent and also its infectivity at a great distance from the sources. This may be evident from our results for the reason by which the Surat city has shown higher relative risk to leptospirosis when compared to other regions like Navsari and Valsad. The scattering of flood water upholds the agent’s contact with the population group, so that the individuals with no previous contact with the leptospiroa and fall under low risk group to leptospirosis may also subjected to infection due to this flood. However, a high prevalence of infection was detected among the individuals living in close proximity and with frequent contact with the agents. Thus, a shift in seropositivity can be predicted in such flood situation over the normal periods. Similar reports were noticed in Reo de Jeneiros, Western region in 1996, where high incidence rates were identified in areas that had precarious sanitation conditions and were vulnerable to floods 18,19. According to the report, densely populated urban areas displayed an excess of leptospirosis cases around waste accumulation sites. It was observed that in Surat, the incidence was greater during the months of August and September particularly may be because of the deficiency of convenience to the people to reach health care personnel or a hospital under the severe rain fed circumstances and flood havoc. Rather sources of infection may be due to the overflowing of water bodies like ponds, pools, domestic sewage which is often susceptible to urine contamination by the carriers of leptospires like rodents, swine, dogs and cattle.

During this outbreak in and around Surat district of South Gujarat, most of the cases admitted were having high grade fever, headache and generalized body aches, associated with pulmonary hemorrhagic conditions and conjunctival suffusion. Large numbers of cases were observed in Surat city followed the flood with nearly 675 confirmed cases along with 121 deaths. The case fatality rate reported was significant in South Gujarat during the last 13 years of epidemic history. Particularly in patients confirmed with leptospirosis, they were...
mostly developed with severe pulmonary haemorrhages in comparison to the previous years. The correlation between clinical forms and the presumptively infecting serovars exist from previous reports as Australis and Autumnalis usually accompanied by the symptoms like fever, myalgia, and nausea and vomiting, jaundice like signs, conjunctival suffusion and haemorrhagic conditions[20]. Traditionally, leptospirosis has been considered as a febrile illness. However, they generally remain undiagnosed or are misdiagnosed due to perplexing signs and symptoms, that too under such flood menace marking out the infection becomes extremely complicated unless the disease is suspected in the presence of suggestive epidemiological information. Apart from the environmental risk factors suitable for survival of leptospires, a large population of intermediary hosts like rodents, cattle, dogs and cats which are domesticated by human and susceptible to be in more contact with population during such flood conditions can be an epidemiological niche for frequent transmission of leptospires [21].

Previously studies on human outbreaks have largely relied on serological methods to substantiate clinical cases and to define the prevalent serovars in a particular geographic area [11]. The standard serological method (MAT) provides a broad idea of serovars responsible for leptospirosis in a given geographic area in spite of the rapid methods like Leptocheck and IgM ELISA. Recently, molecular based methods involving real time PCR has been successfully used to study such outbreaks under flood havoc conditions. There are emergencies need for a highly sensitive and specific diagnostic tests with high sensitivity and specificity for early diagnosis of leptospirosis that can definitively detect individual patients and thereby tends to reduce mortality rate during the heavy flood endemic periods. The deployment of rapid molecular approaches like real time PCR can be very well considered for such epidemiological scenarios. However, the surveillance had emphasized the need for simple, improved and affordable rapid diagnostic tests with high sensitivity and specificity for early diagnosis of leptospirosis which can definitively detect individual patients and thereby tends to reduce mortality rate during the heavy flood endemic periods. The deployment of rapid molecular approaches like real time PCR can be very well considered for such endemic circumstances to efficiently overcome the difficulties tied up with basic serological methods.

REFERENCES

ASSESSMENT OF SELECTED CARDIAC FUNCTIONS OF SPORTSPERSON OF VADODARA CITY

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Email: rachitjoshi@yahoo.com

ABSTRACT

Aims and objective: Sports activity had always been an epitome of physical fitness activities. Multiple studies have shown that people, who maintain appropriate body fitness, using judicious regimens of exercise and weight control, have the additional benefit of prolonged life. The aim of this study was to find out and confirm the fact that regular exercise or sports activity have a beneficial effect on the various system of our body especially the cardiovascular system.

Methodology: A comparative study was carried out at IPCL sports complex of Vadodara city in between the sportsperson and control persons using unpaired ‘t’ test for resting heart rate and blood pressure. They were subjected to hopping test: following which the maximum heart rate achieved and time taken for recovery to resting heart rate was measured.

Results: As a result of our study we came to know that sportsperson have a significantly lower resting heart rate; lower maximum heart rate achieved and a reduced recovery time after hopping test than sedentary individuals.

Conclusion: Our study reaffirms the fact that regular physical activity in any form slows the rate of decline with age of most of the physiological parameters that we associate with health and fitness especially by decline in basal heart rate and increased cardiac reserves.

Keywords: heart rate, blood pressure, hopping test

INTRODUCTION

Sports activity, regular exercise and physical fitness have always been the most sought after topics. Sports persons along with their respective fields also undergo regular aerobic and anaerobic exercises. The effect of organs when they are put to endurance test have been a subject of discussion in past. Irrefutable evidence now exists to slow the rate of decline with age of most of the physiological parameters that we associate with health and fitness viz. Muscle strength, aerobic capacities, reaction time and joint flexibilities. Training or ‘Conditioning’ i.e. hard physical exercise done regularly improves the ‘physical working capacity’ of an individual. Person on term training develops bradycardia due to excessive tone of the vagi that will also cause less rise of pulse rate in the exercise of same intensity. In the present study we tried to see the effect of regular exercise and training on resting heart rate and blood pressure of sportsperson. And observe the variation in cardio vascular activity of sport persons and untrained persons in response to hopping test which is kind of stress test for cardiovascular system.

MATERIALS AND METHODS

The subjects selected were sports persons and residents of Vadodara city who had been playing in their
respective fields for 5 years or more, who routinely performed a minimum of 40 minutes of aerobic activity per week as suggested in the study by Ishida R and Okada M. They were on season during their investigation. The control population was represented by untrained persons.

Total number of subjects included in the present study was 30, which were Football players and track field athletes involved in 100m, 400m, 800m, and 1200m races. All the subjects were male between the age group of 20 – 35 years. The subjects were explained the purpose and importance of study. Only those who were motivated consented and without past history and family history of Diabetes Mellitus, HTN, IHD, TB, Asthma etc. were included in the present study. Also the subjects were not having any personal history of tobacco and alcohol consumption. They were free from any disease and were not taking any medicine at the time of evaluation.

With the similar criterion 30 male persons of same age group of Vadodara city who were not involved in any sports activity or regular daily exercise like walking, cycling, jogging etc. were taken as controls.

All the participants were explained the methodology and made well versed with the functioning of the instruments. Live demonstrations for measurements of all the parameters for hopping test were carried out before actual recording.

Cardio-vascular parameters were taken in the morning time 8 am to 10 am in the month of December 2003 to January 2004 to avoid diurnal variations. All the parameters were recorded throughout the study by the same instruments to avoid instrumental errors.

The cardio-vascular parameters recorded in the study were:
1. Resting Pulse Rate in supine and standing postures.
2. Resting Systolic Blood Pressure in supine and standing postures.
3. Resting Diastolic Blood Pressure in supine and standing postures.
4. Maximum Heart Rate achieved by hopping test.
5. Time taken (seconds) to come to resting Heart rate.

The resting pulse rate in supine posture was recorded by pulse oximeter after rest of 10 minutes and then in standing posture after 10 minutes in right index finger as given in the book 'hutchinson's clinical methods' by Michael swash.

Resting systolic and diastolic blood pressure was recorded over right brachial artery at the level of cubital fossa by using sphygmomanometer and stethoscope through Auscultatory method.

After demonstrations subjects were asked to do hopping with attachment of pulse oximeter to right index finger. They were to hop (jump) about 50 times on one foot as performed in study conducted by Close K M on her study of cardiovascular tests. At the end of exercise i.e. at 0 second pulse rate was recorded on pulse oxymeter (Maximal Heart Rate) and then was recorded every 15 seconds till the resting heart rate on standing is achieved and the total duration in seconds was recorded.

The data was analyzed using unpaired ‘t’ test and the results were consider statistically significant where p values were less than 0.001.

### RESULT & DISCUSSION

On analyzing the results in our study resting heart rate of sports person in supine posture were 68.27 ± 6.53 per minute and standing posture were 73.47 ± 7.79 per minute were significantly less than the control persons having resting heart rate 76.93 ± 6.21 per minute in supine and 81.80 ± 5.42 per minute in standing posture.

### Table 1: Comparison of Age and Anthropometric measurement of sport person and Control subjects

<table>
<thead>
<tr>
<th></th>
<th>Sportsperson (n=30)</th>
<th>Non-sportsperson (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (yrs.)</strong></td>
<td>27.77 (4.93)</td>
<td>29.80(2.71)</td>
</tr>
<tr>
<td><strong>Height (cm)</strong></td>
<td>168.4(4.32)</td>
<td>167.47(5.61)</td>
</tr>
<tr>
<td><strong>Weight (kg)</strong></td>
<td>60.90(5.98)</td>
<td>62(7.63)</td>
</tr>
</tbody>
</table>

### Table 2: Comparison of Resting Heart Rate, Maximal Heart Rate achieved and Time taken to come back to resting Heart Rate in sports person and Control subjects

<table>
<thead>
<tr>
<th></th>
<th>Sports Person (n=30)</th>
<th>Non-sports Person (n=30)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HR (sp) (Per min.)</strong></td>
<td>68.27 (6.53)</td>
<td>76.93 (6.21)</td>
<td>1.64 *** 5.27</td>
</tr>
<tr>
<td><strong>HR (st) (Per min.)</strong></td>
<td>73.47 (7.79)</td>
<td>81.80 (5.42)</td>
<td>1.73 *** 4.81</td>
</tr>
<tr>
<td><strong>Max. HR (Per min.)</strong></td>
<td>133.73 (20.05)</td>
<td>157.47 (12.01)</td>
<td>4.26 *** 5.57</td>
</tr>
<tr>
<td><strong>Time taken (sec.)</strong></td>
<td>116.50 (21.10)</td>
<td>185.27 (32.76)</td>
<td>7.11 *** 9.67</td>
</tr>
</tbody>
</table>

HR (sp) = Heart rate in supine posture, HR (st) = Heart rate in standing posture, and Max. HR = Maximum heart rate achieved. *** = P < 0.001 (High significant), cSD = Combined Standard Deviation, SEP = Standard Error of Probability
Table 3: Mean and SD values of Blood pressure in sports persons (n=30) and non-sport persons (n=30)

<table>
<thead>
<tr>
<th></th>
<th>Sports Person</th>
<th>Non-sports Person</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>SBP (sp) (mm Hg)</td>
<td>115.60 ± 20.13</td>
<td>124.33 ± 9.37</td>
<td>15.70</td>
</tr>
<tr>
<td>SBP (st) (mm Hg)</td>
<td>114.73 ± 20.67</td>
<td>121.33 ± 12.05</td>
<td>16.92</td>
</tr>
<tr>
<td>DBP (sp) (mm Hg)</td>
<td>76.73 ± 6.11</td>
<td>78.53 ± 5.61</td>
<td>5.87</td>
</tr>
<tr>
<td>DBP (st) (mm Hg)</td>
<td>77.87 ± 14.33</td>
<td>79.27 ± 5.57</td>
<td>10.87</td>
</tr>
</tbody>
</table>


* = P < 0.05 (Just significant)
CONCLUSION

Our study reaffirms that regular physical activity in the form of sports, aerobic or workouts; slows the rate of decline with age of most of the physiological parameters that we associate with health and fitness. It also increases the physiological reserves and capacities of the person undertaking them. Thereby regular physical activity not only improves the health but also prolongs the life and physical working capacity of an individual giving a better quality of life.

ACKNOWLEDGMENT

I pay my thanks to Department of Physiology, Medical College, Vadodara for their help at every step of the study. I also wish to thank authorities of IPCL for allowing me to use sports complex and hospital facilities for this study. I am also grateful to my subjects who in spite of their busy schedule have given us their precious time gave consent and active participation in this study.

REFERENCES

5. Close KM: Cardiovascular tests in the adolescent girl: as an index to cardiac and physical efficiency. Cal west med.1932 Sep; vol.37 p 178-180.
ORIGINAL ARTICLE

SELF REPORTING QUESTIONNAIRE AS A TOOL TO DIAGNOSE PSYCHIATRIC MORBIDITY

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ABSTRACT

Background: Mental health is a neglected health issue in India. It is known fact that person not well mentally will not be able to work efficiently and that will have adverse impact on nation’s economy. Therefore it will be helpful if we are able to diagnose possible psychiatric morbidity in individual working. It is very difficult in India where psychiatrist and general population ratio is poor. Present study was conducted with aim of evaluating usefulness of self reporting questionnaire (S.R.Q.) as a tool to diagnose psychiatric morbidity. This will help us lower burden on qualified psychiatrist and also to find more hidden cases of psychiatric morbidity that could lie in community.

Materials and Methods: It’s a cross sectional study conducted in two vocational training institutes for blinds. They were subjected to pre tested S.R.Q. and Personality Based Hardiness Index (PBHI) the individuals found positive with this tool and double the number of matched S.R.Q. negative controls from the institute were subjected to psychiatric clinical examination done by qualified psychiatrists. Fisher’s exact test and chi square test were used

Results: 15 (7.18%) blinds were found S.R.Q. positive indicating they either have or prone to have psychiatric morbidity.

Conclusion: S.R.Q. is a very useful tool to diagnose psychiatric morbidity and can be used with minimal training. It is very easy to administer and interpret than PBHI. Such tools are needed in the developing nations like ours to screen more population and improve mental health.

Keywords: S.R.Q., Personality Based Hardiness Index

INTRODUCTION

Mental health is probably still a neglected health issue in India. The availability of statistics and reference search in this field is also a challenging task. Epidemiological studies report prevalence rates for psychiatric disorders from 9.5 to 370/1000 population in India.1

Qualified psychiatrist to patient ratio in India is 3500 psychiatrist to cater about 1.1 billion population2 this severe manpower crunch in the field of mental health could easily lead to more undiagnosed patients in community which could directly or indirectly have impetus on community health at large. This serious disparity in ratio clearly suggest need of such a solution that could be feasible to apply and will be useful.

This demands need of such a tool that will help easily screen the individuals for their psychiatric morbidity and can be used easily by any healthcare volunteer with minimal training, this tool will be sensitive enough to diagnose true positive and specific enough to diagnose true negative cases. The positive individual found with this tool then could be subjected to qualified psychiatrists clinical examination. This will not only lower unnecessary burden on psychiatrists but also will help diagnose more hidden cases in community. The present study was conducted with a aim to find out possible psychiatric morbidity in the individuals using self reporting questionnaire (S.R.Q.)3

AIMS AND OBJECTIVES

• To evaluate usefulness of SELF REPORTING QUESTIONNAIRE (S.R.Q.) as a tool to find psychiatric morbidity in individuals.
• To find out whether it can be used by a healthcare worker with minimal training to screen individuals.
• To draw ROC (Receiver Operative Curve) to find out appropriate cut of point where this tool could have maximum acceptable sensitivity and specificity.
• To compare S.R.Q. results with Personality Based Hardiness Index (PBHI) so as to comment and compare easiness and usefulness of it.

METHODOLOGY

The study is conducted in the two vocational training institutions for blinds in Mumbai one for the men and other for the women. Written permission is obtained from respective authorities of institutions for conducting the study. All the blinds enrolled in these two institutions at the time of the study are included. Information was given to all blinds included in the study about types of questions and answers were obtained by interview technique. After few demographic questions, just to build rapport they were directly subjected to 20 question self reporting questionnaire which was standardized after translating it in local vernacular language i.e. Marathi. Here different cut of points for categorizing individual as S.R.Q. positives were tried and finally 10 was found as the appropriate cut off point. Later they were also subjected to Personality Based Hardiness Index which is a standardized 47 question questionnaire which have scoring system this questionnaire is proved to diagnose individuals hardiness i.e. ability to cope with surrounding environment, which would mean more the score tough is the individual mentally.

RESULTS AND DISCUSSION

Table 1: S.R.Q. results in subjects

<table>
<thead>
<tr>
<th>S.R.Q. Result</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.R.Q. +VE</td>
<td>15</td>
<td>7.18</td>
</tr>
<tr>
<td>S.R.Q. –VE</td>
<td>194</td>
<td>92.82</td>
</tr>
<tr>
<td>Total</td>
<td>209</td>
<td>100</td>
</tr>
</tbody>
</table>

7.18 % of the total 209 study subjects were S.R.Q. positive and were prone to have psychiatric morbidity. These individuals when subjected to psychiatric examination with double the number of S.R.Q. negative individuals following results were obtained.

Table 2: S.R.Q. result and psychiatric diagnosis

<table>
<thead>
<tr>
<th>S.R.Q. Results</th>
<th>Morbidity Present</th>
<th>Morbidity Absent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.R.Q. Positive</td>
<td>10 (83.33)</td>
<td>2 (8.33)</td>
<td>12</td>
</tr>
<tr>
<td>S.R.Q. Negative</td>
<td>2 (16.67)</td>
<td>22 (91.67)</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>12*</td>
<td>24</td>
<td>36</td>
</tr>
</tbody>
</table>

* 3 S.R.Q. positive subjects couldn’t be examined due to death in 1 and inability to follow in other 2 cases. Remaining 12 out of 15 S.R.Q. positive subjects and double number i.e. 24 matched S.R.Q. negative subjects were subjected to psychiatric clinical exam to find psychiatric morbidity.

When S.R.Q. positive results were correlated with psychiatric morbidity using Fisher’s exact test there was statistically significant difference between the two (p = 0.00000147). The result here indicates that significantly high proportions of cases were conglomerated in true positive and true negative categories. This would mean that S.R.Q. results served as a good indicator of psychiatric morbidity.

Table 2 shows S.R.Q. results and psychiatric diagnosis. It was observed that subjects having psychiatric morbidity belonged to diagnostic categories of ICD-10 classification of mental and behavior disorders with morbidities such as dysthmic disorder, mixed anxiety and depressive disorder, anxiety and dependent disorder and adjustment disorder.

Bansal et al in their study observed that visually handicapped subjects showed significantly high scores in the areas of depression and tension.

Fitzgerald in his study found that blind goes through phases of disbelief, protest, depression and finally recovery.

The result here indicates that significantly high proportions of cases were conglomerated in true positive and true negative categories. This would mean that S.R.Q. results served as a good indicator of psychiatric morbidity. As revealed in the table 83.33 % of S.R.Q. positive subjects were confirmed to be having psychiatric morbidity, while 91.67 % S.R.Q. negative subjects did not have any psychiatric morbidity.

In order to confirm whether same cut-off point serves the purpose when used for screening blind persons an attempt was made to analyze the effect on sensitivity and specificity when cut off points varying from 1 to 20 were used. The results are given in the table below and also depicted in the graph.

As can be observed from the table and accompanying graph, up to the cut-off points 1 to 6 though sensitivity computed to be high, the corresponding specificity values were unacceptably low. Conversely, beyond the cut-off point 11, the sensitivity dropped to very low unacceptable level. Keeping in mind that S.R.Q. is meant as a screening test, if cut-off point up to 6 is utilized there will be unnecessary burden of false positive cases on already overworked psychiatrists. If cut off point is taken beyond 11 a large number of psychiatric morbidities are likely to be missed as they will be screened out at first phase.

Cut-off points 7 to 10 shown fairly high specificity values. Change from 7 to 10 did not affect sensitivity but change from 9 to 10 brought the specificity from 83 % to 91 %. Thus a score of 10 was confirmed as the most suitable cut-off point with highest possible sensitivity-specificity combination. It can thus be concluded that S.R.Q. positive results at cut-off points 10 can be taken as an acceptable indicator of psychiatric morbidity.
It can be observed that 8.79% subjects were ‘Non hardy’ while 91.21% were ‘Hardy’ this would mean that 8.79% study subjects were ill equipped to cope up with stressful conditions of life and were more prone to develop psychological maladjustments, while remaining 91.21% were well equipped to do better in stressful condition in life. The hardiness status of the subjects was linked with the age, sex, socio-economical class, social acceptance etc of the subject to find possible reasons behind non hardy personality and significant association in lower socio economic class and social acceptance of individual was found.

When hardness status and SRQ results were correlated high level of agreement between the two tests was seen. SRQ results as well as results of personality based hardness index study are meant for quantification of two aspects of psychological profile of the subjects. While S.R.Q. can help as screening test for identifying persons with higher risk of psychiatric morbidity, Hardiness index estimates the psychological defense mechanism of subjects. From the clinical examination of psychiatrist it is clear that S.R.Q. work as a good and easy screening tool to diagnose psychiatric morbidity in individuals. Personality Based Hardiness Index was a scoring system questionnaire as compared to S.R.Q. which was closed ended easy to administer and interpret questionnaire. S.R.Q. thus could be a very useful tool in the hands of health worker as they can diagnose mental morbidities in the community that will help improve community health at large. S.R.Q. or similar tool should be evaluated with more number of samples so that it can then be applied to general population for screening.

**RECOMMENDATIONS**

S.R.Q. at the cut of point of 10 was successful to show sensitivity of 83 and specificity of about 93 percent which suggest that this or similar tool should aggressively be invented and applied in the general population that will help find hidden cases in the community and mental health will no longer be a neglected issue.

**REFERENCES**


ABSTRACT

Objectives: The study was conducted with an objective to find out the awareness of self blood pressure in a rural community of West Bengal and factors associated with it.

Methods: A community based cross-sectional study on self BP awareness among adults (≥18 years) was carried out in a rural community of West Bengal through house to house visits. Total study subjects were 1201 (Male=598; Female=603) of which 132 (11%) were hypertensive.

Results: Only 17.2% of all study subjects were aware of their own BP readings with no male-female difference. This awareness was significantly associated with age, education, economic status and hypertension, which remained significant, even after multiple logistic regressions. Even among hypertensives, only 38% were aware of their self BP. Nearly 67.11% of the study subjects had no knowledge about complications of hypertension. About 86.92% of the study subjects were ignorant about the lifestyle changes required to prevent hypertension. Regarding hypertension control/treatment, 72.85% of study subjects were unaware. In general, males had better knowledge compared to females, although not always statistically significant.

Conclusion: Self BP awareness among this study population was very poor even among the hypertensives leading to a high risk of cerebrovascular accidents and coronary heart diseases. Interpersonal communication in medical facilities as well as other strategies like group-discussions (general and focal), mass media and general education system can be utilized to improve the situation.

Keywords: Blood Pressure; Awareness; Hypertension; Complication; Prevention; Control; Logistic Regression

INTRODUCTION

Every person has Blood Pressure (BP), the lateral pressure exerted by the flowing blood on arterial wall, but probably few are aware of it unless needed. The most common cardiovascular ailment is hypertension, a very important preventable cause of cerebrovascular accidents (CVAs) and coronary heart diseases (CHDs), responsible for mortality exceeding about 50% of total deaths in some industrialized countries. Hypertension is classically an “iceberg disease”: even in most developed countries, only half of the hypertensive persons are aware of their condition. Obviously the submerged portion is much more in a developing country like India with poor literacy, awareness and medical services. The only way to check it is to “Know your own BP and control it if raised throughout your life.” Our civilization demands it for a healthy/active adult and geriatric population. Awareness of one’s own BP reading is essential for this.

Here is an experience gathered from a study of awareness of self-BP among general population in a rural community of West Bengal (WB).

MATERIALS AND METHODS

A cross-sectional study on hypertension was undertaken in a village (Dearah) of Singur Block, Hoogly District, WB. It was a randomly selected convenient village out of about 30 villages in Singur Rural Health Unit & Training Centre (RHU&TC), the field practice area of All India Institute of hygiene & public health (AIHH&PH), Kolkata-73. The study was conducted by house-to-house visit, contacting each and every adult person (Census) of the village ≥ 18 years (Total 1201, Male=598 & Female=603). Persons < 18 years were excluded from the study. A pre-tested semi-structured schedule was used to collect data regarding awareness of self-BP readings, complications,
prevention and control of hypertension. Blood pressure of every adult was measured by Mercury manometer using standard technique. Pre-treatment blood pressure was recorded for those who were on treatment. Data collected, were tabulated and analyzed using standard statistical methods (frequency distribution table, proportion) and suitable statistical tests (Z, Chi-square) applied as applicable.

Important variables studied were age (10 years grouping done as 18-27, 28-37,……., the last group being 68+), sex (male and female), education [categorized as illiterate, primary (class I-IV), middle school (class V-VIII), secondary & higher secondary (class IX-XII) and graduate/post graduate], family asset score (NFHS-National Family Health Survey)- an indirect estimate of economic status of the family depending on varying family assets with a total score of 29 [categorized as 0 (score 0-5), I (score 6-15) and II (score >15)] and hypertension (Systolic BP \( \geq \) 160 mm Hg. and/or Diastolic BP \( \geq \) 95 mm Hg or on anti-hypertensive drugs) Unifactorial analyses (1:1) were done to identify the factors having significant association with self-BP awareness. Then a multiple logistic regression analysis was done (using SPSS statistical package) with those significant factors to determine the independent role of these variables influencing self-BP awareness of each individual.

OBSERVATIONS

A total of 132 persons (11%) were found to be hypertensive (i.e. Systolic BP \( \geq \) 160 mm Hg and/or Diastolic BP \( \geq \) 95 mm Hg or on anti-hypertensive drugs) in that village with little higher prevalence in females (12.4% vs. 9.5%). With more liberal criteria of \( \geq \) 140/90 mm Hg, the prevalence was 25.9% (26.3% for females & 25.5% for males). These differences were statistically insignificant (p\( \geq \) 0.05).

Awareness of self-BP reading- The awareness regarding own BP reading was present amongst 17.2% of study subjects with almost no sex difference (17.4% for female and 16.9% for male). Regarding various factors influencing this awareness, Table 1 shows the result of unifactorial analyses (1:1) of self-BP awareness with different factors studied. It reveals that except sex, all the factors studied have significant association with self-BP awareness. (p<0.01)

<table>
<thead>
<tr>
<th>Factors</th>
<th>n</th>
<th>Aware (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>18-27</td>
<td>328</td>
<td>39 (11.9)</td>
</tr>
<tr>
<td></td>
<td>28-37</td>
<td>349</td>
<td>50 (14.3)</td>
</tr>
<tr>
<td></td>
<td>38-47</td>
<td>226</td>
<td>47 (20.8)</td>
</tr>
<tr>
<td></td>
<td>48-57</td>
<td>125</td>
<td>32 (25.6)</td>
</tr>
<tr>
<td></td>
<td>58-67</td>
<td>84</td>
<td>15 (17.9)</td>
</tr>
<tr>
<td></td>
<td>68+</td>
<td>89</td>
<td>23 (25.8)</td>
</tr>
<tr>
<td>Sex</td>
<td>Female</td>
<td>603</td>
<td>105 (17.4)</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>598</td>
<td>101 (16.0)</td>
</tr>
<tr>
<td>Education</td>
<td>Illiterate</td>
<td>311</td>
<td>33 (10.6)</td>
</tr>
<tr>
<td></td>
<td>Class I-IV</td>
<td>201</td>
<td>35 (17.4)</td>
</tr>
<tr>
<td></td>
<td>Class V-VIII</td>
<td>366</td>
<td>52 (14.2)</td>
</tr>
<tr>
<td></td>
<td>Class IX-XII</td>
<td>231</td>
<td>57 (24.7)</td>
</tr>
<tr>
<td></td>
<td>( \geq ) Graduate</td>
<td>92</td>
<td>29 (31.5)</td>
</tr>
<tr>
<td>Asset Score</td>
<td>0-5</td>
<td>89</td>
<td>2 (2.2)</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>822</td>
<td>119 (14.5)</td>
</tr>
<tr>
<td></td>
<td>( &gt;15 )</td>
<td>290</td>
<td>85 (29.3)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Present</td>
<td>132</td>
<td>48 (36.4)</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>1069</td>
<td>158 (14.6)</td>
</tr>
</tbody>
</table>

| Total | 1201 | 206 (17.2) |

Multiple logistic regression analysis (Table 2) shows that all the factors studied have significant independent contribution towards the self-BP awareness of an individual. (p< 0.01 for all) Multiple adjusted Odd’s ratios (i.e. the Odd’s ratio of having self BP awareness when all other factors are constant) show that for every 10 years increase in age, the self-BP awareness increases by about 1.20 times. Similarly, for every one category increase in education this awareness increases by 1.40 times, for one category increase in asset score this increases by 2.10 times and for hypertensives this increases by 2.85 times. So age, education, economic status and hypertension all have independent and positive contribution towards self-BP awareness.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Co-efficient (( \beta ))</th>
<th>Wald</th>
<th>Significance</th>
<th>Exp (( \beta )) = Multiple adjusted Odd’s Ratio</th>
<th>95% CI for Exp (( \beta ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.181</td>
<td>9.31</td>
<td>0.002</td>
<td>1.198</td>
<td>1.067 – 1.346</td>
</tr>
<tr>
<td>Education</td>
<td>0.339</td>
<td>21.81</td>
<td>0.000</td>
<td>1.403</td>
<td>1.217 – 1.617</td>
</tr>
<tr>
<td>Asset score</td>
<td>0.740</td>
<td>20.54</td>
<td>0.000</td>
<td>2.097</td>
<td>1.532 – 2.870</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1.047</td>
<td>20.30</td>
<td>0.000</td>
<td>2.848</td>
<td>1.806 – 4.491</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.861</td>
<td>130.11</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Awareness about complications of hypertension-67.11% of the study subjects were ignorant about the complications of hypertension, significantly more in females compared to males (p<0.001) [Table 3]. Regarding two important complications e.g. Cerebro-vascular accidents (CVAs) and cardiovascular
emergency (Myocardial infarction-MI), only 27.8% and 5.9% of the study subjects were aware respectively. Here again, males had significantly better awareness compared to females (p<0.001).

Awareness regarding the role of life style changes to prevent hypertension - 86.92% of the study subjects were not aware of the role of any life style changes in preventing hypertension (Table 3). Females were significantly less aware (p<0.001). Among the principal ways of stated life style changes- exercise, diet/fat control, salt restriction and stress control came in order of preference. Males were significantly more aware about exercise (p<0.01) and stress control (p<0.05) but others were insignificant. So the study subjects in general had very poor awareness regarding prevention of hypertension, even poorer among females.

Table 3: Awareness of the study subjects (N=1201) regarding complications, prevention and control of hypertension (Multiple responses)

<table>
<thead>
<tr>
<th>Complications</th>
<th>Male (n=598) (%)</th>
<th>Female (n=603) (%)</th>
<th>Total (N=1201) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke/CVA/Paralysis</td>
<td>203 (33.9) ***</td>
<td>131 (21.7) ***</td>
<td>334 (27.80)</td>
</tr>
<tr>
<td>Heart attack/MI</td>
<td>49 (8.20) ***</td>
<td>22 (3.65) ***</td>
<td>71 (5.90)</td>
</tr>
<tr>
<td>Reeling of head</td>
<td>16 (2.68)</td>
<td>23 (3.81)</td>
<td>39 (3.24)</td>
</tr>
<tr>
<td>Headache</td>
<td>5 (0.84)</td>
<td>14 (2.32)</td>
<td>19 (1.58)</td>
</tr>
<tr>
<td>@Others</td>
<td>10 (1.67)</td>
<td>16 (2.65)</td>
<td>26 (2.16)</td>
</tr>
<tr>
<td>No knowledge:</td>
<td>370 (61.9) ***</td>
<td>436 (72.3) ***</td>
<td>806 (67.11)</td>
</tr>
</tbody>
</table>

Prevention (Measures)

<table>
<thead>
<tr>
<th>Male (n=598) (%)</th>
<th>Female (n=603) (%)</th>
<th>Total (N=1201) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise:</td>
<td>49(8.20)**</td>
<td>25 (4.14)**</td>
</tr>
<tr>
<td>Diet/Fat control</td>
<td>41(6.86)</td>
<td>26 (4.31)</td>
</tr>
<tr>
<td>Salt restriction</td>
<td>31(5.18)</td>
<td>23 (3.81)</td>
</tr>
<tr>
<td>Stress control</td>
<td>26(4.35)*</td>
<td>14 (2.32)*</td>
</tr>
<tr>
<td>© Others</td>
<td>6 (1.00)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>$ Specific food item</td>
<td>4 (0.67)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>No knowledge:</td>
<td>500 (83.61)***</td>
<td>544 (90.21) ***</td>
</tr>
</tbody>
</table>

Control (Measures)

<table>
<thead>
<tr>
<th>Male (n=598) (%)</th>
<th>Female (n=603) (%)</th>
<th>Total (N=1201) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt restriction</td>
<td>128(21.40)</td>
<td>112 (18.57)</td>
</tr>
<tr>
<td>Temporary medications</td>
<td>95 (15.90)</td>
<td>86 (14.26)</td>
</tr>
<tr>
<td>Regular medications</td>
<td>74 (12.37)</td>
<td>58 (9.62)</td>
</tr>
<tr>
<td>Diet/Fat control</td>
<td>13 (2.17)</td>
<td>5 (0.83)</td>
</tr>
<tr>
<td>Exercise</td>
<td>7 (1.17)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>No knowledge:</td>
<td>423(70.73)</td>
<td>452(74.96)</td>
</tr>
</tbody>
</table>

[Total no. of responses are more than ‘N’ (n) due to multiple responses.]

* p<0.05  ** p<0.01 *** p<0.001
@ Others include Dyspnoea, Diabetes mellitus and Death.
© Others include Wt. Reduction and Good sleep
$ Specific food items include Plantain stem and Fenugreek

Awareness regarding control of hypertension- The awareness of the study subjects regarding control (treatment) of hypertension was seen to be very poor (Table 3). About 72.85% of the study subjects had no knowledge about control of hypertension and it was almost equal for males and females (p≥0.05). As per opinion of the study subjects, the important ways of controlling hypertension were salt restricted diet, temporary medication i.e. when pressure rises, regular medication, diet/fat control and exercise. Regarding all these responses, no statistically significant male-female differences were observed (p≥0.05). One point of concerns is that the opinion of using short-term medications as and when necessary was more (15%) than the opinion of using regular medications (11%), a dangerous fact indeed.

DISCUSSION

Present study revealed that as a whole 17.2% of all study subjects were aware of their own BP reading, similar for males and females. It also revealed that this awareness was significantly contributed by age, education, economic status and hypertension of the study subjects. Similar rural community based studies in India with logistic regression analysis are not readily available for comparison. In the United States, this general awareness was estimated to be 66.6%.7

The definite hypertensive persons (≥ 160/95 mm Hg. or on treatment) were significantly more aware of their own BP reading compared to the non-hypertensives (36.4% vs. 14.8%, p<0.001), which remains even after multiple logistic regression analysis. Similar awareness
(ranging from 4.9% to 25%) among hypertensives in the rural areas were noted by many workers in India and abroad.8-12 Nevertheless, 62% of the hypertensives were not aware of their BP reading, leaving them at risk of developing CVAs and CHDs. At every medical contact with a subject, BP should be measured and informed to the person including education regarding the necessity of regular check-up. Community based hypertension detection programme is a reasonable but costly solution.

Present study also revealed that awareness regarding complications and measures for prevention and control of hypertension are very poor. About 67.11% of the study subjects were ignorant about complications of hypertension and regarding two important complications of stroke and myocardial infarction, only 27.8% and 5.9% respectively had knowledge. 86.92% of study subjects were ignorant about preventive measures of hypertension; the commonly known measures are exercise, diet/fat control, salt restriction and stress control. Similarly 72.85% were ignorant about treatment/control measures. Common control measures stated are salt restriction, temporary medications, more than regular medications, diet/fat control and exercise. In general men had better knowledge compared to women. (although not always statistically significant) Higher literacy among males (about 82% vs. 66%) in that village might explain these male-female differences. Sometimes this ignorance about some important issue (temporary medication) might precipitate dangerous complications (CVAs and CHDs). All these could not be compared, as comparable studies were not readily available. To improve this awareness level of the population, interpersonal communication with medical facilities as well as other strategies like group-discussions (general and focal), mass media and general education system can be utilized.

REFERENCES

ORIGINAL ARTICLE

NEONATAL HYPERBILIRUBINEMIA AND ITS CORRELATION WITH G6PD ENZYME DEFICIENCY IN A TERTIARY CARE HOSPITAL IN GUJARAT

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ABSTRACT

Background: Neonatal Hyperbilirubinemia is one of the commonest abnormal physical findings in the newborns. Although, not a major cause of neonatal mortality, its morbidity during neonatal period makes its early recognition and management important. Amongst the various etiological factors, G-6-PD enzyme deficiency is one of the important causes of neonatal hyperbilirubinemia.

Objective: The purpose of this study is to identify incidence of G-6-PD enzyme deficiency among hyperbilirubinemic neonates & to know about particular caste involved in the studied area.

Methods: In the present study neonates were tested and analysed by a micromethod (based on classical methemoglobin reduction test) which requires only 20 µl of blood in a minimal laboratory set up as a routine investigation. Influence of various other etiological factors i.e. mode of delivery, birth weight, consangious marriages etc. on neonatal serum bilirubin level were also analysed.

Results: Most of neonates (81.2%) having G-6-PD deficiency were male. Bhanushali (17.85%) and Muslim (11.6%) caste showed higher incidence of G-6-PD deficiency. ABO Incompatibility and Prematurity were associated with 32.6% and 30.6% G-6-PD deficiency neonates respectively.

Conclusion: The present study concludes that higher incidence of Neonatal Hyperbilirubinemia in G-6-P.D deficient neonates due to clustering of casts in some geographical areas of Gujarat.

Key words: G-6-PD, Hyperbilirubinemia, Prematurity, Methhemoglobin.

INTRODUCTION

Human red cell is remarkable for its shape, structure, biosynthetic apparatus and relative stability in spite of a very traumatic existence in the circulation. The integrity of the erythrocyte depends much on the proper function of numerous enzymes. One of them is Glucose-6-phosphate dehydrogenase. It is a catalyst for the initial step & occupies key position In H.M.P. shunt pathway. The main function of this pathway is to provide NADPH for reduction of oxidized glutathione, which plays an important role in maintaining sulphhydryl enzyme within the red cell in active form and detoxifying small quantity of hydrogen peroxide protecting red cell membrane from oxidative injury.

G-6-PD deficiency is probably the most common inborn error of metabolism in humans and was the first erythrocyte enzyme deficiency discovered, which in adults can cause chronic hemolytic anemia or drug induced or stress induce acute hemolysis, where as in neonates it is one of the common etiological factor causing Neonatal Hyperbilirubinaemia. And today extensive work on the genetics, biochemistry and molecular pathology of the disorder has made it the best understood and the most thoroughly studied of the enzymopathies.

The Purpose of this study is to detect the incidence of G-6-PD deficiency in Hyperbilirubinemic Neonates, to evaluate relationship of G-6-PD deficiency in neonates with different epidemiological factors (i.e. sex, consanguinity, cast etc.), various perinatal factors & to derive the extent of different etiological factors in Neonatal Hyperbilirubinemia.

MATERIAL METHOD

150 neonates, having hyperbilirubinaemia (serum bilirubin >10 mg%) admitted to NICU of tertiary care hospital attached to medical college in Gujarat., were studied for the detection of G-6-PD deficiency by Micromethod (Micromodification Of Classical
Only 1 female neonate showed intermediate G-6-PD enzyme activity.

Table 2: Sex Wise Distribution of G-6-PD Deficient Hyperbilirubinemic

<table>
<thead>
<tr>
<th>G6PD Status</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal G-6-PD activity</td>
<td>95</td>
<td>39</td>
</tr>
<tr>
<td>Deficient G-6-PD activity</td>
<td>13</td>
<td>02</td>
</tr>
<tr>
<td>Intermediate G-6-PD activity</td>
<td>00</td>
<td>01</td>
</tr>
</tbody>
</table>

Four neonates (25%) out of 16 deficient neonates showed history of consanguous marriage of their parents.

Table 3: Relation of Consanguineous Marriage with G-6-PD Deficiency

<table>
<thead>
<tr>
<th>Hyperbilirubinemic neonates</th>
<th>Cases</th>
<th>History of consanguineous marriage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes (%)</td>
</tr>
<tr>
<td>Normal G-6-PD activity</td>
<td>134</td>
<td>36 (26.8)</td>
</tr>
<tr>
<td>Deficient G-6-PD activity</td>
<td>16</td>
<td>04 (25.0)</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>40 (26.6)</td>
</tr>
</tbody>
</table>

Among the etiological factors of Unconjugated Hyperbilirubinemia in present study, ABO Incompatibility is most common, than comes Prematurity, G-6-PD deficiency, Rh Incompatibility, Sepsis in that order. Out of them most common combination is Prematurity and G6PD deficiency.

Table 4: Incidence of Different Etiological Factors in Development of Indirect Hyperbilirubinemia

<table>
<thead>
<tr>
<th>Etiological Factors</th>
<th>Cases (%)</th>
<th>Mean Hb gm%</th>
<th>Mean Serum Bilirubin mg% (indirect)</th>
<th>D.C.T CRP +ve</th>
<th>-ve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prematurely</td>
<td>47 (30.66)</td>
<td>13.33</td>
<td>12.54</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ABO Incompatibility</td>
<td>49 (32.66)</td>
<td>12.50</td>
<td>13.12</td>
<td>31</td>
<td>16</td>
</tr>
<tr>
<td>Rh Incompatibility</td>
<td>14 (9.33)</td>
<td>13.31</td>
<td>12.66</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>G-6-PD deficiency</td>
<td>16 (10.66)</td>
<td>12.26</td>
<td>12.60</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Infection</td>
<td>09 (05.33)</td>
<td>13.91</td>
<td>12.50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Idiopathic</td>
<td>15 (10.00)</td>
<td>12.61</td>
<td>12.45</td>
<td>-</td>
<td>09</td>
</tr>
</tbody>
</table>

Various modes of delivery were having little influence on severity of hyperbilirubinemia showing minor variations in each individual group. It was observed that total 15 neonates required exchange transfusion. Among them 1/3rd neonates were having deficient G6PD activity.

Discussion

The present study was done to detect the incidence of G-6-PD deficiency in Hyperbilirubinemic Neonates & to evaluate relationship of G-6-PD deficiency in neonates with different epidemiological factors. An attempt was made to establish the extent of neonatal hyperbilirubinemia with the common etiologies of same with chief focus on neonatal G-6-PD deficiency.

The incidence of G-6-PD deficiency in Indian population varies from 0 to 27.02%\(^4\). In Gujarat, the incidence of G-6-PD deficiency follows following chronology in descending order. Warli (19.53%), Kutchhi Bhanushali (13.80%), Gonds (11%), mix
Among hyperbilirubinaemic neonates the higher incidence (10.66%) in present study, can be compared to that of Bhanderi et al\(^4\) (4%), Handa et al\(^5\) (8.07%), & Baxi et al\(^6\) 1964 can again be explained by the clustering of casts.

In present study as per expectations, the male neonates more commonly showed G-6-PD enzyme defect compared to female patients. This can be explained by location of gene on X chromosome, which occurs in males only in hemizygous form, whereas as the female heterozygote can be protected by the other functional X chromosome of the pair.

Among Indian neonates, the common causes of Neonatal Hyperbilirubinaemia includes, ABO incompatibility, Immaturity, G6PD deficiency, Rh incompatibility, Infection, Breast milk jaundice & Physiological jaundice, etc. Similar observation was made by Weisz B. et al\(^8\) in 1996.

In this study G6PD deficiency is ranking third followed by Rh incompatibility. This can be explained by relatively higher incidence of G6PD deficiency in studied population.

No extra adverse effect can be found due to combination of ABO incompatibility and G6PD deficiency. The later finding can be supported by the finding of Kalpan M, et al\(^9\) 1998 which had stated that the combination of G-6-PD deficiency and ABO incompatibility had no additional deleterious effects compared to either of them alone.

It has been observed in the present study, that neonates delivered by forceps and vacuum are more prone to develop higher serum bilirubin levels compared to other modes of deliveries. However, some of the patients who had undergone other modalities of delivery showed higher bilirubin values than the neonates delivered by forceps & vacuum. Hence the difference is statistically insignificant.

It has been observed from obtained results, that there is not much difference in mean serum bilirubin value between neonates of different birth weights and maturity. This concludes that as far as the magnitude of Hyperbilirubinaemia is concerned, the birth weight and maturity shows no remarkable difference.

Among hyperbilirubinaemic neonates the higher incidence (10.66%) in present study, can be compared to that of Bhanderi et al\(^4\) (4%), Handa et al\(^5\) (8.07%), & Baxi et al\(^6\) 1964 can again be explained by the clustering of casts.

In present study, the finding of higher incidence among Kutchhi Bhanushalis, Muslims, Lohanas can be supported by above mentioned studies (Table 1).
followed by Sindhis & Lohanas. G-6-P.D deficient males were more common than females. Consangious marriages have a positive correlation with G-6-P.D deficiency. ABO incompatibility was the most common etiology followed by Prematurity as the second most common cause of neonatal hyperbilirubinemia. G-6-P.D deficiency was the third most common cause of higher s.bilirubin level in neonates. Mode of delivery in Neonatal Hyperbilirubinemia is statistically insignificant factor. There is no remarkable difference in the magnitude of Hyperbilirubinemia with the birth weight & maturity. Rate of exchange transfusion is much higher in G-6-P.D deficient neonates. Over study concludes that, G-6-PD enzyme testing can be introduced as a routine laboratory investigation with minimal laboratory set up and cost in geographical areas & particular caste of Gujarat to prevent future drug induced haemolytic complications in deficient persons.

REFERENCES
ORIGINAL ARTICLE

HAEMOGLOBIN A2 LEVEL – A COMPARATIVE STUDY BETWEEN PATIENTS WITH MALARIA AND HEALTHY INDIVIDUALS

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ABSTRACT

Background: Since many surveys for the prevalence of β thalassemia have been made in area with high prevalence of malaria, it is important to find out whether malaria can modify Hb A2 levels. In present study, analysis of Hb A2 level of patients with malaria and thalassemia has been done and has been compared with control group to conclude that whether Hb A2 level was affected or not.

Methodology: Total 99 samples of malaria patients, 111 samples of β thalassemia trait patients & 105 samples of healthy individuals were tested. The p value of < 0.05 was used to consider difference as significant & to reject null hypothesis. The t test (two tailed distribution, two samples unequal variance) was used as hypothesis test.

Results: Hb A2 level in malaria group ranged from 1.9 – 4.0 % (n = 89, mean 3.09 % & SD 0.32 %); those of the β thalassemia trait group ranged from 4.0 – 7.3 % (n = 111, mean 5.37 % & SD 0.74 %); and those of the control group ranged from 1.8 – 3.9 % (n = 105, mean 2.82 % & SD 0.43 %). The Hb A2 level of the malaria patients was elevated statistically significantly then that found in 105 healthy controls (P < 0.05 at 95 % confidence limit).

Conclusion: From the study, we can conclude that one should remain conscious while interpreting laboratory tests in patients with malaria or patients from malaria endemic zone for β thalassemia trait which rely mainly on Hb A2 level.

Keywords: Haemoglobin A2, malaria, thalassemia, megaloblastic anaemia, High Performance Liquid Chromatography.

INTRODUCTION

As a result of the synthesis of different globin chains at different stages of life, there is a difference in the type of haemoglobin present in red cells between adult life and the fetal and neonatal periods. In adults, 96 - 98% of haemoglobin is haemoglobin A, which has two α chains and two β chains. A minor haemoglobin, haemoglobin A2 (Hb A2) has two α chains and two δ chains. A very minor haemoglobin in adults, but the major haemoglobin during fetal life and the early neonatal period, is haemoglobin F or fetal haemoglobin, which has two α chains and two γ chains. In the early embryo, haemoglobin is synthesized in the yolk sac and specific embryonic haemoglobins are produced - Gower 1 (ζ2ε2), Gower 2 (α2ε2) and Portland (or Portland 1, ζ2γ2). Hb A2 level is restricted to approximately 2.5% of total haemoglobin in healthy adults. Hb A2 and various other haemoglobins can be quantified with acceptable accuracy by High Performance Liquid Chromatography (HPLC), microcolumn chromatography, cellulose acetate electrophoresis followed by elution and spectrophotometry and capillary zone electrophoresis. Since it was proved in 1957, Hb A2 level elevation has frequently been used as a criterion for the diagnosis of β thalassemia trait in human population surveys. Some other factors are also considered to modify the Hb A2 level temporarily including iron deficiency which decreases it, whereas it is increased in some cases of malaria & megaloblastic anaemia. Hb A2 has also been found to be elevated in some cases of myelofibrosis, viral hepatitis, schistosomiasis and in recipients of fetal hematopoietic tissue.
Many studies have been done to find the possible influence of malaria on the level of Hb A2. These studies have produced divergent results. Since many surveys for the prevalence of β thalassemia have been made in areas with high prevalence of malaria such as sampling area of present study, it is important to find out whether malaria can modify Hb A2 levels and, if so, to what extent. In present study, we have analyzed Hb A2 level of patient with malaria and thalassemia and then we have compared it to control group to conclude that whether Hb A2 level was affected or not.

MATERIALS & METHODS
The present study was conducted at Sickle cell laboratory which is being operated under Sickle Cell Anaemia Control Programme run by Government of Gujarat in collaboration with non-government organizations. The present Sickle cell laboratory has been identified as tertiary center. In present study, data analysis has been done for samples of patients of tertiary hospital who were already diagnosed to have malaria by laboratory services of the same hospital. The control group & thalassemia group were selected from blood samples received for haematological investigations related to haemoglobinopathies. A confounding factor of megaloblastic anaemia was excluded by not including five samples with MCV > 100 fl. Five patients in malaria group who were already diagnosed to have thalassemia & haemoglobin E disorder were also excluded. Sample analysis has been done as per standard ethics & by maintaining confidentiality of test results.

Total 99 samples of malaria patients, 111 samples of β thalassemia trait patients & 105 samples of control group were tested. Samples were tested for complete blood count, DTT, blood group, haemoglobin electrophoresis at alkaline pH on cellulose acetate and HPLC on BIORAD VARIANT (Beta thalassemia short programme). The Hb A2/F calibrator and two levels of controls (BIORAD) were analyzed at beginning of each run. Malaria parasites were looked for in the thick & thin films stained with Giemsa and the species of plasmodium were determined by experienced observers. Any doubtful smear for species identification was dealt with rapid malaria diagnosis kit.

The Null hypothesis was assumed that there was no difference in Hb A2 level in malaria patients & control group and if any difference observed that was just because of different sample population. The p value of < 0.05 was used to consider difference as significant & to reject null hypothesis. The t test (two tailed distribution, two samples unequal variance) was used as hypothesis test with the help of Microsoft Excel 2010 software.

RESULTS
The Hb A2 levels of the total 99 malaria patients were measured. Out of these, total ten patients (five patients with MCV > 100 fl and five patients with haemoglobinopathies) were excluded from analysis. The Plasmodium species of 89 patients are shown in fig 1.

Hb A2 level in malaria group ranged from 1.9 – 4.0 % with a mean of 3.09 % & SD of 0.32 %; those of the β thalassemia trait group ranged from 4.0 – 7.3 % with a mean of 5.37 % & SD 0.74 %; those of the control group ranged from 1.8 – 3.9 % with a mean of 2.82 % & SD 0.43 %. Hb A2 level in malaria group was raised as compare to control group but not up to the extent seen in β thalassemia trait group.

The difference between the mean Hb A2 level of the 89 malaria patients and of the 105 controls was significant (P < 0.05, Table 1). Of the 89 patients, 36 were infected with P. falciparum, 51 with P. vivax, and 2 with both the species. The levels of Hb A2 classified according to the species of plasmodium also showed significant differences in comparison with those of control group (Table 1).

The influence of anaemia on Hb A2 level was also investigated in present study. The cut-off level considered for anaemia was 13 g/dl of haemoglobin in males and 12 g/dl for females. In present study, 61 malaria patients were anaemic with mean Hb A2 3.08 %, while 29 were not anaemic with mean Hb A2 3.10 %. No significant difference was found between the Hb A2 levels of the malaria patients with or without anaemia (P = 0.84). Furthermore, there was no significant correlation between the blood haemoglobin level and the Hb A2 percentage (r = 0.05).
DISCUSSION

Few studies have been done in past about influence of pathologic conditions besides thalassemia trait on Hb A2 level. In present study, influence of malaria on Hb A2 level has been investigated. Malaria has been selected as other pathology affecting Hb A2 level as malaria is quite prevalent in this region& screening for thalassemia is being done using elevated level of Hb A2 as a criterion. While conducting this study, certain samples from malaria patient who have already other pathology as confounding factors such as patients with macrocytic blood picture & already diagnosed cases of haemoglobinopathies have been eliminated.

The conclusions of various studies done in past for the influences of malaria on Hb A2 level are shown in table 2. Out of these, four studies had concluded that malaria has significant effect on the level of Hb A2 as compare to control group. One of these four studies, Wasi P et al found that malaria had negative impact on Hb A2 & they concluded that Hb A2 level was lower in patients with malaria as compare to healthy individuals.5 The rest of three studies conducted by Arends T et al, Lie InJoLuangEng et al & Isaacs A et al have demonstrated that Hb A2 level were elevated in malaria patients as compare to control groups.6-8 The present study is also in accordance with these three studies. In present study we have analysed Hb A2 level in 89 patients with malaria & compared it with Hb A2 level in 105 healthy individuals & with thalassemia group of 111 patients. We concluded that the difference between the mean Hb A2 levels of the 89 malaria patients and that of the 105 healthy individuals was significant (P < 0.05, table 1). There were no elevation in Hb A2 level in malaria patients in study performed by Esan G J F et al, Wilcox M C et al & Van Ros et al. 3, 9, 10

Iron deficiency anaemia & thalassemia are two very important conditions which affect Hb A2 level. The blood picture in both of these conditions is that of microcytic anaemia. The iron deficiency anaemia can be differentiated from thalassemia with the help of mentzer index. It is calculated from the results of a complete blood count. If the quotient of the mean corpuscular volume divided by the red blood cell count is less than 13, thalassemia is more likely. If the result is greater than 13, then iron-deficiency anaemia is more likely.11 Mentzer index was applied to eliminate possible inclusion of patients with β thalassemia trait as well as at the same time to include patients with iron deficiency anaemia in control as well as the study group with malaria.

No significant difference in Hb A2 levels due to different species of plasmodium (P vivax and P falciparum, p = 0.4 at 95% CI) was found. As we have good proportion of both species in present study, we can conclude that species variations in plasmodium is not confounding factor for affecting Hb A2 level.

CONCLUSION

As mentioned earlier, there are different methods available for quantitative estimation of Hb A2 level.1 Out of all these, HPLC is one of the best methods for quantification. One must take into consideration method used for quantification also.
before concluding that whether Hb A2 level is elevated in malaria patients or not. From present study we can conclude that malaria may have influence on Hb A2 level & patients with malaria may have transient elevated level of Hb A2. The reason behind divergent result of present study from some previous studies may be because of difference in study designs, quantification methods of Hb A2 & sampling population. We can conclude that one should remain conscious while interpreting laboratory tests in patients with malaria or patients from malaria endemic zone for β thalassemia trait which rely mainly on Hb A2 level.

The present study has some limitations like molecular analysis was not done for all patients with elevated Hb A2 level to rule out β thalassemia trait and follow up study of malaria group for repeat Hb A2 level was not done. The authors of present study plan to design a study with inclusion of molecular analysis in future for more accurate analysis.

Conflicting Interest: Non declared

ACKNOWLEDGEMENT

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REFERENCE

ORIGINAL ARTICLE

USE OF DEXMEDETOMIDINE ALONG WITH BUPIVACAINE FOR BRACHIAL PLEXUS BLOCK

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ABSTRACT

Introduction: Supraclavicular brachial plexus block provides safe, effective, low cost anaesthesia with good postoperative analgesia. This study was conducted to compare the postoperative analgesic efficacy and safety of dexmedetomidine for brachial plexus blockade along with bupivacaine.

Methodology: This prospective double blind study was conducted on 70 patients of age 18 to 60 years posted for various upper limb surgeries and randomly allocated into two equal groups of 35 each. Control group-C received injection bupivacaine (0.25%) 38 milliliter plus 2 milliliter normal saline, dexmedetomidine group-D received injection bupivacaine (0.25%) 38 milliliter plus dexmedetomidine 30 microgram (2 milliliter). Assessment of motor and sensory blockade, pulse, systolic blood pressure, respiration and side effects were noted every 5 minutes for first 30 minute and every 10 minute till end of surgery. Duration of analgesia and incidence of various complications following the procedure were observed.

Results: It was observed that in control group onset of motor and sensory blockade was faster. Whereas, dexmedetomidine group have better hemodynamic stability and greater postoperative analgesia. Only two cases of bradycardia and two cases of hypotension were noticed in dexmedetomidine group-D.

Keywords: Bupivacaine, Dexmedetomidine, Brachial Plexus Block

INTRODUCTION

Supraclavicular brachial plexus block via Winnie’s approach¹ is a very popular mode of anaesthesia for various upper limb surgeries. This approach is attractive due to its effectiveness in terms of cost and performance, margin of safety along with good postoperative analgesia. Supraclavicular approach gives the most effective block for all portion of upper extremity and is carried out at the level of trunks of brachial plexus.² The plexus is blocked where it is most compact³ i.e. at the middle of brachial plexus, resulting in homogenous spread of anaesthetic throughout the plexus with a fast onset and complete block.⁴

A variety of adjuvant has been studied for brachial plexus blockade including opioid and non opioid agents. Dexmedetomidine has shown greater affinity as an alfa 2 adrenoreceptor agonist than clonidine. The effect of dexmedetomidine when added to lidocaine for intravenous regional anaesthesia, demonstrate that addition of 0.5 milligram/kilogram dexmedetomidine to lidocaine improves quality of anaesthesia and intraoperative as well postoperative analgesia without causing side effects.⁵

The aim of the present study was to compare the postoperative analgesic efficacy and safety of dexmedetomidine for brachial plexus blockade along with bupivacaine.

MATERIALS AND METHODS:

The study was performed at GMERS Medical college Sola, from June 2011 to Dec. 2011 after institutional approval. After obtaining informed written consent and institutional approval 70 adult patients of both gender, American Society of Anesthesiology (ASA) grade 1 and 2 between age of 18-60 years, posted for various upper extremity surgeries were selected for the purpose of this study. Patients with evidence of any contraindication to brachial block like neurological deficit, history of seizures, bleeding problems, pneumothorax, and pregnancy were excluded.

After taking history, physical examination and all routine investigations were done. Before performing the procedure venous cannula 18 gauge was secured in opposite hand and routine monitors like pulse oximetry, non invasive blood pressure,
Electrocardiogram were attached. Study medication was prepared in identical 50 milliliter syringes to ensure blinding of anaesthetist. Investigators, who collected postoperative data, were blinded to study drug administered.

The supraclavicular brachial plexus block was performed with a 22 gauze, 38 millimeter short bevel needle using subclavian artery as a guide until paraesthesia was noted and if paraesthesia was not elicited, the first rib was encountered and after free aspiration 40 milliliter of solution was given.

The 70 patients of both genders were randomly allocated into two equal groups of 35 each (group C and D). Total 40 milliliter of solution for supraclavicular brachial plexus blockade was administered as follows- Control group-C received injection bupivacaine (0.25%) 38 milliliter + 2 milliliter normal saline and Dexmedetomidine group-D received injection bupivacaine (0.25%) 38 milliliter + Dexmedetomidine 30 microgram (2 milliliter).

Sensory block was tested using alcohol swabs. Similarly assessment of motor blockade was done using the Bromage three point score [0 = normal motor function with full flexion and extension of elbow, wrist and fingers, 1= decrease motor strength with ability to move fingers and/or wrist only, 2= complete motor blockade with inability to move fingers]. After evaluation of blocks patients were given injection ondansetron 4 milligram intravenously. Patients were sedated with injection midazolam 2 milligram intravenously and oxygen is given by venti mask.

Vital parameters (pulse, respiration, blood pressure) were performed every 5 minutes for first 30 minutes and thereafter every 10 minutes till end of surgery. Postoperatively motor and sensory blockade and vital of the patients were noted every half hourly by nursing staff.

The duration of analgesia was taken from the time of onset of block to the first complaint of pain. Injection diclofenac sodium intragluteally in dose of 1-5 milligram/ kilogram was administered as a rescue analgesic.

Pain score used was visual analogue scale (0- 10):
0 - No pain
5 - Moderate pain
10 - Maximum pain.

Episodes of perioperative hypotension (systolic blood pressure < 80 millimeter of mercury), bradycardia (heart rate < 40 beats per minutes) and desaturation (SPO2 < 90%) were recorded.

Data was expressed in Mean ± SD (standard deviation) and p value of less than 0.05 was considered statistically significant.

**OBSERVATION AND RESULTS**

This prospective double blind study was conducted on 70 patients of age 18 to 60 years posted for various upper limb surgeries and randomly allocated into two equal groups of 35 each. Table 1 shows demographic profile of the studied groups.

### Table 1: Demographic data of studied groups

<table>
<thead>
<tr>
<th>Demographic profile</th>
<th>Control group C (n= 35)</th>
<th>Dexmedetomidine group D (n= 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>35.4 ± 20.2</td>
<td>36.6 ± 25.4</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>50.2 ± 8.9</td>
<td>51.4 ± 10.6</td>
</tr>
<tr>
<td>Gender ratio (M:F)</td>
<td>25:10</td>
<td>27:8</td>
</tr>
</tbody>
</table>

The results regarding the characteristics of sensory block and motor block are summarized in table 2. The onset of both motor and sensory block in control group is faster than in dexmedetomedine group. The duration of sensory and motor block was longer in dexmedetomidine group D (p <0.00).

### Table 2: Onset time and duration of motor and sensory block

<table>
<thead>
<tr>
<th>Variables</th>
<th>Control group C Mean± SD (min) (n= 35)</th>
<th>Dexmedetomidine group D Mean± SD (min) (n= 35)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset time for complete motor blockade</td>
<td>8.5 ± 1.4</td>
<td>11.2 ± 2.1</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Duration of motor block</td>
<td>100.7 ± 48.3</td>
<td>660.2 ± 60.4</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Onset time for complete sensory blockade</td>
<td>18.4 ± 2.5</td>
<td>21.4 ± 2.5</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Duration of sensory block</td>
<td>146.5 ± 36.4</td>
<td>732.4 ± 48.9</td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>

The duration of analgesia in control group is 194.8 ± 60.4 minute and dexmedetomidine group-D is 732.4 ± 95.1 minute, which is statistically significant (p <0.000). Vital parameters like mean pulse rate, systolic blood pressure, mean respiratory rate and mean arterial saturation values were similar in both the groups.

### Table 3: Duration of analgesia

<table>
<thead>
<tr>
<th></th>
<th>Duration of analgesia Mean ± SD (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group C (n= 35)</td>
<td>194.8 ± 60.4</td>
</tr>
<tr>
<td>Dexmedetomidine group D</td>
<td>732.4 ± 95.1</td>
</tr>
<tr>
<td>p-value</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
The side effects were found to be insignificant and incidental. Only two cases of bradycardia and two cases of hypotension were noticed in dexmedetomidine group-D.

DISCUSSION
This prospective, randomized, double blind study was done in patients undergoing upper limb surgery. A volume of 40 milliliter of local anaesthetic agent was taken because this volume was associated with a more complete spread for brachial plexus block as found by Winnie and colleagues.

Various animal studies have been conducted in rats, rabbits, dogs and sheep using intrathecal dexmedetomidine at a dose range of 2.5 – 100 microgram without any neurological deficit. In human beings, studies using epidural dexmedetomidine have been conducted without any report of neurological deficit. Intrathecal dexmedetomidine in combination with bupivacaine have been studied in human beings without any postoperative neurological deficit. So that, we selected 30 microgram dose of dexmedetomidine.

Outer motor fibers of brachial plexus form the mantle and are blocked earlier than the sensory fibers at the core. The onset of motor blockade was significantly faster than sensory block, this can be explained by “core and mantle” concept of Winnie et al, 1977.

Kalso et al. reported that dexmedetomidine affinity to alpha 2 adrenoceptor agonists is 10 times as compared to clonidine when dexmedetomidine is added to lidocaine for intravenous regional anaesthesia, it has been studied that it improves quality of anaesthesia and intraoperative – postoperative analgesia without causing side effects. The lack of significant side effects like respiratory depression and haemodynamic stability make dexmedetomidine an attractive choice as an adjuvant for supraclavicular brachial plexus block.

CONCLUSION:
Dexmedetomidine is a useful drug for combination with bupivacaine, as it prolongs the duration of analgesia in supraclavicular brachial plexus block.

REFERENCES
A STUDY ON PROFILE OF ALLERGENS SENSITIVITY AND ASSOCIATED FACTORS IN NASO-BRONCHIAL ALLERGIC PATIENTS

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ABSTRACT

Background: Prevalence of nasobronchial allergy is increasing globally. Several genetic, environmental and other associated factors are responsible for this increase. This study is designed to investigate profile of different allergens sensitivities and associated factors involved in the prevalence of naso-bronchial allergy.

Methods: 4312 skin prick tests with 77 allergens in 56 patients of nasobronchial allergy were studied using parameters like age, temporal association between asthma and allergic rhinitis, most common type of allergens, age of onset, sex, residence and family history of atopy.

Results: It was found that the age groups 12-40 years are more prone to nasobronchial allergy. 75% patients have shown temporal association between asthma and allergic rhinitis. Most common offending allergens were insects (33.3%), followed by pollens (30.3%), fungi (13.6%), dust (8.3%), non-juicy foods (6.8%), juicy foods (4.16%) and dander (3.03%). Males have shown more prevalence of nasobronchial allergy than that of the females. 32% patients have shown genetic disposition.

Conclusions: Overall, this study unravels different associated factors and profile of allergens in patients’ of nasobronchial allergy which will be helpful in diagnosis, management and treatment of asthma.

Keywords: Allergy, Nasobronchial asthma, Rhinitis, Insects

INTRODUCTION

The definitive diagnosis of allergy requires three criteria identification of allergen, establishment of causal relationship between exposure to allergens and occurrence of symptoms. Allergic disorders manifest in different body organs as allergic rhinitis, bronchial asthma, allergic conjunctivitis and atopic eczema. Allergic reactions can be antibody or cell mediated. In the majority of cases antibody typically responsible for an allergic reaction belongs to the IgE isotype. It is estimated that over 20% of the world’s population suffer from IgE mediated allergic disorders such as allergic rhinitis, bronchial asthma, allergic conjunctivitis, food allergy, atopic eczema and anaphylaxis. Respiratory allergy accounts for substantial part of burden of allergic disorders worldwide. The general pathogenic view of respiratory allergy has considerably changed over last 15 years. The prevalence of allergic rhinitis and bronchial asthma is continuously increasing, placing an enormous strain on health resources in many countries and is a major cause of hospitalization especially among children. Airway allergy is now considered to be a disease not confined to a specific target organ but rather a disorder of the whole respiratory tract. Epidemiological evidences and clinical as well as experimental observation have suggested a link between rhinitis and asthma leading to a definitive rhino bronchitis or united airway disease (UAD) and the concept of one airway disease. Thus, nasal and bronchial allergies are not distinct and separate entities but rather a continuum of inflammation involving one airway. Studies of temporal relationship between the onset of rhinitis and asthma have also shown that rhinitis frequently precedes the development of asthma. Common allergens such as house dust mites, animal dander, pollen; aspirin can affect both the nose and bronchi and lead to allergic rhinitis and bronchial asthma. Both the disorders bronchial asthma and allergic rhinitis are common chronic diseases imposing a substantial social burden...
worldwide among both children and adults and their prevalence is only increasing with time. The prevalence of asthma has risen steadily in this century. According to World Health Organization, India has an estimated 15-20 million asthmatics and prevalence of 10-15% in 5-11 year old children. Allergic disease is preventable if the allergen can be avoided. Identification of responsible allergen is only possible by careful history and diagnostic investigations. Several studies have been reported regarding the allergens profile and several associated factors related to nasobronchial allergy but, a thorough study is still needed. As there is no permanent cure of nasobronchial allergy and precaution is best option in the control of this disease then, there is need of exhaustive studies on allergens profile and several associated factors.

In this study, we have tried to open a new dimension towards the enhancement of our understanding regarding profile of different allergens sensitivities and other associated factors like temporal association between asthma and allergic rhinitis, age of onset, family history of atopy, sex and residence wise distribution of the cases in prevalence of nasobronchial allergy.

**METHODOLOGY**

**The Study Population:** The present study was undertaken in the Department of Pulmonary Medicine, CSM Medical University, UP, Lucknow, India. A total of 194 patients of nasobronchial allergy were evaluated on the basis of complete clinical grounds and out of these 56 patients fitted the inclusion criteria were subjected to skin testing. Study period was June, 2008 to Aug, 2009. This study was comprised of patients of bronchial asthma attending the indoor/outdoor Department of Pulmonary Medicine for their illness during the study period.

![Image](image_url)

**Figure 1:** Protocol of skin prick test.

**Detailed Clinical History, Clinical Examination and Investigation:** Name, age, sex, residence, profession, education, socioeconomic status, date of birth, age of onset of symptoms, history of smoking, breast feeding, respiratory illness in childhood, allergy disorders, BCG immunization, eczema, past and present medications and their responses, urticaria or allergic conjunctivitis, general ear nose throat (ENT) examination, chest examination, systemic examination, total leukocytes count (TLC), differential leukocyte count (DLC), absolute eosinophil count (AEC), x-ray chest, spirometry, stool for ova/cyst, Montaux test, nasal smear for eosinophils (in patients of allergic rhinitis) have been performed before the Skin Prick Test (SPT).

**Patients’ Inclusion Criteria:** Patients were informed about the study and study protocol. An ethical permission, patients’ informed consent was obtained.
After first visit in the department the patient was enrolled in the study. For next one week patient got investigations done and after review of clinical history and physical examination along with all investigations, patient was finally included or excluded from the study. The diagnosis of allergic rhinitis was done based on detailed history and diagnosis of bronchial asthma was done detailed history and spirometric confirmation. Skin prick test was not used for the diagnosis but, performed following diagnosis of allergic rhinitis and bronchial asthma.

Patients' Exclusion Criteria: Patients less than 12 years and more than 55 years of age were not taken in this study. Pregnant and lactating females were omitted from this study. Patients having other associated significant broncho-pulmonary disease other than bronchial asthma, like pulmonary tuberculosis, Chronic Obstructive Pulmonary Diseases (COPD), bronchiectasis or other systemic disorder like diabetes mellitus, tuberculosis, hypertension, malignancy and other immunodeficiency syndrome are also excluded.

Medications to Be Avoided before Skin Testing: It has been suggested to patients to avoid some medicine so that occurrence of false positive results of SPT could be minimized. H1 & H2 blockers to be discontinued for >72 hours, Fexofenadine for 5-7 days, Loratidine for 7 days, Cetirizine for 7-10 days, Tricyclic antidepressants for 7 days, Beta blockers for >24 hours have been implicated in all the patients. Emergency drugs were kept ready eg: Inj. Adrenaline, Inj. hydrocortisone, Inj. Chlorphenaramine, I V fluids and oxygen gas cylinder for managing allergic anaphylactic reaction that may occur.

Method of Skin Prick Test: Skin Prick Test was performed according to guidelines in the USA with slight modifications. \(^3\) In brief, SPT was done with purified extracts of various allergens like pollens, fungi, insects, animal dander, juicy and non-juicy foods obtained from Aleit India Pvt Ltd, New Delhi, India. Assessment of skin reactivity was done according to positive control (histamine acid phosphatase in glycerinated buffer saline 1mg/ml). Glycerinated buffer saline was taken as the negative control. Skin was cleansed with 70% alcohol and then allowed to dry. The skin prick test was performed by placing a small drop of each extract and control solution on the volar aspect of the forearm at a minimum distance of 2 cms. A disposable hypodermic needle (26-G) is passed through the drop and inserted in to the epidermal surface at a low angle with the bevel facing up. The needle tip is then gently lifted upward to elevate a small portion of the epidermis with out inducing bleeding. The needle tip is then withdrawn and the solution gently wiped away with a paper tissue. The skin test was performed for following 77 antigens (Figure 1).

Time of Reading Test Result: The immediate skin test induces a response that is read after 20 minutes. The size of the each reaction is measured with a millimeter ruler. Grading of the skin prick test was as 1+, erythema <21 mm, 2+ erythema >20 mm, 3+ wheal >3mm, 4+ wheal with pseudopodia.\(^6\)

**Figure 2:** (a) Age wise distribution of the cases (b) Sex wise distribution (c) Distribution according to Diagnosis (d) Shows residence wise distribution of the cases. Probability values <5% were considered statistically significant (N=56).
Time of Reading Test Result: The immediate skin test induces a response that is read after 20 minutes. The size of the each reaction is measured with a millimeter ruler. Grading of the skin prick test was as 1+, erythema <21 mm, 2+ erythema >20 mm, 3+ wheal >3mm, 4+ wheal with pseudopodia.6

Data Analysis: The categorical variables were expressed as frequencies and percentages. Percentages were compared by chi-square test. Probability values <5% were considered statistically significant.

RESULTS

![Figure 3](image_url)

**Figure 3:** (a) Temporal association between asthma and allergic rhinitis (b) Distribution according to age of onset. Probability values <5% were considered statistically significant (N=56).

![Figure 4](image_url)

**Figure 4:** (a) Distribution according to duration of the disease (b) History of respiratory illness in childhood (c) family history of atopy (d) distribution according to pattern of symptoms. Probability values <5% were considered statistically significant (N=56).

Majority of the patient (52) among 56 belong to age group of 12-20. Total 48 patients among 56 amounting to 85% belong to age group between 12-40 confirming the fact that asthma is more common in children and young adults (Figure 2a). Among 56 patients, 40 were males and 16 were females, the difference among two groups is likely to be correlated as males seeking medical help are more common than females (Figure 2b). In this study, 57.51% of patients were from rural area and 52.49% were from urban area (Figure 2c). The 56 patients included 40 patients of bronchial asthma and allergic rhinitis, 11 patients of only allergic rhinitis and 5 patients of only bronchial asthma (Figure 2d).
In our study maximum number of patients (75%) had the age of onset of disease in the first two decades of life i.e. between 0-20 years of age (Figure 3a). Temporal association between asthma and allergic rhinitis, in 70% of the patients nasal symptoms preceded the respiratory symptoms while 5% patients respiratory symptoms preceded nasal symptoms where as 25% could not specify (Figure 3b).

48.21% of the patients had less than five years of disease duration, 32.14% between 6-10 years of duration and 19.64% had more than 10 years of duration (Figure 4a). 28.57 % of patients show association with previous. One patient (20%) of bronchial asthma and two patients (18%) of allergic rhinitis had history of respiratory illness in childhood where as 13 patients (23%) of combined bronchial asthma and allergic rhinitis had history respiratory illness in child hood (Figure 4b). Family history of atopy was present in 32 (57.14%) patients among total 56 patients. Among those 32 patients 75% had both allergic rhinitis and bronchial asthma (Figure 4c).

Four patients (7.14%) among 56 had ocular allergy and cutaneous allergy separately, two patients had combination of above allergies while one patient had food allergy (Figure 5a). Out of 56 patients 49 (87.5%) had SPT positive reaction to the antigens, while 7 patients did not show any sensitivity. Among 49 patients who reacted to antigen 4, (8.16%) were bronchial asthma patients, while 9 (18.36%) had allergic rhinitis patients and 36 (73.46%) had combined bronchial asthma and allergic rhinitis (Figure 5b). Most common trigger according to patient was common cold in 67%, followed by insects in 53.51%, psychological factors in 28.51%, and physical factors in 25% where as food and exercise in 1.78% of patients (Figure 5c).

The 4312 skin prick tests with 77 allergens in 56 patients of nasobronchial allergy were studied. A total of 1792 skin tests with 32 pollen antigens were performed on 56 patients. Among pollens commonest was *A. altissimus* with 11.25%, followed by *A. dactylon* 10%, *P. junifera* 8.75%, *C. dactylon* 7.5% reactivity. Total of 336 skin tests were done with insects, among which cockroach male was positive in 31.4%, followed by cockroach female in 27.7%, and cricket in 20.45% and gross hopper 19.31% were reactive. A total of 224 skin tests were done with dusts, house dust and wheat dust were 30%, paper dust were reactive in 25% and cotton meal dust was positive in 15% of the patients. A total of 280 skin tests were done with 5 dander allergens in 56 patients. Among them buffalo dander was commonest with 37.5% and followed by cow dander in 25%. A total of 392 skin tests were performed with non juicy foods, among them rice and mustard were commonest with 30%, followed by potato in 22.2%. A total of 504 skin tests were done with juicy foods commonest was milk.
(66.6%) followed by apple and bean fresh (20.6%) (Fig 6a and 6b).

**DISCUSSION**

The use of skin testing as a diagnostic tool in nasobronchial allergy dates to the studies on hay fever since 1860’s. Most investigators have found the prick test to be the most satisfactory of the epicutaneous tests commonly employed. In comparison, particularly with the scratch test the prick test has been reported to be more sensitive, less variable and better correlated with intradermal testing.7-10 Because of the simplicity, speed and ease of performing on the forearm and back, it is possible to test with many allergens in one session. Allergen extracts are most stable when they are most concentrated. There is a good correlation between a strongly positive prick test and a positive RAST, and also between a negative prick test and a negative RAST. Prick tests with wheals less than 4-5mm in diameter are less frequently associated with a positive RAST, and intradermal tests with 1:1000w/v extracts are only exceptionally associated with a positive RAST.11-13

Prick test wheals 3 mm or greater in diameter are often indicative of clinical sensitivity to some foods, particularly milk, eggs, peanuts, soybean, red gram, green gram and red kidney bean.14-17 In our study, 87.5% patients had showed positive reaction to the different allergens. Among these patients who reacted to allergens bronchial asthma, allergic rhinitis or combined bronchial asthma and allergic rhinitis were quite evident.

Nasobronchial allergy has predilection for certain age groups. About 85% patients were belonging to age group between 12-40 confirming the fact that asthma is more common in children and young adults. Chaubey et al (1973) also reported maximum number of patients in age group of 13-48 years.18 This is also supported by study done by Rajendra Prasad et al (2000) where maximum number of patients was in age group 12-30 years (63.6%) and more than 83% between 12-40 years of age.19 Allergic rhinitis has showed no sex or age predilection.

The prevalence of nasobronchial allergy is higher in male but the susceptibility towards different allergens in male in females was different. In our study patients from rural area have shown dominance over patients from urban area for being nasobronchial allergic. This difference in considered to be due to more catering from rural area to the medical college setting also this is further justified considering the long distances from which patients arrived at out patient department. In this study, temporal associations between asthma and allergic rhinitis have been found significantly (70%). Pawankar (2006) studied that up to 80% of the bronchial asthma patients have co-existing allergic rhinitis, while up to 40% of allergic rhinitis will have asthma.20 In this study maximum number of patients (75%) had the age of onset of disease in the first two decades of life. This is in concordance with the reported onset of atopy at a younger age. Majority of patients had duration of disease less than 10 years.

![Graph](image)

**Figure 6:** (a) Allergen sensitivity pattern (b) Most common type of antigen sensitivity pattern. Probability values <5% were considered statistically significant (N= 56).

Family history of atopy was present in more than fifty percent patients. Among those patients 75% had both allergic rhinitis and bronchial asthma. Chhabra et al (1999) also reported a strong association between a family history of atopic disorders and the prevalence of current asthma as well as total wheezing.21 Several studies of twins have demonstrated that concordance rates for asthma, eczema and hay fever are all substantially higher for monozygotic twins than dizygotic twins, suggesting strong genetic contribution. In population based studies of twins, the estimated effect of genetic factors is about 35-70% depending on the population and the design of the study.22-23

In this study, the most common offending allergens were insects followed by pollens, fungi, dusts, non-juicy foods, juicy foods and danders. The common insect antigen were cockroach male (31.4%) followed by cockroach female (28.8%). Common pollen allergens were ambra (11.25%). Among fungi *Aspergillus flavus* (16.6%) was commonest. In dusts, wheat dust and house dust each with (30%) are commonest. Among non-juicy foods rice and mustard (each 20.8%) has highest sensitivity while milk (66.6%) is commonest in
juicy foods. Among danders buffalo dander (37.5%) was the commonest. PJ Acharya found prevalence of skin reactivity with pollen (10.4%), fungi (7.4%), insects (29.4%) and dusts (24.5%) in this order among patients of nasobronchial allergy. Duc J et al (1986) determined frequency of hyper sensitivity to allergens in patients of rhinitis and bronchial asthma and found total house dust (50%) followed by grass pollen (46%), house dust mite (38%) and animal dander (33%) as common allergens. Rajendra Prasad et al (2001) found that insects (17.5%), dusts (15.4%), danders (13.8%), pollens (10.9%) and fungi (10.3%) were reactive in patients of nasobronchial allergy. P J Acharya found prevalence of skin reactivity with pollen (10.4%), fungi (7.4%), insects (29.4%) and dusts (24.5%) in this order among patients of nasobronchial allergy.

CONCLUSIONS

This study unravels the fact that people of age range 12-40 are the most susceptible for being nasobronchial allergic. Males have been shown dominance over females in prevalence of nasobronchial allergy. The 70% temporal association between asthma and allergic rhinitis was highly evident and one can easily be prone for each other. Insects allergens are very dangerous allergens in the patients as they cause high prevalence of nasobronchial allergy. Several other factors like age of onset, place of residence and family history have shown significant role in the prevalence of disease. This study will improve our understanding regarding the nature and prevalence of asthma and will be useful in the nasobronchial allergy diagnosis, understanding the nature of disease and its management and therapy. Finally, the factors associated with asthma and their effects in exacerbation need to be addressed thoroughly using a bigger sample size.

ACKNOWLEDGMENTS

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ORIGINAL ARTICLE

EFFICACY OF FINE NEEDLE ASPIRATION CYTOLOGY, ZIEHL-NEELSEN STAIN AND CULTURE (BACTEC) IN DIAGNOSIS OF TUBERCULOSIS LYMPHADENITIS

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ABSTRACT

Background: Tuberculous Lymphadenitis is the commonest form of extra pulmonary tuberculosis and tissue diagnosis is the main stay in the diagnosis of extra-pulmonary tuberculosis. This study was conducted to compare cytology, ZN staining and culture findings of clinically suspected tuberculosis lymphadenitis cases.

Methods: In the Present Study clinically suspected cases of Lymphadenopathy were undergone Fine Needle Aspiration. The aspirate were examined cytologically followed by ZN staining and BACTEC culture.

Results: The cytology suggestive of tuberculous lymphadenitis was found in 46 (76.6%) cases out of total 61 cases. Ziehl Neelsen stain demonstrated acid fast bacilli (AFB) in 14 (22.9%) cases and BACTEC isolated mycobacteria in 36 (59%) cases. Out of 61 cases as many as 15 (24.5%) cases yielded pus and in 13 of those cases cytology of tuberculous lymphadenitis was found. Cases from blood mixed aspirate demonstrated AFB positivity in 2 (5.88%) and mycobacteria were isolated in 16 (48.48%) cases and cytology also suggest least numbers of tuberculous lymphadenitis i.e. 21 (63.63%) cases.

Seven out of Nine cases of necrosis with or without neutrophils show presence of AFB. Samples having epithelioid cell granuloma with or without necrosis show presence of AFB in 5 (16.66%) and 2 (25%) cases and mycobacteria was isolated in 22 (73.73%) and 5 (62.5%) cases respectively.

Conclusion: In spite of the diagnostic pitfalls, the results obtained on analytical examination of the study carried out reinforce the opinion that Fine Needle Aspiration Cytology serves as a potent and accurate diagnostic tool for patients presenting with Lymphadenopathy due to tuberculosis.

Key words: Fine Needle Aspiration Cytology, Ziehl-Neelsen Staining, BACTEC

INTRODUCTION

Tuberculosis is a very ancient disease and evidence of its existence was seen in Egyptian mummies and statuaries in the form of poit’s disease of spine.¹ Tuberculosis waxed and waned in Europe during 18th and 19th centuries. During industrial revolution it claimed millions of lives in Europe and so was called as ‘The White Plague’ ². Robert Koch wrote that tuberculosis killed one third of Europeans of middle age. According to WHO tuberculosis still kills three million people every year in underdeveloped countries.² Tuberculosis still ravage in India even 100 years after the discovery of tubere bacillus, with an annual incidence of 100/100,000 and a prevalence four times the incidence³. AIDS is one of the important causes for change in etiological profile as well as increasing cases of extra pulmonary tuberculosis.⁴

Tuberculous Lymphadenopathy is the commonest form of extra pulmonary tuberculosis in region where mycobacterial infection is highly prevalent and presents commonly in lymphnodes draining the head and neck. The conventional methods of diagnosis for tuberculosis like sputum examination of acid-fast bacilli and chest X-ray are fairly accurate in detecting the active pulmonary component of the disease. However they are not useful for detecting extra-pulmonary components. By and large, tissue diagnosis is the main stay in the management of cases of extra-pulmonary tuberculosis.

Fine needle aspiration cytology (FNAC) is now established as an alternative, easy and rapid method of tissue diagnosis. It also has a high degree of patient acceptance as FNAC avoids physical and psychological trauma occasionally encountered after biopsy, anaesthesia, surgical operation and hospitalization. It is
very safe, trivial, cost-effective and at the time conclusive.

Mycobacteria are slow growing and hence culture is not done routinely in all laboratories. Few studies have tried to correlate the cytological finding with microbiological results for the presence of acid-fast bacilli in smears and culture for mycobacteria. The current study was conducted with following objectives.

1. To determine efficacy of FNAC in detecting tuberculous lymphadenitis
2. To evaluate the role of ZN staining and culture of aspirated material in detecting tuberculous lymphadenitis
3. To correlate the gross appearance of aspirate and microscopic feature of lymph node aspirate with AFB positivity and culture.

MATERIAL AND METHODS

The present study consists of clinically suspected cases of tuberculous lymphadenitis attending the Outpatient department of SSG hospital, Baroda from August 2003 to October 2004. The patients had been initially seen in the outpatient department of SSG hospital Baroda and were subsequently referred to FNA clinic for evaluation of their Lymphadenopathy. Each patient was subjected to complete clinical examination, routine hemogram with ESR of blood and to FNA. Varying sites of Lymphadenopathy i.e. cervical, axillary, inguinal were aspirated using 22 gauge needle attached to 10ml disposable syringe under strict aseptic precaution. During each pass the needle was moved throughout the lesion several times while aspirating. Care was taken not to aspirate through dependent area of swelling to prevent sinus formation.

In each case the part of the aspirate was used for preparing 3 smears at least, one for Hematoxylin & Eosin (H & E) stain which was fixed immediately in cytofix containing equal volume of absolute alcohol and ether, one for giemsa stain and one for ZN stain. Remaining material was inoculated in BACTEC (Middlebrook 7H12B) vial taking care to have at least 0.5 ml volume of test material in the vial.

A record was made of all relevant findings including the gross appearance of the aspirate. The gross appearance of aspirate was described as caseous for cheese like or yellow-white aspirate, pusy for greenish-yellow or yellow aspirate and blood mixed when material was haemorrhagic.

Cytology smears and ZN stain smears were examined in cytology sections of Department of Pathology, Medical College, Baroda. BACTEC vial containing aspirated material was sent to Amin’s laboratory without delay where first medium was supplemented with mixture of anti-microbials called PANTA, which contains polymyxin –B, amphotericin-B, nalidixic acid, trimethoprim and azlocillin to reduce the contamination. Then initial reading Growth Index (GI) was taken and then incubated at 37°C. Readings of GI were taken on day 1, 3, 5, 7,9,12 for first 15 days and then weekly upto 45 days.

The diagnosis of tuberculous lymphadenitis was made when the following criteria’s were met: the presence of epithelioid cell granuloma with or without necrosis and /or ZN smear positivity for Acid-Fast Bacilli (AFB) and/or positive culture for mycobacteria.

Data was recorded and statistically analyzed using chi square. Specificity, sensitivity, Positive Predictive Value (PPV), Negative Predictive Value (NPV) and likelihood ratio of smear and cytology were compared.

RESULT

The Present Study Consist Of 61 Cases Of Lymphadenopathy who attended the outpatient department of SSG hospital Baroda from August 2003 to October 2004, the FNA smears of all 61 patients were cytologically followed by ZN staining and BACTEC culture.

Culture reporting the minimum incubation time for isolation of mycobacteria through BACTEC culture was 14 days and maximum was 52 days (mean 24 days)

Table 1: Cytological findings in 61 cases of Lymphadenopathy

<table>
<thead>
<tr>
<th>Total cases</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cytology suggestive of tuberculous lymphadenitis</td>
<td>46*</td>
</tr>
<tr>
<td>Cytology suggestive of nonspecific lymphadenitis</td>
<td>14+</td>
</tr>
<tr>
<td>Cytology of metastatic squamous cell carcinomas</td>
<td>01</td>
</tr>
</tbody>
</table>

*– in 1 case possibility of tuberculous lymphadenitis was given.
+– in 2 cases repeat after antibiotic therapy was advised to rule out tuberculosis

The cytology suggestive of tuberculous lymphadenitis was given in 46(76.6%) cases out of 61 cases, which also included one case where the possibility of tuberculous lymphadenitis was given. In 14 cases a cytology report suggestive of non specific or reactive of lymphadenitis was given which included two cases where repeat FNAC after antibiotic therapy to rule out tuberculosis was advised. One case showed metastatic squamous cell carcinoma on cytology. (Table 1)

Table 2: Correlation between cytology, ZN staining and culture findings

<table>
<thead>
<tr>
<th>Total cases</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cytology suggestive of tuberculous lymphadenitis</td>
<td>46(75.4)</td>
</tr>
<tr>
<td>ZN staining demonstrating AFB</td>
<td>14(22.9)</td>
</tr>
<tr>
<td>Culture isolating mycobacteria</td>
<td>36(59)</td>
</tr>
</tbody>
</table>

Figure in bracket shows percentage
Ziehl Neelsen stain demonstrated acid fast bacilli (AFB) in 14 (22.9%) cases and BACTEC isolated mycobacteria in 36 (59%) cases (Table 2).

Table 3: Correlation between gross, cytology, ZN staining and culture features of aspirated material

<table>
<thead>
<tr>
<th>Gross appearance of aspirate</th>
<th>Cases (%)</th>
<th>Cytology s/o TBLN (%)</th>
<th>AFB +ve on ZN stain (%)</th>
<th>Culture isolated mycobacteria (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood mixed</td>
<td>34(55.70)</td>
<td>21(61.70)</td>
<td>2(5.88)</td>
<td>16(47.05)</td>
</tr>
<tr>
<td>Cheesy</td>
<td>12(19.60)</td>
<td>12(100)</td>
<td>4(33.33)</td>
<td>8(66.60)</td>
</tr>
<tr>
<td>Purulent</td>
<td>15(24.50)</td>
<td>13(86.60)</td>
<td>8(53.33)</td>
<td>12(80.00)</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>46(75.40)</td>
<td>14(22.95)</td>
<td>36(59.01)</td>
</tr>
</tbody>
</table>

Of 61 cases as many as 15 (24.5%) cases yielded pus and in 13 of those cases cytodiagnosis of tuberculous lymphadenitis was given. In two cases non specific lymphadenitis was given but in one of them ZN staining demonstrated AFB and culture isolated mycobacteria. Overall 8 (53.33%) cases from pus based aspirate demonstrated AFB on ZN staining and in 12 of these 15 cases mycobacteria were isolated on culture. This was followed by cheesy aspirate which demonstrated AFB in 4 (33.33%) cases and mycobacteria isolated in 8 (66.66%) cases. Cases from blood mixed aspirate demonstrated least number of AFB positivity i.e. 2 (5.88%) and mycobacteria were isolated in 16 (47.05%) cases and cytology also suggest least number of culture isolated mycobacteria i.e. 21 (63.63%) cases. (Table 3)

Of the 61 cases as many as 15 (24.5%) cases yield pus and in 13 of those cases cytodiagnosis of tuberculosis lymphadenitis was given.

Table 4: Correlation of morphology on smears, AFB positivity and culture positivity

<table>
<thead>
<tr>
<th>Morphology on cytology</th>
<th>Cases (%)</th>
<th>AFB positive (%)</th>
<th>Culture positive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelioid cell granuloma without necrosis</td>
<td>8 (17.02)</td>
<td>2 (25.00)</td>
<td>5 (62.50)</td>
</tr>
<tr>
<td>Epithelioid cell granuloma with necrosis</td>
<td>30(63.82)</td>
<td>5 (16.66)</td>
<td>22 (73.33)</td>
</tr>
<tr>
<td>Necrosis without granuloma</td>
<td>9(19.14)</td>
<td>7 (77.77)</td>
<td>9 (100.00)</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>14 (29.78)</td>
<td>36 (76.59)</td>
</tr>
</tbody>
</table>

Based on present study criteria 47 cases could be classified as tuberculous lymphadenitis. These cases are sub divided into three groups on the basis of presence of necrosis and epithelioid cell granuloma as shown in table - 5. 7 out of 9 cases showing necrosis with or without neutrophils show presence of AFB and in same all 9 cases mycobacteria could be isolated. The other two groups i.e. epithelioid cell granuloma with or without necrosis show presence of AFB in 5 (16.66%) and 2 (25%) cases and mycobacteria could be isolated in 22 (73.73%) and 5 (62.5%) cases respectively. In all cases culture positivity was significantly higher than smear positivity (with p value 0.00005%).

DISCUSSION

The present study consists of 61 clinically suspected cases of tuberculous lymphadenitis with a M:F ratio of 1.25:1 and in the age group of 5 to 55 years, who attended the outpatient department of SSG hospital, Baroda.

The patients were examined clinically and fine needle aspiration of Lymphadenopathy was carried out. The material obtained was used for cytopathological examination, ZN smears and BACTEC culture, also the gross appearance of aspirate was noticed as either purulent or cheesy or blood mixed. Diagnosis of tuberculous lymphadenitis was made when following criteria were met: epithelioid cell granuloma with or without necrosis and /or smear positivity of acid fast bacilli and /or culture isolating mycobacteria.

The results obtained were in the range that was observed by other authors, who carried out same procedure. When gross appearance of aspirate was correlates with AFB and culture positivity, maximum positivity was observed in cases with purulent aspirate for both. On cytomorphological correlation maximum positivity for AFB (77.77%) and culture (100%) was found in smears showing necrosis without epithelioid granuloma. The overall ZN staining positivity for AFB was 22.95% and in 59.01% cases mycobacteria were isolated by culture. In all the culture positivity was significantly higher than ZN smear positivity (p value = 0.00005%).

When culture was taken as the Gold Standard the diagnostic parameters for cytology were as follows: Sensitivity 97.2% Specificity 56% Accuracy 80.32%. Sensitivity of FNAC was higher and diagnostic accuracy was comparable with other studies.

The diagnostic difficulties encountered were parallel to those experienced by different authors working on similar projects, a case in point being false negative cytology diagnosis in case with purulent aspirate which...
calls for ZN staining in every case suspected of tuberculous in origin.

CONCLUSION

In spite of the diagnostic pitfalls, the results obtained on analytical examination of the study carried out reinforce the opinion that Fine Needle Aspiration Cytology serves as a potent and accurate diagnostic tool for patients presenting with Lymphadenopathy due to tuberculosis.

This approach carries numerous advantages, the principal ones being enhanced patient compliance obtainable samples, easily aspirated tissue and an inexpensive yet accurate outcome. Another essential and practical feature includes the staining of aspirated smears by Ziehl-Neelsen technique especially in purulent material for an improved diagnostic accuracy. These procedures facilitate a reduction in operative morbidity as well as the time span for a definitive diagnosis.

Finally, culture methods for the specific mycobacteria proved to be the mainstay in the diagnosis of tuberculosis.

In conclusion, FNAC serves as one of the most accurate frontline method for the diagnosis of tuberculous lymphadenitis. It is more than adequately supplemented by the mandatory lymphadenitis. It is more than adequately supplemented by the mandatory Ziehl-Neelsen technique carried out on smears as well as culture methods which can be relied upon in conjunction with the above procedures. However, newer diagnostic techniques would be more than welcome in improving the diagnostic yield of tuberculous lymphadenitis.

REFERENCES

A STUDY ON CERVICAL PAP SMEAR EXAMINATION IN PATIENT LIVING WITH HIV

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ABSTRACT

Background: Decline in morbidity & mortality due to cervical cancer in developed countries can be mainly attributed to early detection of precancerous & cancerous lesions due to extensive screening programmes of cervical Pap smear examination. HPV infection is a known etiological agent for cervical cancer. HIV infected women are at higher risk of contracting HPV infection due to immune compromised status.

Objective: Present study has been undertaken mainly to detect precancerous & cancerous lesions as well as inflammatory lesions in female patients living with HIV & to emphasize the fact that Pap smear examination should be established as a part of routine protocol for examination in these women.

Methods: The study was carried out on 407 HIV infected females attending Integrated Counseling & Testing Centre of government institute. As controls, 200 females (not falling under high risk category), attending the Obstetrics & Gynecology OPD with various gynecological complaints were taken & results were compared.

Results: Squamous cell abnormalities were found about four times high as compared to control group (P value <0.05). High incidences of squamous cell abnormalities were noted in patients with high parity (parity three or more).

Conclusion: Regular gynecological examination including Pap smear examinations is highly recommended for HIV infected females. Pap smear examination is a simple, cheap, safe & practical diagnostic tool for early detection of cervical cancer in high risk population.

Keywords: HIV, Pap smear, patient living with HIV (PLWH)

INTRODUCTION

Cervical cancer & infection with Human Immunodeficiency Virus (HIV) are both important public health problems in developing countries. The Human Papilloma Virus (HPV) is the known major etiologic agent for the development of cervical cancer. In immune competent subjects, HPV infections normally clear in 6-24 months in 70% of females. However the studies have shown that the women infected with HIV have a higher prevalence of HPV infection, are more likely to develop persistent HPV infection & are more frequently infected with multiple HPV types & thus are at greater risk (ten times increased risk) of developing cervical intraepithelial neoplasms. Additionally, highly active anti-retroviral therapy does not seem to impact this increased rate or persistent HPV infections in this population. Dysplasia has been reported in 15 to 40% of HIV infected women & these rates are 10-11 times higher than those observed among HIV negative women. Both the Centre for Disease Control & Prevention and the Agency for Healthcare Policy & Research recommend that HIV infected women should have a gynecological evaluation including a Pap smear & pelvic examination as a part of their initial evaluation.

Cases & deaths due to cervical cancer have declined markedly in most industrialized countries mainly due to extensive screening programmes. The reason that cytological screening is so effective in preventing cervical cancer is that majority of cancer cases are preceded by a long standing latent period. Pap smear is the standard screening tool to detect the presence of abnormal cells that could become cancerous. Apart from detecting early cervical cancers, Pap smear also initiate the immunological clearance of HPV, therefore reducing the risk of cervical carcinoma.

Present study has been undertaken mainly to detect precancerous & cancerous lesions as well as inflammatory lesions in female patients living with HIV & to emphasize the fact that Pap smear examination
should be established as a part of routine protocol for examination in these women.

MATERIAL & METHODS

In present study, all cases (407 cases) were HIV infected females attending ICTC (Integrated Counseling & Testing Centre) at a tertiary level hospital ranging in age from 18 to 71 years with a mean of 35 years & SD of 9 years. As controls, 200 females attending the Obstetrics & Gynecology OPD not falling under high risk category were taken. They were ranging in age from 20 to 71 years with a mean of 38.1 years & SD of 10.5 years. The study has been conducted after getting ethical committee clearance from the same institute.

Their detailed clinical history particularly related with various risk factors, obstetric & menstrual history along with clinical examination findings including per abdominal examination, per speculum examination, per vaginal examination & relevant investigations were recorded. Pap smear of these females (case & control subjects) were collected, fixed, examined & reported as per standard Bethesda system 2001.

Statistical analysis: For categorical variables, proportions were compared using Fisher's exact test & chi-square test. A two-tailed P value of <0.05 was considered significant. The odds & risk based analysis were also done. The statistical analysis was done with the help of EpiInfo™ version 7.08.3 software, CDC.

RESULTS

Out of 407 study cases 15 smears & out of 200 controls five smears were reported as unsatisfactory for evaluation (USFE) & were excluded from the study. Cervical Pap smear findings in case vs control group are shown in Table 1.

Overall incidence of maximum HIV infected cases were in age group 26-35 years (52.56 %). In control group, maximum subjects were in the age group 36-45 year (36.41 %) followed by 26-35 year (35.38 %), 44.56 % of cases had complaints of whitish discharge & 15.85% had abdominal pain. In control subjects 31.80 % had whitish discharge & 22.06% had abdominal pain. 32.65% case subjects were multiparous with parity three or more. On per speculum examination of case subjects, 58.41 % did not show any abnormality in cervix, 13.52 % had cervical erosion, 13.78 % had discharge per vaginum, 3.32 % had hypertrophied cervix & 2.55% had uterine descent. In control subjects, 34.35 % subjects did not show any abnormal finding in cervix, 12.83 % were with cervical erosion, hypertrophied cervix in 7.69 %, discharge per vaginum in 14.88 % & uterine descent in 10.76 %.

In cases the most common infection was Bacterial Vaginosis (29.39 %) followed by Candida infection (1.78 %). There were 2.01 % females who had infection with more than one organism, 0.5 % had Trichomonas vaginalis infection & 0.24 % had Herpes simplex infection. In control subjects the most common infection was Bacterial Vaginosis (28.72 %) followed by Candida infection (1.54 %). There were 1.03 % females who had infection with more than one organism, 1.03 % had Trichomonas vaginalis infection.

The scenario of CD4 count in cases of present study along with Pap smear findings & statistical comparison of case & control subjects are shown in Table 1. The two tailed P value of present study was <0.05 along with odds ratio of 3.36 & risk ratio of 3.38 for HIV infected women as compare to control subjects. There were about 28 cases of epithelial abnormalities in which women were multiparous with parity two or more, five cases with parity one & only a single case was of nulliparous woman.

Table 1: Cervical Pap smear findings with clinical history

<table>
<thead>
<tr>
<th>Size (n)</th>
<th>Control</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>407</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>38.1 ± 10.5</td>
<td>35.0 ± 9.0</td>
</tr>
<tr>
<td>Use of Contraception</td>
<td>-</td>
<td>376 (92)</td>
</tr>
<tr>
<td>Parity</td>
<td>-</td>
<td>2.0 ± 1.2</td>
</tr>
<tr>
<td>CD 4 cell count</td>
<td>&gt;500</td>
<td>53 (13)</td>
</tr>
<tr>
<td>Gynecological complaints</td>
<td>200 (100)</td>
<td>107 (26)</td>
</tr>
<tr>
<td>Cervical smear cytology</td>
<td>124 (62)</td>
<td>202 (49.6)</td>
</tr>
<tr>
<td>NILM with inflammatory changes</td>
<td>63 (31.5)</td>
<td>132 (32.4)</td>
</tr>
<tr>
<td>NILM with atrophic changes</td>
<td>03 (1.5)</td>
<td>24 (5.89)</td>
</tr>
<tr>
<td>ASC-US</td>
<td>04 (2)</td>
<td>13 (3.19)</td>
</tr>
<tr>
<td>LSIL</td>
<td>00 (0)</td>
<td>11 (2.7)</td>
</tr>
<tr>
<td>ASC-H</td>
<td>00 (0)</td>
<td>03 (0.73)</td>
</tr>
<tr>
<td>HSIL</td>
<td>01 (0.5)</td>
<td>06 (1.47)</td>
</tr>
<tr>
<td>AGUS</td>
<td>00 (0)</td>
<td>01 (0.25)</td>
</tr>
<tr>
<td>Squamous cell carcinoma</td>
<td>00 (0)</td>
<td>00 (0)</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>00 (0)</td>
<td>00 (0)</td>
</tr>
<tr>
<td>Small cell carcinoma</td>
<td>00 (0)</td>
<td>00 (0)</td>
</tr>
<tr>
<td>Histocytology correlation</td>
<td>-</td>
<td>5</td>
</tr>
</tbody>
</table>

| Odd Ratio | 3.61 |
| Risk Ratio | 3.38 |
| P value | <0.05 |

Values in brackets (%) reflects %

Out of 33 cases with epithelial abnormalities reported by cytology, follow up for histopathological correlation with cervical biopsy was available only in five cases. A case of ASCUS was reported in histopathology as “Chronic cervicitis”; ASC-H as “moderate to severe dysplasia & LSIL” as “In situ squamous cell carcinoma”. Out of two cases of HSIL, one case was reported as “Moderate to severe dysplasia” & the other was reported as “In situ squamous cell carcinoma” on histopathology.
RESULTS

Results were compared with various studies carried out on HIV infected females as well as on general population. In both cases & controls, the most common complaint was whitish discharge per vaginum (46.55 % in cases &33.86 % in controls).In studies on general population the incidence of discharge per vaginum was 42.5 % in Sherwani et al, 27.43 % in Dhaubhadel et al & 28.5 % in Sharma et al. [3-5] The high incidence in case subjects is due to more susceptibility of HIV infected females to infection due to lowered immunity. The second most common complaint was abdominal pain. The other less common complaints encountered during present study were muco-purulant discharge, irregular menstruation, burning micturition, bleeding per vaginum, something coming out per vaginum etc. The findings of present study were quite comparable to other studies.

Table 2: Cervical Pap smear findings in HIV infected females in various studies

<table>
<thead>
<tr>
<th></th>
<th>Amphan et al9</th>
<th>Leibenson et al10</th>
<th>Jennifer et al11</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4 less than 200/µL (in %)</td>
<td>28.87</td>
<td>39.75</td>
<td>92.67</td>
<td>10.07</td>
</tr>
<tr>
<td>No Epithelial cell abnormalities (in %)</td>
<td>84.6</td>
<td>79.76</td>
<td>34.5</td>
<td>87.89</td>
</tr>
<tr>
<td>Epithelial cell abnormalities (in %)</td>
<td>15.4</td>
<td>20.24</td>
<td>66.5</td>
<td>8.34</td>
</tr>
<tr>
<td>ASCUS</td>
<td>2.8</td>
<td>0</td>
<td>15.3</td>
<td>3.19</td>
</tr>
<tr>
<td>LSIL</td>
<td>8.5</td>
<td>19.05</td>
<td>40</td>
<td>2.7</td>
</tr>
<tr>
<td>HSIL</td>
<td>3.5</td>
<td>1.19</td>
<td>10.2</td>
<td>1.47</td>
</tr>
<tr>
<td>ASC-H</td>
<td>0.6</td>
<td>0</td>
<td>1</td>
<td>0.73</td>
</tr>
<tr>
<td>AGUS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Incidence of infective lesion in general population was 6.05 % in Mulay et al, 9.86 % in Ranabhat et al & 22.02 % in Jain et al.8-9 It was 33.92 % in case subjects of present study as compared to 32.32% of control subjects in the present study. There were 2.01 % cases with multiple infections which were almost doubled as compared to 1.03 % in controls subjects. In other studies in general population incidence of multiple infections was 0.43 % in Mulay et al & 0.47 % in Ranabhat et al.8-7 The reason for this difference can be explain by the fact that in present study cases were HIV infected females & had lowered immunity & so more susceptible to multiple infections.

Among various studies on HIV infected women like Amphan et al there were 28.87 % cases with CD4 count less than 200/µL & median CD4 count was 324 /µL.9 In Leibenson et al there were 39.75 % cases with CD4 count less than 200/µL & median CD4 count was 307 /µL.10 In Jennifer et al there were 92.67 % cases with CD4 count less than 200/µL & median CD4 count was 125 /µL.11 In HIV infected females of present study there were 10.46 % cases with CD4 count less than 200/µL & median CD4 count was 328 /µL. The median CD4 count was quite comparable in all of them except in Jennifer et al in which it was very low.

The incidence of epithelial abnormalities in various studies on HIV infected females were 15.4 % in Amphan et al, 20.24 % in Leibenson et al & 66.3 % in Jennifer et al.9-11 In case subjects of the present study incidence of epithelial cell abnormalities was 8.68 % that was low compared to other studies on HIV infected women. Furthermore the incidence of various epithelial abnormalities in case subjects of present study are shown in details & are compared with other studies in table 2. From the table 2, it appears that incidence of epithelial abnormalities increases with the more number of cases showing CD4 count less than 200/µL & probably this may be the reason for comparative low incidence of epithelial abnormalities in present study as the number of cases with CD4 count less than 200/ µL was only 10.46 % in present study.

Null hypothesis can be rejected on the basis of statistical analysis of present study. P value in present study was< 0.05. It signifies that the difference is statistically significant & signifies that HIV infected women have more risk of having cervical epithelial abnormalities as compared to general population.

In various studies on general population, number of females with parity-3 or more were 50.85 % in Dhaubhadel et al, 47.04 % in Aggarwal et al & 32.65 % in case subjects of present study. There were 32.57 % females with parity-2 in Dhaubhadel et al, 28.18 % in Aggarwal et al & 26.54 % in case subjects of present study. There were 14.87 % females with parity-1 in Dhaubhadel et al, 10.59 % in Aggarwal et al & 9.43 % in case subjects of present study.4, 12 It is very well seen that in all the above studies maximum number of females had parity-3 or more.

CONCLUSION

The incidence of epithelial abnormalities in case subjects was quite high (four to eight times more) as compared to control subject of present study & other studies on general population. The high incidence of dysplasia in HIV infected women supports the recommendation of Centre for Disease Control for regular gynecological examination including Pap smears in all these women even if they do not have any
gynecological symptoms. There is a need to have a regular follow up so that appropriate therapeutic measures can be taken. Health awareness programmes particularly by media & government with their implementation in the form of screening camps would be of great help to these high risk HIV infected women. High incidences of squamous cell abnormalities were noted in patients who had high parity (Parity-3 or more) suggesting that squamous cell abnormalities are directly related to multiparity.

REFERENCES


INDICATIONS AND COMPlications OF CENTRAL VENOUS CATHETERIZATION IN CRITICALLY ILL CHILDREN IN INTENSIVE CARE UNIT

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ABSTRACT

Background: Nothing can be more difficult, time consuming and frustrating than obtaining vascular access in critically ill pediatric patient1. Central venous catheters are widely used in the care of critically ill patients.

Methodology: This paper reviews our experience with central lines in 28 critically ill patients including neonates and non-neonates, in a study period of October 2008 to October 2009. Of the total 28 patients, central venous catheterizations was more in those who were more than a month age and of female sex.

Results: The route of insertion was femoral in approximately 89% of our patients and insertion was successful in 24 patients. The most common indication we observed for catheter use was, venous access in shock (37.1%) in neonates and for monitoring the central venous pressure (32%) in non neonate patients of ARDS with pulmonary edema and Shock. The central line was removed in majority of patients (60%) within 24-48hrs of insertion and was kept for maximum of six days in just one patient. Organism most frequently isolated was Acinetobacter. Recommendations made include, use strict aseptic measures by restricted number of skilled operators while inserting and during maintaining central line, routine confirmatory x-ray or fluoroscopy to check the position of central line before catheter use, if possible, use for central pressure monitoring recommended.

Conclusion: We concluded that central venous catheterization is a safe and effective measure so we recommend timely and judicious use of percutaneous central venous catheter in paediatric critically ill patients of PICU and NICU.

Keywords: Central Venous Catheterizations, Indications, Complications, PICU and NICU

INTRODUCTION

Nothing can be more difficult, time consuming and frustrating than obtaining vascular access in a critically ill pediatric patient. This was best described by Orlowski in 1984, who stated, ‘My kingdom for an intravenous line’1. This article reviews the various indications, sites, techniques and complications that may occur during acute intravascular access by CVC in emergency situations or in intensive care settings. Following the introduction and widespread use of central venous catheters (CVCs) in adult patients, these devices are now frequently used also in the pediatric population. They have become an indispensable route for venous access, especially in pediatric and neonatal intensive care units. Nowadays, millions of CVCs are used worldwide ,so central venous line insertion is one of most frequently performed procedure in critically ill neonates and non neonates for poor venous access
percutaneous central venous catheterization at a tertiary referral center.

OBJECTIVES

The study was conducted to study indications of central venous line insertion and complication associated with central line with special reference to catheter related bloodstream infection.

MATERIAL AND METHODS

It was a Prospective study conducted in Neonatal Intensive Care Unit (NICU) and Pediatric Intensive Care Unit (PICU) of SSG Hospital Vadodara, a tertiary care level hospital and teaching institute. The study was conducted during October 2008 to October 2009.

A total of 28 children required central line insertion during study period. All patient below the age of 12 year having requirement of insertion of central line were included in the study. Exclusion criteria were patients with bleeding disorder, on anticoagulation therapy with distorted anatomy, burns at insertion site and severe dermatitis at insertion site. All lines were inserted by a single person (resident in the Department of Pediatric) using the Seldinger technique by a uniform protocol initially under supervision and later independently by the bedside. Each catheterization was followed by an X-ray to confirm the position of the tip of the catheter. Each skin puncture was defined as an attempt. Success was defined as the ability to cannulate the vein. Data collected included age, weight, sex, hemodynamic status, indication for placement, site of catheterization, number of attempts and immediate complications. Then patients were followed for immediate complications like catheter malposition, arterial puncture, bleeding, unable to insert, catheter displacement and late complications like infectious, local, vascular and mechanical.

Data was recorded using a predesigned semi structured proforma and entered into Microsoft Excel worksheet. Appropriate tests were applied for analysis.

RESULT AND DISCUSSION

Sir Sayajirao Gaekwad Hospital a tertiary level referral teaching hospital, Vadodara, has three main intensive care units under Department of Pediatrics - Intramural NICU, Extramural NICU and PICU. As a referral hospital, it receives admissions not only from Gujarat but also from various neighboring states, accounting for sizeable neonatal and pediatric admissions. The prospective study was conducted from October 2008 to October 2009 at Intramural (for in born babies), Extramural (for out born babies) Neonatal Intensive Care Unit (NICU) and Pediatric Intensive Care Unit (PICU) of Sir Sayajirao Gaekwad (SSG) Hospital.

The observation of age of patients is comparable with the Signa vitae study. Male: female ratio is 0.64. The difference observed probably is due to gender bias seen in form of late referral of female child by parents to hospital, bringing them in critical stage, requiring central line insertion.

Table 1: The profile of the patients compared with other studies

<table>
<thead>
<tr>
<th></th>
<th>Current study</th>
<th>CMC Ludhiana</th>
<th>Signa vitae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neonates (&lt; 28 days)</td>
<td>39.2</td>
<td>63</td>
<td>42.9</td>
</tr>
<tr>
<td>Non neonate (1 month – 12 yrs)</td>
<td>60.7</td>
<td>37</td>
<td>57.1</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>39.2</td>
<td>83.5</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>60.7</td>
<td>16.5</td>
<td></td>
</tr>
</tbody>
</table>

All figures are in percentage

Out of the 28 critical patients following are the various indications for inserting central line:

The most common indication for which central line was inserted is poor venous access which is comparable with the study conducted Dr Geetika Dheer and colleagues of CMC Ludiana. Other common indications were for CVP monitoring, volume resuscitation, CPR resuscitation and for medication.

Table 2: Comparison of Indications of CVC

<table>
<thead>
<tr>
<th></th>
<th>Current Study</th>
<th>Geetika3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVP Monitoring</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Poor Venous Access</td>
<td>13</td>
<td>70</td>
</tr>
<tr>
<td>Volume Resuscitation</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Prolonged Venous Access required</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>Total Parenteral Nutrition</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Cardio-pulmonary Resuscitation</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Medications</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Most of the CVP lines were inserted in two attempts followed by single attempts. Three attempts were usually required in those who were in shock. In most of the patients central line was kept for 24 hours.

Table 3: Comparison of success rate of CVP line insertion in various studies

<table>
<thead>
<tr>
<th>Name of study</th>
<th>Success Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our study</td>
<td>92.3</td>
</tr>
<tr>
<td>B karapinar and colleague4</td>
<td>92.4</td>
</tr>
<tr>
<td>Geetika Dheer and colleague3</td>
<td>92.9</td>
</tr>
</tbody>
</table>

The most common route of insertion selected was femoral route (89%) which is comparable with the study of Bulent karapinar5 and colleague who had used femoral vein in 45% patients. In our study femoral route is followed by internal jugular (7.1%) and Axillary (3.5%). Successful catheter insertion was possible in
92.3% which is comparable with the study Dr Bulent karapinar\(^5\) the success rate were 92.4% and we were not able to insert catheter in 7.6% patients.

In our study complications were observed in 28% patients whereas no complications were observed in 72% of patients, thereby making it safe in all critically ill patients.

Table 4: Complications CVC observed in various studies

<table>
<thead>
<tr>
<th>Complication</th>
<th>Our study</th>
<th>Study of karapinar &amp; colleagues(^5)</th>
<th>Signa Vitae Study(^4)</th>
<th>Study of Chua MC, Chan IL(^6)</th>
<th>Study of Rao &amp; colleagues(^7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No complications</td>
<td>72</td>
<td>-</td>
<td>44</td>
<td>42</td>
<td>-</td>
</tr>
<tr>
<td>Malposition</td>
<td>7</td>
<td>7.3</td>
<td>19</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bleeding</td>
<td>3</td>
<td>3.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arterial puncture</td>
<td>0</td>
<td>8.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Catheter related infection</td>
<td>15</td>
<td>-</td>
<td>14</td>
<td>32</td>
<td>15.4</td>
</tr>
<tr>
<td>Extravasation</td>
<td>0</td>
<td>3.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spontaneous removal</td>
<td>3</td>
<td>3.8</td>
<td>13</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

All figures are in percentage

Table 5: Catheter related infections in the current study

<table>
<thead>
<tr>
<th>Organism</th>
<th>Positive blood culture (%)</th>
<th>Positive CVC tip culture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acinetobacter</td>
<td>8 (30.7)</td>
<td>14 (19.2)</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>5 (19.2)</td>
<td>3 (11.5)</td>
</tr>
<tr>
<td>E.coli</td>
<td>2 (7.6)</td>
<td>2 (7.6)</td>
</tr>
<tr>
<td>Klebsiella</td>
<td>2 (7.6)</td>
<td>1 (3.8)</td>
</tr>
<tr>
<td>Enterococcus</td>
<td>2 (7.6)</td>
<td>1 (3.8)</td>
</tr>
<tr>
<td>CONS</td>
<td>1 (3.8)</td>
<td></td>
</tr>
<tr>
<td>Contaminated</td>
<td>3 (11.5)</td>
<td>14 (33.8)</td>
</tr>
<tr>
<td>No organisms</td>
<td>3 (11.5)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Catheter related-bloodstream infections (CRBI) of inserted CVCs in a Signa vitae study\(^4\)

<table>
<thead>
<tr>
<th>Organism</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>1</td>
</tr>
<tr>
<td>Coagulase-negative Staphylococcus</td>
<td>3</td>
</tr>
<tr>
<td>Candida albicans</td>
<td>1</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>2</td>
</tr>
<tr>
<td>Methicillin-sensitive Staphylococcus</td>
<td>1</td>
</tr>
<tr>
<td>epidermidis</td>
<td></td>
</tr>
<tr>
<td>Methicillin-resistant Staphylococcus</td>
<td>5</td>
</tr>
<tr>
<td>epidermidis</td>
<td></td>
</tr>
<tr>
<td>nonenteric Gram-negative rods</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
</tr>
</tbody>
</table>

In our study the organism most commonly isolated in both blood culture and CVC tip culture was Acinetobacter species, but the blood culture correlating with CVC Tip culture was seen in 4 patients. According to different microbiological flora in different hospitals, the organism and its antibiotic sensitivity might differ. Looking at the outcome, 60.7% of patients succumbed, was probably due to the critical condition in which they were brought. This can be supported by the fact that catheter related blood borne infection were only in 4 out of 26 patients in whom the central line was inserted.
CONCLUSION
Most common indication in neonate was poor venous access and in non-neonate was central venous pressure monitoring and poor venous access. The most common route of insertion selected was femoral route was selected due to less chances of mechanical complications, easy access, bleeding complications being easily controlled by local pressure. 28% had catheter related complications in which catheter related blood borne infection was most common and Acinetobacter was most commonest organism isolated.

LIMITATIONS
We are not able to check the position of catheter using fluoroscopy method, due to non availability of the appliance so we did an x-ray to look at correct position of central line.

RECOMMENDATIONS
We recommended using strict aseptic measures by restricted number of skilled operators while inserting and during maintaining central line to prevent infection. In our study 72% of patients had no complications showing that central venous catheterization is a safe and effective measure so we recommend timely and judicious use of percutaneous central venous catheter in critically ill patients of PICU and NICU.

ABBREVIATIONS
CVC = central venous catheter; EJV = external jugular vein; IJV = internal jugular vein; IO = intraosseous

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ORIGINAL ARTICLE

KARYOTYPE STUDY IN PATIENTS WITH HEARING DISABILITY

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ABSTRACT

Background: Hearing disability is the most common sensory disorder in humans. About 50% cases of congenital hearing loss are due to genetic causes. About 70% of genetic hearing loss is nonsyndromic and 30% is syndromic. Syndromic hearing loss is found as about 500 syndromes associated with chromosomal abnormalities. Genetic study of hearing loss include numerical chromosomal aberrations like trisomy 13, 18, 21 and structural chromosomal aberrations like deletion, translocation or inversion involving chromosome numbers 1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 15, 18, 21 and many more.

Materials & Method: The aim of this study was to carry out a cytogenetic profile of 25 clinically diagnosed patients of hearing loss from school of deaf & dumb and from ENT clinics, Ahmedabad to find out the chromosomal abnormalities in these patients. Karyotypes of all the patients were prepared from peripheral venous blood & photographed at genetic laboratory at B.J.Medical College, Ahmedabad.

Observations: Clinical & karyotype analysis revealed that out of 25 patients, 8 cases had positive family history of hearing loss. Positive history of consanguineous marriage was found in 6 patients. It was observed that 17(68%) cases had isolated(non-syndromic) hearing loss and 8(32%) cases had syndromic deafness. Among 17(68%) non-syndromic patients 13(52%) cases showed normal chromosomal constitution and in 4(16%) cases metaphase was not found and out of 8(32%) patients with syndromic deafness, one female (4%) & two males (8%) had trisomy 21, one female (4%) had monosomy of X chromosome and 4(16%) cases showed normal chromosomal constitution.

Conclusion: Cytogenetic pattern of hearing loss is variable among different studies. So, cytogenetic analysis of suspected hearing loss is of value to objectively confirm the diagnosis and to provide a basis for genetic counselling.

Keywords: Nonsyndromic hearing loss, syndromic hearing loss, karyotype

INTRODUCTION

Hearing is a prerequisite for the development of normal speech & language. The period from birth to 5 years of life is critical for development of speech and language; therefore, there is need for early identification and assessment of hearing loss and early rehabilitation in infants and children.

The incidence of pre-lingual (before acquisition of speech) deafness is 1 in 1000 new born. About 50% cases of congenital hearing loss are due to genetic causes. About 70% of genetic hearing loss is nonsyndromic and 30% is syndromic.

Around 80 chromosomal locations harbour genes which are involved in non-syndromic hearing loss. Connexin 26, DFNB1 locus is the most common cause of autosomal recessive, nonsyndromic, congenital hereditary hearing loss.

Syndromic deafness is found in about 500 syndromes associated with chromosomal abnormalities; e.g. Down's syndrome, Turner's syndrome, Usher syndrome, Pendred syndrome, Waardenburg syndrome, Branchio-Oto-Renal syndrome, Treacher Collins syndrome etc.

In genetic study of deafness numerical chromosomal aberrations like trisomy 13, 18, 21 and structural chromosomal aberrations like deletion, translocation or inversion involving chromosome numbers 1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 15, 18, 21 and many more were found.

The object of this work was to study the clinical and karyotypic profile of patients with hearing loss from
the school of deaf and dumb and from ENT clinics, Ahmedabad to detect chromosomal abnormalities and genetic causes of deafness so that proper management and genetic counselling can be done.

MATERIALS AND METHOD

Being a retrospective study, data has been gathered from the available information on 25 deafs, who have been karyotyped. For each individual, a detailed personal & family history has been compiled. Blood samples of the patients were obtained in a heparinized container. Cultivation was done on the same day of the aspiration. After an incubation period of 69 hours at 37°C, the harvesting was done and finally the metaphase on the slides were obtained. Thereafter, those slides showing metaphase with good morphology were selected and kept under non-humid dry wooden boxes for aging process.

Approximately after 7 days of harvesting, banding procedure was done using freshly prepared EDTA-Trypsin solution and giemsa stain.

About 25 metaphase plates were observed in each case and a photograph was obtained from a good quality metaphase slide with the help of a black & white film loaded camera attached with a photomicroscope with an exposure time of 8-15 seconds. The chromosomal findings were described according to the International system of Human Cytogenetic Nomenclatures & finally, karyotype was prepared using conventional cut & paste technique. Ethical committee permission was taken.

RESULTS

In the present study out of 25 patients, 14 males & 11 females were studied for cytogenetic assessment. Out of them 8 cases had positive family history of hearing loss & positive history of consanguineous marriages were found in 6 patients. It was observed that 17(68%) cases had isolated (non-syndromic) hearing loss and 8(32%) cases with syndromic deafness.

| Table 1: Clinical Features of Hearing Loss |
|------------------|------------------|------------------|
| Deafness          | Non-syndromic    | Syndromic        |
| No. of Cases      | 17               | 8                |
| Male:Female       | 8:9              | 6:2              |
| Type of Deafness  | Sensoryneural    | Sensoryneural or mixed |
| Positive Family History | 8            |      |
| Consanguinity     | 6 cases          |                  |

The cytogenetic evaluation was done by karyotyping & was as follows.

| Table 2: Cytogenetic Observation in Non-syndromic Hearing Loss |
|------------------|------------------|------------------|
| No. of cases      | 17               |
| Normal            | 13               |
| Abnormal          |                  |
| Metaphase not found | 4             |

<table>
<thead>
<tr>
<th>Table 3: Cytogenetic Observation in Syndromic Hearing Loss</th>
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<tr>
<td>Syndrome</td>
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<td>Down's syndrome</td>
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<tr>
<td>Turner's syndrome</td>
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<tr>
<td>Cleft lip cleft palate</td>
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<tr>
<td>Congenital heart disease</td>
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<td>Branchio-oto-renal syndrome</td>
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Table 4: Cytogenetic Findings in Non-syndromic hearing loss in Different Studies

<table>
<thead>
<tr>
<th>Worker</th>
<th>Karyotype</th>
<th>FISH/CGH array/others</th>
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<tr>
<td>Dar H (1969)</td>
<td>Chromatid aberrations,</td>
<td></td>
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<tr>
<td>León PE et al (1981)</td>
<td>No chromosone abnormalities</td>
<td></td>
</tr>
<tr>
<td>A Veske et al, (1996)</td>
<td>No numerical or structural chromosomal aberration</td>
<td></td>
</tr>
<tr>
<td>Ramchander P. V et al (2004)</td>
<td>No numerical or structural chromosomal aberration</td>
<td></td>
</tr>
<tr>
<td>G.Padma et al (2010)</td>
<td>Disomy of a part of chromosome 13q</td>
<td></td>
</tr>
<tr>
<td>Present study</td>
<td>No numerical or structural chromosomal aberration</td>
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Cytogenetic investigation of the 25 deafs gave the following observations. Out of them 1 deaf female & 2 deaf males with Down's syndrome had trisomy 21, 1 deaf female with turner's syndrome had monosity X & 17 patients showed normal chromosomal constitution. In remaining 4 deafs metaphase was not found.

DISCUSSION

Consanguinity & Positive family history is the most important factor in the genetically determined deafness. Consanguinity could be an aetiological factor in deaf mutism (Rajendra kumar P.V). A large family with childhood deafness, contained several consanguineous marriages (A Veske et al). 70% of the deaf children were from parents of consanguineous marriages (Mazin Al Khabori and Michael A. Patton ). Out of 356 patients with hearing defect, consanguinity among the parents was found in 199(55%) patients (Ramchander P. V et al). Out of 140 deaf school pupils, Parental consanguinity was established for 121(86.4%) of deaf school pupils. (Sajjad M et al) Out of 535 children with hearing loss, 73 (13.7%) children had positive family history (Ishisawa H). Out of 45 children, 33(73%) had positive family history. (Fishman J.E.et al). Out of 356 patients with hearing defect, 129(36.2%) cases had positive family history (Ramchander P. V et al).

In the present study 25 patients (M: F::14:11) of hearing loss were studied. Out of them 8 cases have positive family history of deafness & positive history of consanguineous marriage found in 6 patients.

Chromosomal analysis in 129 children with congenital familial deafness, 4 children showed a high incidence of chromatid aberrations, 5 members of one family showed a conspicuously elongated secondary constriction of chromosome 9, one deaf child showed heterozygosity of chromosome 16 and another deaf child showed an unusually long Y chromosome (Dar H and Winter S T). Karyotype analysis of the family included 13 cases of heritable childhood deafness showed an apparently normal male chromosomal constitution of 46, XY in all cells examined with no numerical or structural chromosomal aberration. (Kabarity A. et al). A large family from Pakistan, Linkage analysis mapped the disease locus (DFNB8) on the distal long arm of chromosome 21 (A Veske et al).

In the study of clinical and cytologic examinations in 6 deaf patients, the karyotype showed chromosomal 15 satellite enlargement, 46, XY(X), PS++ (15). A proband as well as his brother and sister suffered from gradual hearing loss at the age of 12 to 13 and big satellite 15 existed in chromatinic karyotype. Based on the fact that they had similar clinical phenotype and karyotype, their delayed deaf-mutism may be related to the structural abnormality of chromosome 15 (Zhuang J et al). In a large kindred of hereditary deaf affected with a progressive sensorineural loss, no associated abnormalities have been detected in karyotypes. (Leon PE et al). Autosomal recessive nonsyndromic hearing impairment (ARNSHI) is the most common form with profound hereditary hearing impairment linked to DFNB1 locus (connexin26 gene) at 13q12. (Ramchander P. V et al). In a family of a male proband with prelingual, profound non-syndromic hearing impairment was arising as a result of maternal uniparental disomy of a part of chromosome 13q. (G. Padma et al).

In the present study out of 17 patients of nonsyndromic deafness 13(52%) cases showed normal chromosomal constitution and in 4(16%) cases metaphase was not found.

The disturbance of the auditory function is more severe in the complete trisomy 22 than in the partial trisomy (Katano T et al). Out of 201 adults with Down syndrome (trisomy 21), 23(11.9%) had moderate or severe impairment (V.P. Prasher). 24 individuals with turner syndrome had presence of unpaired genes on the X chromosome may account for hearing loss (Sculerati N.et al). 40 women with Turner’s syndrome, mid frequency SNHL was frequently diagnosed and could be correlated to the karyotype (Hultcrantz M et al.). Two chromosomal anomalies: a der(9)(9;13) derived from a paternal translocation and a der(6)(t;4;6) of unknown origin was found in the study of 27 deaf patients of CHARGE syndrome. (Sanlaville D). In the study of an eleven year old boy with unilateral high-graded and contralateral middle-graded hearing loss in addition to the known skeletal, orofacial disorders, hypothrophia and retardation & found that there is interstitial deletion of chromosome 1(q23-q31). (Schwemmle C et al).

In the present study 8 patients had syndromic deafness, out of them 3(12%) had deafness with Down’s syndrome, 1(4%) had deafness with turner’s syndrome, 1(4%) patient had deafness with congenital heart disease, 2(8%) had deafness with cleft lip & palate & 1(4%) had deafness with branchio-oto-renal syndrome.

CONCLUSION

For the present study 25 clinically diagnosed patients with hearing disability were selected from school of deaf & dumb & from ENT clinics, Ahmedabad. In all
cases, relevant history clinical findings & necessary investigations were noted. Blood samples were collected & cytogenetic/ karyotypic study was performed at genetic laboratory, B.J. Medical College, Ahmedabad.

Samples were cultured, harvested & finally slides were prepared. There after photographs were obtained from the slides showing good quality metaphase using photomicroscope & karyotypes were prepared using conventional cut & paste technique.

Cytogenetic evaluation was done. Out of 25 cases of hearing loss, chromosomal abnormalities was found in 4 cases, 17 cases showed normal chromosomal constitution and in 4 cases metaphase was not found. The chromosomal abnormality was trisomy 21 in 3 cases & monosomy of X chromosome in 1 case. In the present study nonsyndromic deafness was observed in 68% cases and syndromic deafness was in 32% cases. Positive family history was found in 32% cases & consanguineous marriages were found in 24% cases.

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PERIOPERATIVE ANAPHYLAXIS – OUR EXPERIENCE OF TWO CASES

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ABSTRACT

Anaphylactic reactions during intraoperative period are difficult to diagnose because of the anaesthetized state of the patient. During the perioperative period, any event relating to sudden-onset haemodynamic collapse or increased airway pressures during certain surgical procedures should raise suspicion of anaphylaxis. Though cited as rare in the western world, echinococcus infection is common in India, resulting in an increased ratio of cases, as and when compared to the western world. We report of two cases of perioperative anaphylaxis for hydatid disease surgery during 3 years period. Anaphylaxis is a medical emergency requiring prompt intervention. Although protocols vary in some of the details of management, adrenaline is the mainstay of treatment and early administration saves lives. However, even with prompt appropriate treatment, anaphylaxis can still kill, as our first case reports. From our experience, we suggest use of 100 % oxygen during the intraoperative period and maintaining anaesthesia with intravenous agents so that in case of an untoward catastrophic event, cerebral hypoxia may be delayed. Increased reports of successfully managed cases will help in future references and in formulating guidelines of management.

Keywords: perioperative anaphylaxis, hydatid cyst, adrenaline

INTRODUCTION

Echinococcus granularis /multilocularis is a common disease found in india. Highest prevalence of hydatid disease is found in Andhra Pradesh and tamil nadu. This explains the fact that we see more number of cases posted for surgery of hydatid disease. Echinococcosis produces cystic lesions primarily found in liver and secondarily in lungs and other tissues. The cyst has got high antigenicity and potential for anaphylaxis with IgE mediated immunity. Following the activation of cellular immunity, mediators released act on different target organs leading to clinical sequelae from urticaria to profound shock. The incidence of intraoperative anaphylaxis is found between 0.2 to 3.3 % . We review in this article our experience of two anaphylaxis cases during intraoperative period and management of such disastrous complication. More reporting of such cases will lead to a better understanding of the associated complications and help in future references. Also successfully managed cases can guide us in treating and formulating protocols for further management.

CASE HISTORY

CASE 1:

A 29 years old female patient from rural background was admitted in the hospital with the diagnosis of hydatid disease of spleen and posted for splenectomy. Patients preoperative history was nil except occasional pain in left flank. Her preoperative investigation revealed haemoglobin of 13.6 gram percent, blood urea 40 mg, serum creatinine of 1.2 mg, serum bilirubin of 0.6mg/dl, bleeding time of 2 minutes and clotting time of 5 minutes, normal chest x ray and normal electrocardiogram. Patient was accepted for anaesthesia as ASA grade 1 case.

On the operative day, she was conscious and coherent, with Nil by mouth for 12 hours, a pulse rate of 90 beats per minute, blood pressure of 124/74 mm Hg with non invasive BP monitor without any additional clinical findings. It was decided to proceed with general anaesthesia with endotracheal intubation. Patient was premedicated with injection midazolam of 1 miligram, injection fentanyl 100 microgram and injection glycopyrolate 0.2miligram. After preoxygenation for 3 minutes, patient was induced with injection thiopentone sodium 250 mg and injection succinyhleholine 100 mg. Endotracheal intubation was done with portex cuffed endotracheal tube of 7.5mm internal diameter. After intubation, patients pulse rate was 100 beats per minutes with blood pressure of
140/90 mm Hg with non invasive blood pressure monitor. Injection vecuronium bromide 4 mg was given and patient maintained with oxygen: nitrous ratio of 50:50 with intermittent isoflurane. Surgery started after 10 minutes.

Patient maintained haemodynamic stability for next 2 hours. During this period patient received 2 litres of lactated ringer solution, and her output was 150 ml clear. After ligation of all ligaments, patient developed sudden bradycardia and cardiac arrest without any prior changes in rate or rhythm either by monitor or auscultation. Immediately nitrous oxide was put off, patient ventilated with 100 % oxygen and cardiopulmonary resuscitation was started with external cardiac massage .Injection atropine 0.6 mg Intravenous and injection adrenaline 1 mg (1:1000) was given. After 3 cycles of Cardiopulmonary resuscitation with continuous external cardiac massage and 3 doses of injection adrenaline patient regained spontaneous rhythm around 6 minutes after the initial event. Though peripheral pulses were palpable they were weak, heart rate on monitor showed 150 beats with sinus rhythm, blood pressure recorded was 80 mm Hg systolic on non invasive blood pressure monitor. Noradrenaline infusion was started with rate of 10 microgram /kg /min. Fluid boluses with lactated ringer were given to augment the preload. Surgery was started again and completed within next 15 minutes. The diagnosis of anaphylactic shock to spillage of contents of hydatid cyst was made. Patient was given injection hydrocortisone 200 mg, injection diphenhydramine 50 mg and injection ranitidine 50 mg. Throughout the period patient heart rate remained between 140-150 beats per minute and blood pressure of around 80/50 mm Hg systolic on vasopressor (noradrenaline) support. Patient was shifted to high dependency unit and put on ventilatory support with controlled ventilation; another vasopressor dopamine was added at the rate of 10 microgram /kg /minute along with noradrenaline infusion. Central venous line was put (internal jugular) and her central venous pressure was found to be 8cm of water. Patient’s investigation immediate post surgery showed eosinophilia and severe metabolic acidosis. Injection soda bicarbonate was given in standard doses to tackle acidosis. After 2 hour of surgery, patient showed spontaneous respiration but efforts were very poor, though patient did not regain consciousness.

6 hours post surgery, patient developed pulseless electric activity and even after 1 hour of cardiopulmonary resuscitation, patient could not be survived. Patients relative did not consent for autopsy.

CASE 2:

30 years old female patient from rural background admitted in hospital with a diagnosis of hydatid cyst of right lobe of liver on ultrasonography. Her previous history was uneventful except mild pain in right side of abdomen. She was posted for laparoscopic aspiration of hydatid cyst. On preoperative examination, she did not give any history of comorbid conditions. Her haemoglobbin was 11 grams%, platelet count 1.5 lakhs , normal kidney function tests , liver function tests , electrocardiogram and chest x-ray she was accepted for anaesthesia as ASA grade 1 case.

On the day of surgery, she was conscious and coherent; her pulse rate was 86 beats per minute, blood pressure of 124/80 mm Hg with non invasive blood pressure monitor, and without any additional clinical findings. It was decided to proceed with general anaesthesia with endotracheal intubation .In preoperative room, patient received premedication in the form of injection glycopyrolate 0.2 mg, injection ranitidine 50 mg, injection ondensetron 4 mg, injection midazolam 1.5 mg and injection fentanyl 80 mcg. She was preoxygenated with 100 % oxygen for 3 minutes. Induction of anaesthesia was done with injection propofol 100 mg. Patient was intubated with portex cuffed endotracheal tube of 7.5 mm internal diameter under effect of injection succinylcholine 100 mg . Anaesthesia was maintained with oxygen : Nitrous oxide : isoflurane and injection vecuronium bromide. Intraoperative course was uneventful except one episode of hypertension (180/110 mm Hg) which was managed with nitroglycerine drip. Intraoperative fluids were 2 litres ringer lactate and urine output was 300 ml in 2 hours period. Procedure was uneventful. After surgical closure and deflation of pneumoperitonium , nitrous oxide was cut off and patient ventilated with 100 % oxygen while anaesthesia team was waiting for recovery of the patient. Patient did not regain spontaneous activity even after 20 minutes of controlled ventilation, so reversal was not attempted. After 20 minutes of surgical closure patient developed sudden bradycardia and cardiac arrest within a few seconds without any pre-existing changes in rate or rhythm on monitor. Immediately cardiopulmonary resuscitation was started with effective external cardiac compression and injection adrenaline 1:1000 1 mg intravenous given. After 3 cycles of cardiopulmonary resuscitation, patient developed ventricular fibrillation which was treated with biphasic DC shock of 150 joules. Rhythm reverted to sinus rhythm immediately post DC shock and peripherals were palpable though blood pressure recorded was low (80 /50 mm Hg). Nor adrenaline infusion was started and patient shifted to high dependency unit on ventilator. Injection ranitidine 50 mg , injection diphenhydramine 25 mg also given. Central venous catheter was put and CVP showed 6 cm water. Additional fluid boluses were infused to achieve target CVP of 8 cm of water, when blood pressure recorded was 120 /70 mm Hg, and nor adrenaline infusion was stopped after 4 hours. In view of delayed occurrence of the reaction, other pathologies like severe hypovolemia, tension pneumothorax and myocardial infarction were ruled out suitably and diagnosis of anaphylactic shock was made. Postoperative blood examination revealed eosinophilia of 10, though patient did not afford serum tryptase. Patient regained consciousness after 6 hours, but
sedated with midazolam and kept on ventilator till next day morning and extubated on second day uneventfully without any neurologic deficits. Patient was discharged home on 5th postoperative day.

DISCUSSION

Anaphylactic shock, an extreme manifestation is a systemic presentation of type-I (IgE) mediated immediate hypersensitivity reaction. Hydatid cyst may trigger off this reaction because of its high antigenicity. In case 1, the anaphylaxis occurred within minutes after puncture of the hydatid cyst of spleen. Patient went immediately into cardiac arrest and was successfully revived after 5 minutes, though patient remained hypotensive throughout the procedure and into High dependency unit, which did not respond to any vasopressor agents and patient expired after episode of pulseless electric activity 6 hours of surgery. Patient was young and without any co morbidities.

In case 2, anaphylaxis occurred almost after completion of surgery, when anaesthesia team was waiting for recovery of the patient and patient was being ventilated with 100% oxygen for 15 minutes. Patient developed sudden cardiac arrest and was revived after 7 minutes of Cardiopulmonary resuscitation. Patients showed improvement in blood pressure in contrast to the first patient, shifted to high dependency unit and uneventfully extubated after 28 hours of surgery.

Though anaphylaxis is cited as rare, we report of 2 cases within a span of a 3 year period from August 2008 to August 2011, where we did 18 cases of hydatid cyst of various organs.

Both cases were females, which is in line with the findings by other researchers who demonstrated 3 times more incidence of anaphylaxis in females.

Both cases were managed with the standard line of management of anaphylactic shock on table, including epinephrine, volume loading, hydrocortisone, diphenhydramine and ranitidine. We were able to revive the second case, probably because patient was being ventilated with 100% oxygen 20 minutes prior to the anaphylactic reaction occurrence, providing greater time for cerebral protection.

The timing for this reaction is also interesting in second case. As previous experiences indicates, IgE mediated immune reactions occur within 30 minutes of exposure to the allergen. When we reviewed other reported cases, we found that in most of the cases anaphylaxis occurred within minutes of spillage of the contents into body. our second case did not show the corresponding findings. For this reason, other causes mimicking anaphylaxis (myocardial infarction, tension pneumothorax, sudden hypovolemia) were ruled out and diagnosis of anaphylaxis was made. The patient responded to the treatment of adrenaline which also supports the diagnosis of anaphylaxis.

The evidence base for the management of acute anaphylaxis is limited, given the ethical and practical difficulties inherent in performing randomized clinical trials in medical emergencies. So the guidelines for management of acute episodes also vary. However, all protocols agree that adrenaline is mainstay of treatment of anaphylaxis and should be given early in the course of the process. Moreover, identification of anaphylaxis on table is difficult, but, often the first sign is pulselessness and or severe bronchospasm, in both our cases, pulselessness was the first sign, while neither of the cases showed bronchospasm.

From our experience of these two cases, we can have some conclusion.

1) Perioperative anaphylaxis in hydatid disease is not uncommon in endemic areas.

2) Avoiding the use of inhalational agents to increase the oxygen concentration at near 100%, while maintaining anaesthesia with intravenous agents like propofol infusion and opioids like fentanyl can give us precious time to revive the patient in case of any eventuality in hydatid.

REFERENCES

CASE REPORT

PRIMARY NASAL SEPTAL TUBERCULAR ABSCESS IN HIV PATIENT

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ABSTRACT

India has an estimated 6 million HIV infected people. Tuberculosis is the most common cause of death in people with HIV. Tuberculosis may become apparent at any time during HIV infection and may be pulmonary or extrapulmonary. Although tuberculosis is a life time risk of 50% among HIV infected individuals; nasal tuberculosis is still rare. We describe a rare case of primary nasal tuberculosis in an adult male who presented with nasal vestibulitis and septal abscess and simultaneously diagnosed as HIV reactive. The patient successfully responded to antituberculous drug treatment along with antiretroviral therapy.

Keywords: Extra pulmonary Tuberculosis, HIV infection, Nasal presentation, pus culture and microbiology

INTRODUCTION

Nasal tuberculosis - either primary or secondary to pulmonary tuberculosis or facial lupus, it should be considered in the differential diagnosis of nasal granulomas. We describe a rare case of an adult male who presented with a nasal vestibulitis and septal abscess, diagnosed as HIV reactive and primary nasal tuberculosis. The diagnosis was based on pus microscopy and culture examination. The patient was treated with antituberculous drug and anti-retroviral therapy. Given the rising incidence of tuberculosis, it is prudent that otolaryngologists remain cognizant of this infection as a potential cause of unusual lesions in the head and neck.

CASE REPORT

A 55 year old male presented to ENT OPD with chief complaint of nasal blockage with pain and tenderness over the nasal vestibule and septum since one month. He had already taken oral antibiotics but did not improve. Swelling was progressively increasing, along with on and off nasal bleeding. There was no history of trauma. He did not have any history of diabetes or hypertension. He was admitted as a case of nasal vestibulitis and septal abscess. He underwent routine blood investigation in which he was diagnosed to have S.HIV reactive and so detail work up done.

On clinical examination there was swelling of the dorsum of the nose, anterior rhinoscopy showed bulge in the right side septum and granular ulcerative lesion. Postnasal space was apparently normal. CT scan of paranasal sinuses revealed Enhancing soft tissue thickening involving vestibule, distal nasal septum, right lateral wall of nose and part of left lateral wall of nose. (Fig. 1). Posterior part of septum was absolutely normal.

Incision and drainage was done under local anesthesia in view of medical condition. Incision and Drainage revealed minimal seropurulent discharge. The mucoperichondrium was thickened with lots of granulation tissue. Quadrangular cartilage was thinned out. Seropurulent discharge was sent for microscopy, bacterial culture, sensitivity and fungal smear.

INVESTIGATIONS

At the time of admission Hb.- 14.9gm%, WBC count was 4300, neutrophils - 59% and ESR was 14 mm/hr. HIV – 1 reactive. RFT, LFT, Blood glucose within normal limits. S.HbsAg, S.VDRL, S.Toxoplasma and HSV1/2 were negative. CD4 count was 96. Fungal smear of pus was negative. Chest X-ray and abdominal sonography was normal. Pus smear and culture was positive for AFB (Fig. 2).
Fig 1: Enhancing soft tissue thickening involving vestibule, distal nasal septum, right lateral wall of nose and part of left lateral wall of nose

Fig 2: ZN stain of pus suggestive of AFB

MANAGEMENT

Patient was started on broad spectrum injectable antibiotics and anti-inflammatory drugs. After the pus smear report showed AFB positive, four drugs AKT started. Patient was given tablet co-trimazazole for Pneumocystitis jiroveci (PCP) prophylaxis.

Follow up was done after 15 days, patient symptomatically improved. He was started on triple drug anti-retroviral therapy (Zidovudin + Lamivudin + Effavarine).

OUTCOME AND FOLLOW UP

Follow up done on every two weeks for one month and then after every monthly. Clinically lesion improved dramatically within 3 to 4 weeks. Hemogram, LFT and RFT investigated regularly, no abnormality was detected in blood investigation and no drug to drug interaction or side effects noted. After 3 months CD4 count repeated and improved from 92 to 151 and after 6 months it increased up to 351.

DISCUSSION

Tuberculosis is highly prevalent in India particularly in HIV infected patients. While Extra-pulmonary TB accounts for only 20% of TB in non-HIV patients; it constituted 45 to 50% of all TB in cases of patients with HIV AIDS.1

Primary nasal tuberculosis is extremely rare, indeed any nasal involvement is uncommon but in over 75 per cent of cases represents a manifestation of generalized disease.2

Nasal septal abscess occurs with collection of purulent material between the cartilage and the bony septum or its mucoperichondrium and periosteum. The drug therapy for nasal tuberculosis is the same as for generalized condition. The surgical debridement is essential for diagnosis and clearance. Delayed management of septal abscess can result in compromise of the vascular supply to septal cartilage resulting in its ischaemic necrosis and saddle shaped deformity of the nose. Other complications of septal abscess documented include sepsis, bacteraemia, meningitis and maxillary hypoplasia.3

However in any case pulmonary Koch's should be ruled out by chest X-ray.

Various lessons can be learned from this case. First, it is very important to suspect and establish an early diagnosis of HIV in any patient having long lasting and not improving skin and soft tissue infections. Second, during I&D procedures along with gram stain, AFB stain and culture is mandatory.

It is very important to start AKT first and delay antiretroviral therapy for at least two weeks, so that AKT is better tolerated and we can avoid IRIS.
immune reconstitution inflammatory syndrome). Effavarin based ART is selected. In this particular case, regular follow up is required to monitor CD4 count, to see clinical improvement and more important to detect any side effect and drug-interaction of AKT and ART.

Last but not least, early diagnosis and appropriate treatment with good patient’s compliance is must in patient of TB and HIV for better prognosis and prevent resistance. Tripple drug ART improves quality of life in HIV infected patients and reduces the risk of opportunistic infections.

REFERENCES
KARTAGENER’S SYNDROME PRESENTED AS PARANASAL POLYPOSIS WITH RECURRENT EPISTAXIS: A RARE CLINICAL CASE REPORT

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ABSTRACT

Background: Genetically determined syndromes of ciliary dyskinesia prevent normal transport of mucus from the bronchial tree to the mouth and result in serious impairment of lung defence system. Male infertility was sometimes associated with Immotile spermatozoa. Approximately half of patients with Primary Ciliary Dyskinesia have full triad of kartergens’s syndrome, give history of recurrent sinusitis and lower respiratory tract infection from early life to adulthood. Kartagener's syndrome has been considered to be a sub group in a heterogenous collection of disorders to which Immotile Ciliary Syndrome or Dyskinitic cilia syndrome have been applied. There may also be a link with retinitis pigmentosa and hearing loss.

Aim: Kartagener’s syndrome with paranasal polyposis is an uncommon presentation shown in our case. We report an adult female of 23 of age having Recurrent sinusitis, Bronchiectasis and Dextrocardia with Sinus inversus and with Paranasal polyposis showing recurrent epistaxis.

Conclusion: Kartagener’s syndrome with paranasal sinusitis is common but paranasal polyposis with epistaxis is uncommon way of presentation.

Keywords: Kartagener’s syndrome, Sinusitis, Bronchiectasis, Sinus inversus with Dextrocardia, Paranasal polyposis

CASE REPORT

A 23 years old female patient attended our OPD,Dept., of Chest,KIMS Hospital,Amalapuram with complaints of cough with expectoration,general weakness, dizziness. Last one month she is having recurrent episodes of epistaxis.She is suffering from cough with expectoration and breathlessness since her childhood. Past history of surgery to the nose at the age of 16 years details not known. She was married having 2 children.Her general condition was thin built,illnourished.Her pulse92/minute,regular,BP 110/70mm of HG,RR 18/minute.Chest was symmetrical without any deformities.Her apical impulse was ½ inch medial to midcavicular in on 5th intercostal space on right side .Per abdominal examination , liver dullness on left side and splenic dullness on right side. On percussion , tympanic note on right hypochondrium.Lungs were clear on auscultation without any adventitious sounds.Heart sounds were louder on the right side and S1 S2 heard.No murmurs were heard.

INVESTIGATIONS

1. CXR PA: Revealed base to apex axis pointing towards right .Stomach bubble on right side.
2. ECG: 12 lead standard ECG showed P wave ,QRS and T waves are Down in L1. P wave,QRS and T waves are UP in AVR,P wave,QRS and T waves are Down in AVL.No left ventricular deflexion in V3V4V5V6. V1V2V3V4V5V6 showed progressive left ventricular deflexion with transition zone in V3.
3. Echo cardogram: Demonstrated dextrocardia with ejection fraction of 65%.
DISCUSSION

It is suspected that visceral rotation in the embryo is dependent upon normal ciliary action, hence the association between primary ciliary dyskinesia and situs inversus abnormality. Genetically determined syndrome of ciliary dyskinesia prevent normal transport of mucus from bronchial tree to the mouth and result in serious impairment of lung defence system. The incidence of the genetic disorder is 1 in 32,000 births. However, higher incidences have been found in communities in which consanguineous marriages are common. In our case she married blood relative, her own mother's brother which is very common in villages of Andhra Pradesh. Neonatal respiratory distress may occur in many cases but in our case there is no such history of childhood sufferings. In our case this lady after attaining age of 23 years got reported having recurrent sinusitis, bronchiectasis and dextrocardia with situs inversus and with paranasal polyposis.

She was presented with episodes of epistaxis and hemoptysis. Nasal examination done by ENT surgeon suggested of paranasal sinusitis and paranasalpolyposis. Chest X-ray suggestive of bronchiectasis and situs inversus.

Efforts to standardize the clinical criteria for the diagnosis of Kartageners'syndrome have centred on dextrocardia, a ciliary beat frequency of less than 10 Hz/s and a mean cross-section dynein arm count of less than 2. If the patient does not have dextrocardia, the identification of primary ciliary dyskinesia becomes the mainstay of diagnosis. Genetic testing ultimately may become the principal means of establishing this diagnosis.

Obstructive lung disease/ bronchiectasis should be treated with inhaled bronchodilators, mucolytics and...
chest physiotherapy.

Lobectomy is sometimes required for the associated bronchiectasis. Lung transplantation and heart-lung transplantation have occasionally been tried in severe cases with some success. This episode of hemoptysis and epistaxis make us to confuse but finally HRCT Thorax and CT Scan PNS suggestive of paranasal sinusitis, bronchiectasis and situs inversus and confirmed Kartagener syndrome.

CONCLUSION

Kartagener’s syndrome presenting with episode of epistaxis is rare. Nasal endoscopy examination revealed paranasal polyposis. But later we did Chest X ray which suggestive of Bronchiectasis with dextrocardia. HRCT Thorax revealed the truth of Kartagener’s syndrome with Situs inversus, Bronchiectasis and Paranasal sinusitis. With episodes of epistaxis and haemoptysis we think of haematological abnormalities. But we confirmed it is a Kartagener’s syndrome with paranasal polyposis which results in epistaxis.

REFERENCES

A CASE REPORT OF 2 SYNCHRONOUS TUMORS OF FEMALE GENITAL TRACT – RARE FINDING

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ABSTRACT

Synchronous gynecological tumors are rare. It is even rarer to find the rarest of gynecological tumors that of the fallopian tube, together with a histological sub-type as rare as adenocarcinoma cervix. In the field of Gynecological Oncology, this type of lesion is infrequent, representing no less than 6% of cases. We present a case of a 45 year patient with a primary adenocarcinoma of the fallopian tube synchronous with a papillary endocervical adenocarcinoma of cervix. A Radical Wertheim Hysterectomy With Bilateral Pelvic Lymph Node Dissection was done. We reported papillary endocervical adenocarcinoma of cervix in association with fallopian tube adenocarcinoma [A Synchronized Origin]. All the lymph nodes were negative. FIGO staging was done, for cervix it was 1B1 and for fallopian tube it was 1A.

Keywords: Synchronous gynecological tumors, adenocarcinoma of the fallopian tube, Papillary endocervical adenocarcinoma of cervix, FIGO staging.

INTRODUCTION

The majority of synchronous multiple primary neoplasm of female reproductive tract are of endometrial and ovarian origin. Cancer of the cervix is frequent neoplasm. The most frequently identified histologies are Squamous, adenocarcinoma, and adenosquamous, this representing > 95% of cases. Primary adenocarcinoma of the fallopian tube with papillary features is the most common histological type. While the etiology of this phenomenon remains unclear, it has been postulated that embriologically similar tissues of the female genital tract, when simultaneously subjected to carcinogen may develop synchronous neoplasm. Others suggest that these neoplasm represent metaplasia occurring in similar histological epithelium of genital tract.

CASE REPORT

A 45 year old lady was admitted with menstrual history suggested an irregular pattern of cycles. Local examination revealed an irregular non tender mass involving the cervix and the upper vagina projecting into the vaginal cavity. CT scan showed a heterogeneously enhancing soft tissue mass of 94.9mm x 89.2 mm in the region of cervix. An exploratory laparotomy and A Radical Wertheim Hysterectomy with Bilateral Pelvic Lymph Node Dissection was done. We received Uterus with cervix with right sided adnexa. Right & left Pelvic nodes were also dissected & sent to us.

GROSS FINDINGS

We received a specimen of uterus, cervix with vaginal cuff & Right sided adnexa. A separate Left tubo-ovarian mass was received measuring 14X8X6 cm weight 380 Gms. Cervix was markedly enlarged & multi nodular on left side measuring 8.5X7.5X5 cm. Right fallopian tube measure 3.5cms. There was pink homogeneous mass coming out of the cervix. The mass involved left half circumference of cervix and left half vaginal cuff. On cut surface endometrial cavity was hemorrhagic. Also received left tubo-ovarian mass measuring 8x6x3cms,on opening the left tube half of the lumen contain whitish mass attached to inner wall of tube measuring 5x3x2cms. Rest of fallopian tube was dilated which measuring 3.5cm. They also sent soft tissue bit measuring 4x3.5 cm. 10 lymph nodes dissected largest measuring 3.5x1.2 cms. Rest of fallopian tube was dilated which measuring 3.5cm. Also received soft tissue bit measuring 4x3.5 cm. 10 lymph nodes dissected largest measuring 2x1cms, smallest measuring 0.3cm. They also sent soft tissue bit measuring 6x3cms grayish white in colour. Total 9 lymph nodes dissected largest measuring 3.5x1.2cms.

MICROSCOPIC EXAMINATION
Multiple sections from the cervical mass had shown histology of papillary adenocarcinoma. Tumour involves left half of cervix with superficial involvement of lower left half of isthmus.

![Fig 1: The section endocervical glands lined by malignant cells. Also seen few normal looking endocervical glands along with stromal tissue in the section studied](image1)

![Fig 2: The section shows histomorphology of adenocarcinoma of fallopian tube. The malignant cells lining the tubal mucosa show loss of polarity, high nucleocytoplasmic ratio & prominent nucleoli.](image2)

The tumour also involves left side of vaginal cuff. Squamous epithelium is free from tumor cells. Section from left and right parametrium show no tumour cell infiltration. Section from left tubovarian mass had shown papillary adenocarcinoma of similar morphology as that of cervix involving distal half of tubal lumen. A synchronized origin of tumor in cervix and left fallopian tube was seen. Left ovary had showed simple cyst with hyalinised corpus luteum. No evidence of metastasis. Section from left and right pelvic node tissue show total nineteen nodes, all are free from metastasis. No lymphatic or vascular permeation seen. No lymphatic or vascular permeation seen. Section from uterus shows endometrial gland in proliferative phase. Myometrium show normal histology. Section from right ovary and tube show no remarkable pathology.

**DIAGNOSIS**

Papillary endocervical adenocarcinoma of cervix in association with fallopian tube adenocarcinoma. (a synchronized origin). The tumor involves left half of cervix with vaginal cuff. Squamous epithelium is free from tumour. Tumour infiltrates superficially into left side of isthmus. Left and right parametrium is free from tumour cells infiltration, no vascular or lymphatic permeation seen.

All nineteen nodes from right and left pelvic area negative. The section from left ovary show normal histology with simple cyst. The section from endometrium shows endometrial glands in proliferative phase. The section from myometrium shows normal histology. The section from right ovary and tube shows no remarkable pathology.

Cervix-
TNM-T1b1: FIGO-IB1: T1b1- IB1
Clinically visible lesion or greater than A2, < 4 cm in greatest dimension

Left fallopian tube-
TNM-T1a: FIGO-IA: T1a – 1A
Cancer is only in the inner lining of one tube.

**DISCUSSION**

Primary malignancies of the genital tract seem to occur synchronously more often than one would expect by chance. The association of early stage and low histological grade indicates that they may have arisen separate multifocal primary lesions rather than metastases. The prognoses in these patients was found to be more favorable when compared to metastatic lesions of individual tumors [1,2]. The International Federation of Gynecology and Obstetrics FIGO staging system assign nearly two-thirds of patients to stage I or II and is based on surgical staging criteria similar to ovarian cancer. In cervical adenocarcinoma radical surgery, radiation therapy, or a combined approach offered equal survival. The most significant
factor influencing prognosis is likely to be the lymph node status. Tumor grade significantly influences prognosis and these results are consistent with other reports showing well-differentiated adenocarcinoma had the best survival. There are some case reports of cervical and tubal carcinomas, one of them was associated with two other tumors of the genital tract (endometrial and ovarian), the characteristic feature was that both tubal and cervical carcinoma were from glandular origin. Similar case was reported by Ayas who reported coexistence of an epidermoid carcinoma in situ of cervix with a stage Ic serous papillary adenocarcinoma of the left fallopian tube, this case is interesting since is similar to ours in relation to the tubal neoplasm. One more case of a 84 year female having synchronic fallopian tube adenocarcinoma and a verrucous cervical cancer was reported. We can conclude that synchronous gynecological tumors are rare, most frequent association of fallopian tube tumors is with endometrium. Several reports show relation between abnormalities on cervical smears and tubal carcinoma, these abnormalities are characteristically glandular rather than squamous. There was no association found with human papilloma virus. The important reasons for our presentation of this case are:

1. These type of synchronous tumors are rare.
2. It will be useful to present a case report to help in the treatment of these patients.

REFERENCES

GIANT MESENTRIC CYST- MESENTRIC CYST LYMPHANGIOMA- A CASE REPORT

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ABSTRACT

Mesenteric cyst are rare intra abdominal tumours. Intra abdominal and retroperitoneal cystic lymphangioma are cystic benign tumours of congenital origin. A 7 month female was presented with complaints of abdominal distension. CT scan revealed congenital vascular malformations lymphangioma. The patient was operated and the cyst was excised. The histology confirmed the diagnosis of mesenteric cyst lymphangiomas. We report this case because of its rare occurrence and varied presentation.

Keywords: mesenteric cyst, lymphangioma, intra abdominal

INTRODUCTION

Mesenteric cystic lymphangiomas are rare lesions. It is an uncommon benign tumour of congenital origin. It presents either with chronic abdominal distension or acute with bowel obstruction or signs of peritonitis. Clinical presentation is varied or may be misleading due to a lack of awareness of clinical condition. Occasionally diagnosis made during surgery. General awareness with high index of suspicion is needed to avoid complications. Histology is diagnostic in this case.

CASE REPORT

A 7 month old female presented with complains of abdominal distension. On examination abdomen was significantly distended, non tender to palpation and dull on percussion. Abdominal radiograph showed evidence of gaseous distension of bowel loops and soft tissue mass in lower abdomen. A CT scan revealed congenital vascular malformation- lymphangioma. Exploratory laparotomy showed a 25x15cm mesenteric cyst arising from the length of the jejunum. Cyst was identified and excised.

Grossly, the mass was multicystic, multilocular, thin walled with smooth surface measuring 20x15x8 cm. There are multiple cysts of varying size of 4x4cms to 6x6 cms. External surface is grayish white with few brown hemmorhagic areas. On cut surface yellowish white milky fluid and inspissiated material is seen. Few cysts showed hemorrhage and changes of gangrene.

Histologically the cystic spaces were lined by a single layer of cuboidal to flat epithelium. At places the lining was attenuated. The stroma consist of loose fibrovascular tissue and smooth muscles with sparse chronic inflammatory cell infiltrate in the stroma at few places. So, histological diagnosis of mesenteric cyst lymphangioma was made.

DISCUSSION

Mesenteric cyst are one of the most rare intra abdominal tumours¹,² The reported incidence ranges
Mesenteric cyst are most common in 4th decade of life but may also effect young children. They appear to have no significant gender of race predeliction. Cysts are most commonly locate within mesentery of ileum followed by omentum mesocolon, and retroperitoneum.

Cysts can be unilocular or multilocular or infrequently hemorrhagic fluid. The cyst can remain asymptomatic and therefore grow to giant proportions as illustrated in present case. Cystic lymphangiomas occur most frequently in the head and neck or axilla of young children. Intra abdominal and retro peritoneal cystic lymph angiomas are rare benign congenital lesions. Clinical presentation is diverse and can range from incidentally discovered abdominal mass to symptoms of acute abdomen. Children are most likely to develop life threatening complications.

The lining cells of lymphangioma typically express endothelial cells associated antigen and lack cytokeratins more over.

**DIFFERENTIAL DIAGNOSIS**

Cystic lesions of mesentry includes lymphangiomas, pancreatic pseudocyst, chylolymphatic cyst, hemangioma, endometriosis, peritoneal inclusion cyst, cystic mesenteric pancreatitis, hydatid cyst and cystic teratoma.

Cystic lymphangiomas has striking resemblance to chylo lymphatic cyst both grossly and microscopically. Some authors considered chylo lymphatic mesenteric cyst to be a type of lymphangiomas but some literatures also shows authors describing chylo lymphatic cyst as a variant of mesenteric cyst. The absence of smooth muscle and lymphatic spaces in the wall of the cyst differentiates chylo lymphatic mesenteric cyst from mesenteric lymphangiomas.

Their rare occurrence makes them difficult to make diagnose clinically and pathologically. This case is reported because of their occurrence and varied presentation. It is a separate entity from chylo lymphatic mesenteric cyst.

The cystic lymphangioma may grossly resemble multilocular peritoneal inclusion cyst (MPIC) and can be distinguished microscopically by the presence of smooth muscles and lymphoid cells in the cyst wall. Moreover MPIC shows typical features of mesothelial cells why cystic lymphangioma shows endothelial cells.

**REFERENCES**

E-WASTE MANAGEMENT: AN EMERGING ENVIRONMENTAL AND HEALTH ISSUE IN INDIA

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ABSTRACT

Electronic waste or e-waste is one of the rapidly growing problems of the world. E-waste comprises of a multitude of components, some containing toxic substances that can have an adverse impact on human health and the environment if not handled properly. In India, e-waste management assumes greater significance not only due to the generation of its own e-waste but also because of the dumping of e-waste from developed countries. This is coupled with India's lack of appropriate infrastructure and procedures for its disposal and recycling. Putting the onus of recycling of electronic wastes (e-waste) on the producers, the Ministry of Environment and Forest (MoEF) has for the first time notified e-waste management rules (2011). This review article provides the associated issues and impact of this emerging problem, in the light of initiatives in India.

Keywords: E-waste, environmental hazards, recycling yards, information and communication technology

INTRODUCTION

Electronic and Electrical waste, popularly known as e-waste products, do not decompose or rot away. The information and communication technology (ICT) sector in the last twenty years or so in India has revolutionized life of one and all, ratcheting a viral effect on electronic manufacturing industries leading to phenomenal growth in terms of both, volume and applications. Digital development has become the new mantra having its all engulfing footprints everywhere. The booming usage of electronic and electrical equipments has created a new but very dangerous stream of waste, called “electronic-waste”, or simply known as e-waste. With the presence of deadly chemicals and toxic substances in the electronic gadgets, disposal of e-waste is becoming an environmental and health nightmare. E-waste is now one of the fastest growing waste streams. Every year, hundreds of thousands of old computers, mobile phones, television sets and radio equipment are discarded, most of which either end up in landfills or unauthorized recycling yards.

According to Basel Action Network executive director Jim Puckett recycling companies might not be as honest about what they are doing with your old electronics in US, about 80 percent of that material, very quickly, finds itself on a container ship going to a country like China, Nigeria, India, Vietnam, and Pakistan where very dirty things happen to it.

Solid waste management, which is already a mammoth task in India, is becoming more complicated by the invasion of e-waste, particularly computer waste. E-waste from developed countries finds an easy way into developing countries in the name of free trade further complicating the problems associated with waste management. Article highlights the associated issues and impact of this emerging problem, in the light of initiatives in India.

E-WASTE IN INDIA

According to a MAIT report, India in 2007 generated 380,000 tonnes of e-waste from discarded Computers, Televisions and Mobile Phones. This is projected to grow to more than 800,000 tonnes by 2012 with a growth rate of 15%. Maharashtra generates the most waste from electrical and electronic equipments in the country. Pune, along with Mumbai, are among the top 10 cities generating E-waste. The total electronic waste generation in Maharashtra is more than 20,270.6 tonne, out of which Navi Mumbai 11,017.06 tonne, Greater Mumbai 11,017.06 tonne, Pune 2,584.21 tonne and Pimpri-Chinchwad 1,032.37 tonne. The estimate includes 50,000 tonnes of such e-waste imported from...
developed countries as charity for reuse, which mostly end up in informal recycling yards either immediately or once the re-used product is discarded. The authorized e-waste recycling facilities in India capture only 3% of total e-waste generated; the rest makes its way to informal recycling yards in major cities like Delhi, Mumbai and Bangalore. As per UNEP, “currently, the available data on e-waste arising is poor and insufficient and estimation techniques are required for extension of known data to regional-global coverage. United Nations University’s estimations indicate that current e-waste arising across the twenty seven members of the European Union amount to around 8.3 – 9.1 million tons per year; global arising are estimated to be around 40 million tons per year.”

IMPACTS OF E-WASTES

The disposal of e-waste is a particular problem faced in many regions across the globe. Environment and human health is affected by e-waste. E-waste takes up space in the communities it invades and can be very harmful to humans and animals. It is of concern mainly due to the toxicity and carcinogenicity of some of the substances if processed improperly.

E-waste is much more hazardous than many other municipal wastes because electronic gadgets contain thousands of components made of deadly chemicals and metals like lead, cadmium, chromium, mercury, polyvinyl chloride (PVC), brominated flame retardants, beryllium, antimony and phthalates. Long-term exposure to these substances damages the nervous systems, kidney and bones, and the reproductive and endocrine systems, and some of them are carcinogenic and neurotoxic. Primitive recycling or disposal of e-waste to landfills and incinerators causes irreversible environmental damage by polluting water and soil, and contaminating air.

A study conducted by Greenpeace in 2005 in electronic recycling yards in Delhi clearly indicates the presence of high levels of hazardous chemicals including deadly dioxins and furans in the areas where this primitive recycling takes place. Workers in e-waste disposal sector are poorly protected against the risk of it.

They dismantle e-waste, often by hand, in appalling conditions. About 25,000 workers are employed at scrap-yards in Delhi alone, where 10,000 to 20,000 tons of e-waste is handled every year, with computers accounting for 25 percent of it. Other e-waste scrapyards exist in Meerut, Firozabad, Chennai, Bangalore and Mumbai. The hazardous substances found in the e-waste includes substantial quantities of lead, cadmium, chromium and flame-retardant plastics. Cathode ray tubes and components with high lead content are considered dangerous to health. Inhaling or handling such substances and being in contact with them on a regular basis can damage the brain, nervous system, lungs, kidneys and the reproductive system. Working in poorly-ventilated enclosed areas without masks and technical expertise results in exposure to dangerous and slow-poisoning chemicals. Due to lack of awareness, workers are risking their health and environment as well.

Scientists who have examined Guiyu, China (one of the popular destinations of e-waste recycling activities) have determined that because of the waste, the location has the highest levels of cancer-causing dioxins in the world. Pregnant women are six times more likely to suffer a miscarriage, and seven out of ten kids have too much lead in their blood. There is paucity of data on burdens of heavy metal exposure on human body in India. A large number of workers including small children are exposed to different dismantling activities of e-waste. There are no data available about the health implications of these workers. They might be ruining their lives in the lack of appropriate knowledge.

SNAPSHOT OF COMPANY PRACTICES ON TAKE-BACK IN INDIA

The solution to the impending e-waste crisis lies in prevention rather than its management. Recycling of e-waste is beyond the means of a consumer or local government, given its toxic nature. The solution lies with the brand owners or manufacturers of electronic products, which need to bear responsibility for financing the treatment of the own-branded e-waste, discarded by their customers. This is known as the principle of Individual Producer Responsibility (IPR). Legislation embracing Producer Responsibility for e-waste is already in force in the EU, Japan, Korea, Taiwan and some US states. Greenpeace expects responsible companies to treat all their customers globally in the same way and offer take back and recycling services wherever their products are sold – not just in countries where this is a legal requirement.

In India some brands have initiated take-back programmes but these are not working as well as they should. Moreover, brand owners should also work towards establishing a robust system of e-waste collection and treatment infrastructure so that e-waste can be collected and recycled in a safe manner. Many brands have no take back service in India, despite many of these global brands providing a voluntary take back service in countries like the US. The global brands have no take back programme in India, despite some tall claims on producer responsibility, undoubtedly falter on their commitment in India and treat their Indian customers as second-grade clients. These companies indirectly foster the growth of the informal recycling by failing to provide easy and free take back service to ensure responsible recycling.

Despite the absence of any legal binding requirements, Indian brands like HCL and WIPRO are offering voluntary take back and recycling service to their customers. Other brands doing relatively well are Nokia, Acer, Motorola and LG. Titan Industries, the wristwatch major, does safe disposal of 600,000-
700,000 of its old watches each year as part of e-waste management. 9

Most of the brands haven’t taken any notable initiatives on educating and raising awareness of their customers on the environmental and health impacts of e-waste, as well as its need for customers to bring back/post back their discarded e-products for recycling. Brands are directly responsible for huge volumes of e-waste generated in India due to their fast developing technology that dramatically reduces the lifespan of an electronic product. Though, they spend millions of rupees on marketing campaigns, celebrity endorsement and advertisement to promote their product.

SOME INITIATIVES REGARDING E-WASTE MANAGEMENT IN INDIA

E-Parisaraa: is the first government-authorized eco-friendly recycling unit which makes full use of e-waste. The plant, which is India’s first scientific e-waste recycling unit, aims to reduce pollution, landfill waste and recover valuable metals, plastics and glass from waste in an eco-friendly manner. What makes E-Parisaraa different is that unlike the backyard handling of e-waste, there is no melting involved in the sorting. Notably, it protects data from discarded PCs and guarantees customers' confidentiality.

Earth Sense Recycle Private Limited: Earth Sense Recycle Private Limited is the joint venture between the E-Parisaraa Private Limited and M/S. GJ Multiclave India Private Limited, which is a bio-medical waste handling and management company. This company came into existence in the year 2000 and they recycle all types of e-wastes including de-bound assets and other electrical and electronic equipment.

Trishyiraya Recycling India Pvt. Ltd (TPL): is the Indian company that offers safe and reliable disposal of e-waste. The Govt. of India as well as the Pollution Control Board has certified the company. It has constant surveillance mechanisms like CCTV Monitors etc. TPL feels proud of its innovative technology that helps recycle E-Waste. Adding feather to its cap is the ‘Total Termination Process’ that is completely pollution free. There is no contamination of water or air and, no sound pollution either. 10

Plug-in to eCycling: It is a partnership of Environmental Protection Agency (EPA) and consumer electronics manufacturers, retailers, and service providers that offers more opportunities to donate or recycle - to "eCycle" used electronics. eCycling includes recycling and recovers valuable materials from old electronics which can be used to make new products. It also includes reducing greenhouse gas emission, reducing pollution, saving energy and resources by extracting fewer raw materials from the Earth. Safe recycling of outdated electronic items promotes sound management of toxic chemicals such as lead and mercury and helps others. 11

In Bangalore city installation of e-bins to ensure safe disposal of e-waste generated at government offices is set to become a reality shortly. Saahas, the non-governmental organization (NGO) involved in this pioneering effort, plans to hold campaigns in government offices to create awareness about e-waste and the need to dispose it safely and environment-friendly disposal and recycling of e-waste. Toll-free telephone number is provided to get e-waste picked up from home and recycled. 13

MAIT-The Manufacturers’ Association for Information Technology has incubated an Electronics Recyclers’ Association (ERA) to organize electronic waste (e-waste) handling in an environment-friendly manner. ERA will initially comprise nine members, of whom six are e-waste processors and three are executive members. 14

LEGISLATION DEALING WITH E-WASTE IN INDIA

Putting the onus of re-cycling of electronic wastes (e-waste) on the producers, the Ministry of Environment and Forest (MoEF) has for the first time notified e-waste management rules. The e-waste (management and handling) Rules, 2011 would recognize the producers’ liability for recycling and reducing e-waste in the country. The rules will come into effect from May 1, 2012.

Personal Computer manufacturers, mobile handset makers and white goods makers will be required to come up with e-waste collection centers or introduce ‘take back’ systems. “These rules will apply to every producer, consumer and bulk consumer involved in manufacture, sale, and purchase and processing of electronic equipment or components,” The ministry is giving the producers of electrical and electronic equipment a breathing period of one year to set up their collection centers.

The rules will come under the Environment Protection Act (EPA). Under the new rules, producers will have to make consumers aware about the hazardous components present in the product.

They will also have to give information booklets to prevent e-waste from being dropped in garbage bins. However, according to the rules, bulk consumers such as enterprises and government will be responsible for recycling of the e-wastes generated by them. The bulk users have to ensure that the e-waste generated by them is channelized to authorized collection centers or is taken back by the producers. They also have to maintain records of e-wastes generated by them and make such records available with State Pollution Control Boards or the Pollution Control Committees. 15

CONCLUSION
The e-waste is going to become a great challenge for environmentalists and technologists as the rate of growth is much higher than the rate it is disposed, reused or recycled. There is an urgent need for improvement in e-waste management covering technological improvement, operation plan, implementing a protective protocol for the workers working in e-waste disposal and educating public about this emerging issue posing a threat to the environment as well as public health.

**RECOMMENDATIONS**

Many issues of great concern are likely to be addressed by the forthcoming Act. Therefore, the required observance of the Act provisions in word and spirit by all the stakeholders, as desired, shall surely enable the country to deal with the short term and long term pollution hazards with effective implementation, sustained monitoring and better supervisory practices. However, some seemingly remaining unaddressed or less addressed issues require further consideration of the authorities towards devising the ways and means to ensure formulation of related strategic plans and subsequent necessary field level initiatives.

The first order priority is to identify informal sectors contributing for 95% of e-waste collection and recycling. In addition, there is an urgent need to create a system for absorbing the strong workforce of informal sector into the proposed scheme for scientific recycling. A large number of workers are involved in crude dismantling of these electronic items for their livelihood and their health is at risk, therefore, there is an urgent need to plan a preventive strategy among these workers. Skill enhancement of workers through training facilities and focus on their occupational health must be ensured. It is emphasized here that the producers should make financially liable for generated e-waste as per norms of their safe disposal based on the toxicity of the concerned products. Pollution Control Boards probably require further strengthening of their resources, powers and plans for performing the entrusted tasks with greater zeal through result oriented active enforcement.

Present legislation needs to be transformed to active policies which will pave way for a brighter pollution free future in the country.

**REFERENCES**

STUDENTS’ PERCEPTION ON ANATOMY TEACHING METHODOLOGIES

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ABSTRACT

An opinion regarding curriculum, teaching methodology & assessment techniques in anatomy was taken from the First MBBS students at Medical college Baroda with specially designed questionnaire. Majority of the students feel the curriculum can be taught in present one year duration with present system lecture timetables. The best method of learning is the dissection hall teaching & the students should be shown the structures and their relations rather than discussing these things in lectures. Majority of the students feel that the subject related books in library are not enough but they are aware of internet as an effective learning tool. Majority students opined that the best method of assessment is tests e.g. viva & part ending tests. This study show that the planning about the curriculum, teaching methodology & assessment techniques is decided by the senior faculty members but the opinion of the students is reasonable & justifiable and needs to be heard in deciding this aspect.

Keywords: Anatomy learning, Students view, Teaching Method

INTRODUCTION

Anatomy has been always recognized as an essential foundation for clinical sciences. Focus of medical education is to equip medical students with knowledge, skill and attitudes expected from a basic doctor-either in private practice or in government service. Students acquire fundamental skills and learning techniques that will serve them during their lifelong medical training.

The role of the faculty member in the modern concept of medical education is to facilitate the learning process. It is important to use multiple techniques in order to reach as many different types of learners as possible.

It is observed that curriculum review, teaching methodology, evaluation at institutional level is done by the senior faculty members at institutional level & at the medical college council of India.

The students are usually never involved in the planning or revising of the curriculum.

Majority of the students joining the MBBS course undergo a prior “spoon feeding” type of coaching by their parents and teachers. In the new unfamiliar environment of a medical college they are exposed to a totally new scenario of teaching/learning process. They develop problems like difficulty in studying and understanding of the heavy volumes of the pre-clinical subjects (especially Anatomy), problems related to adjusting and adapting to the new college and hostel life and odour related to the dissection of cadavers. As a result, learning becomes very unpleasant, leading to frustrations, corroding of the morale and self-confidence of the students, with consequent poor performance in the first term examination disturbing even their mental equilibrium.

It is necessary to know the views of the students while revising the curriculum and to know the best teaching methodology which will facilitate the learning process. It is also important to know the opinion of the students regarding the best assessment (formative and summative) techniques to measure their knowledge and skills.

MATERIAL & METHODS

Input from the students are collected from the 140 MBBS students who completed first MBBS by using a specially designed questionnaire comprising of points relating to the curriculum, teaching methodology and assessment techniques in institute at Baroda medical college, Gujarat, India.

The students are briefed about the questionnaire & asked to respond freely and fearlessly. They were informed that the information furnished by them is for the research and evaluation purpose only and will be confidential.

The faculty participation while filling up the questionnaire by the students was avoided to get a fair opinion of the students.

The questions in the questionnaire were explained and students are free to respond to all or any question they
wanted to respond without any sort of compulsion. The questionnaire was collected back from the students and analysis was done considering each question of the questionnaire.

**DISCUSSION**

Most students ranked the teaching on dissection table as best method of understanding the topic taught but the conventional lecture method of teaching was not liked by most of the students. 56.12% of the students feel that the time in dissection hall is more than enough, though most of the students (66.91%) do not follow dissection manuals in the dissection Lab. 79.71% of the students believe that the “small batch lectures “are important guide to learning anatomy i.e. batch lectures were found to be popular amongst the students.

54.68% of the students felt that the structures mentioned in lectures are not always found at the dissection.

The opinion of the student seems to be divided about the duration of curriculum. 38.41 % believed that previous scheme of one and half year was better, another 21.41% believed that the present duration of one year is not enough and 37.66% are in favour of present one year curriculum. 53.03% mentioned that the material in Audio-visual room (Interactive methodology) is accessible to the students but they are felt to be of average (by 48.46% of students) to good quality (by 28.46% of the students). 54.61% of the students would like to get a handout of material before the lecture but 26.95% wanted the material before the beginning of lecture. 79.86% of the students are of the opinion of short revision of a region.

Majority of students liked to have viva, quiz and question – answer sessions but the symposium & chart model competition were not popular in students. Student’s opinion were divided for learning through CME. 40.34% of the students felt that is a useful tool. 40.44% students did not accept the spotting as a method of self learning only 21.32% of the students believe that it is a very good method of learning.

Majority students (70.80%) think that the integrated teaching programs are useful to them & welcome such attempts.

As for the teaching methodology majority of students feel that dissection hall teaching is the best method followed by slide projector /AV projection / Multimedia, conventional chalk & board methods. None of the students liked see by yourself in the museum method. 46.72% students are aware of internet as a tool to learning and judge it as an effective source of self learning. 42.34% of students felt that subject related books & reference books are not adequate in the library. But the timings of library & reading room in library is adequate.

Majority of the students (80.29%) believe that the timetable & number of lectures and tutorial as well as practicals are adequate to cover the topics & teachers concerned with lectures and tutorials are knowledgeable. Majority of the students are in favour of weekly test (70.80%) and part ending tests (63.50% - Theory & 59.85 – Practicals). Journal writing is the least favoured method of assessment.

**SUMMARY & CONCLUSION**

An opinion regarding curriculum, teaching methodology & assessment techniques in anatomy was taken from the first MBBS students at Medical college Baroda with specially framed questionnaire.

Majority of the students feel the curriculum can be taught in present one year duration with present system of lecture, practical timetable.

The best method of learning is the dissection hall teaching on the cadavers. Many of them used internet for self study. Majority students opined that the best method of assessment is weekly test e.g. viva & part ending tests.

This study shows that the planning about the curriculum, teaching methodology & assessment techniques can be modified considering the opinion of the students to bring out the best in them and how teaching can address their contemporary learning needs. As courses become shorter and curriculum more crowded, the resources of teaching methods must maximize the effectiveness of Anatomy learning and most importantly to recall and apply anatomy knowledge in medical practice.

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4. Lauren De Meester, MSc Learning Anatomy for Use Beyond the Classroom MUMJ
KNOWLEDGE, ATTITUDES AND PRACTICE OF LABORATORY TECHNICIANS REGARDING UNIVERSAL WORK PRECAUTION

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ABSTRACT

Objective: Objective of the present study is to determine the knowledge, attitude, and practice of universal work precautions amongst medical laboratory technicians in private hospitals.

Methodology: Cross-sectional study of health care workers was conducted using a pretested self-administered questionnaire, which enquired about knowledge, attitude and practices of universal work precautions. The hepatitis B vaccination statuses were also asked.

Results: 200 questionnaires were administered to laboratory technicians and 154 of them were returned giving a response rate of 77%. All the participants wear gloves during laboratory work but 81.2% wear a single pair. 17.5% of the participants claimed to know what to do if exposed to infection. 45.6% of the participants eat in the laboratory, 47.0% of them store foods and water in the refrigerators, 31.5% of them put on cosmetics in the laboratory, 12.6% smoke in the laboratory, 10.0% cut their finger nails with teeth in the laboratory. 91.5% are not immunized against hepatitis B virus (HBV). 99.0% of them do not take shower immediately after laboratory work. 82.0% of the participants do not feel that the use of masks is necessary in laboratory.

Conclusion: It is concluded that the knowledge, attitude, perception, and compliance with universal work precautions amongst laboratory technicians are poor.

Keywords: Laboratory Technicians, Universal Work Precautions, attitude and Practices

INTRODUCTION

The workers in laboratories generally are faced with many occupational risk at work and his/her health and safety may be severely jeopardized if adequate preventive protective measures are not taken. These hazards can be physical, chemical and biological. The prevention of occupational hazards in laboratories requires a thorough knowledge of the risks and practical measures to be taken. Laboratory workers should familiarize themselves with “universal work precautions,” as defined by Center for Disease Control, are a set of precautions designed to prevent transmission of Human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood borne infections when providing first aid or health care. Under universal work precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other blood borne pathogens.

Universal work precautions apply to blood, other body fluids containing visible blood, semen, and vaginal secretions. Universal work precautions also apply to tissues and to the following fluids: cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids. Universal work precautions do not apply to faeces, nasal secretions, sputum, sweat, tears, urine, and vomitus unless they contain visible blood. Universal work precautions do not apply to saliva except when visibly contaminated with blood or in the dental setting where blood contamination of saliva is predictable.

Universal work precautions involve the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear, which can reduce the risk of the health care worker’s skin or mucous membranes to potentially infective materials. In addition, it is recommended that all health care workers take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.

Laboratory technicians are exposed to a large pool of specimens from patients suffering from infections such as HBV and HIV. However, they seem to have a poor perception of the risk of infections and are not compliant with the basic principles of universal work precautions. This system of infection control is,
therefore, very important if the risk of transmission of infections in the laboratory is to be minimized, as they may not be aware of the outcome of blood and fluid specimens until they are investigated or contaminated instruments in the laboratory.

The purpose of this study was therefore to assess the knowledge about and compliance with universal work precautions amongst laboratory technicians in private hospitals situated in Ahmedabad city.

MATERIALS AND METHODS
This cross-sectional study of laboratory technicians was conducted at various private hospitals of Ahmedabad city in the year 2009. Only technicians directly involved with the work in the laboratories of selected hospitals participated in the study. Hospitals were selected considering feasibility and response from their management. 200 questionnaires were randomly sent out, which were to be filled and returned. Only 154 questionnaires were returned.

A structured pretested self-administered questionnaire prepared by using guidelines on universal work precautions was used to collect data for the study. Information sought included socio-demographic characteristics such as age, sex, marital status, duration of working experience and background on biohazards.

Attitude and practices of participants were included in the study. Participants were also scored on some items on biohazards and biosafety. Furthermore, participant's knowledge on the subject was sought by inquiring what they would do if they sustained injuries in the laboratory. The Hepatitis B vaccination statuses were also determined.

All returned questionnaires were analyzed in a computer using Epi-Info version 6.04 b software (CDC, USA, and WHO, Geneva, Switzerland).

RESULTS
200 questionnaires were sent out and 154 of them were returned giving a response rate of 77%. 92 males and 62 females participated in the study. 73% of them were married while 27% are single. 82% of them are Hindu while 18% were Muslims. The mean age was 36.8±6.5 with a mean working experience of 8.3±2.1 years. 76.63% of the participants had worked for less than 10 years. Regarding awareness about Universal work precautions, Table 2 shows that 20.8% (n=32) of the participants had heard of it and only 37.5% (n=12) of these could define and state it's objectives.

53.23% (n=82) of the participants had had injury (cuts or punctures) from needles, surgical blades, sharp instruments or devices. The current study shows that only 28.78% of the victims make use of first aid after injury. All the participants wear gloves during laboratory works but 81.2% wear a single pair. Of these, 59.7% had experienced torn gloves and claimed that they are changed as soon as they are noticed.

Table 1: Demographic characteristics of laboratory technicians

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>25 (20.8)</td>
</tr>
<tr>
<td>30-39</td>
<td>53 (33.3)</td>
</tr>
<tr>
<td>40-49</td>
<td>6 (3.3)</td>
</tr>
<tr>
<td>50-59</td>
<td>10 (6.7)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>92 (59.7)</td>
</tr>
<tr>
<td>Female</td>
<td>62 (40.3)</td>
</tr>
<tr>
<td>Work experience in laboratory (yrs)</td>
<td></td>
</tr>
<tr>
<td>1-10</td>
<td>118 (76.63)</td>
</tr>
<tr>
<td>11-20</td>
<td>21 (13.4)</td>
</tr>
<tr>
<td>21-30</td>
<td>10 (6.7)</td>
</tr>
<tr>
<td>&gt;30</td>
<td>5 (3.3)</td>
</tr>
</tbody>
</table>

93.5% of the participants were aware of the risk of being infected with blood born infections after injury in laboratory and could recognize HBV and HIV as potential workplace exposures. They do not know if the following diseases could be contacted at workplace: Shigellosis, Tuberculosis, Hepatitis C, Brucellosis. 17.5 percentage of the participants claimed to know what to do if injury happens.

Table 2 describes attitude and practices of laboratory technicians.

Table 2: Knowledge, attitude, and practices of laboratory health workers

<table>
<thead>
<tr>
<th>Occupational hazards and preventive Measures</th>
<th>Numbers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware of Universal Work Precaution</td>
<td>32 (20.8)*</td>
</tr>
<tr>
<td>Immunized against Hepatitis B</td>
<td>5 (8.5)</td>
</tr>
<tr>
<td>Injury while working</td>
<td>82 (53.23)</td>
</tr>
<tr>
<td>Used first aid after injury</td>
<td>44 (28.78)**</td>
</tr>
<tr>
<td>Wearing of gloves For all procedure</td>
<td>154 (100.0)</td>
</tr>
<tr>
<td>Wearing Single pair of gloves</td>
<td>125 (81.27)</td>
</tr>
<tr>
<td>Experienced torn gloves</td>
<td>92 (59.7)</td>
</tr>
<tr>
<td>Awareness of the risk of being infected</td>
<td>144 (93.5)</td>
</tr>
<tr>
<td>Eating in Laboratory</td>
<td>70 (45.6)</td>
</tr>
<tr>
<td>Storage of food and water in refrigerator</td>
<td>72 (47.0)</td>
</tr>
<tr>
<td>Putting on of cosmetics in laboratory</td>
<td>49 (31.5)</td>
</tr>
<tr>
<td>Smoking in Laboratory</td>
<td>19 (12.07)</td>
</tr>
<tr>
<td>Cutting the fingernails with teeth in lab</td>
<td>15 (10.0)</td>
</tr>
<tr>
<td>Take shower immediately after lab work</td>
<td>2 (1.00)</td>
</tr>
<tr>
<td>Put on face masks</td>
<td>9 (25.5)</td>
</tr>
<tr>
<td>Put on white lab coat</td>
<td>110 (71.4)</td>
</tr>
<tr>
<td>Knowing that prophylaxis measures to be taken in the event of injury or exposure</td>
<td>27 (17.5)</td>
</tr>
</tbody>
</table>

*Only 37.5% of these could correctly state its objective. **Percentage of those who had cuts while working.
DISCUSSION

The level of awareness about universal work precautions amongst laboratory technicians is low as only 20.8% of them had heard about the term and only 37.5% of these could correctly state the objectives. The attitude and practices of the laboratory health workers towards universal Precaution call for a lot of concern as 45.6% of them ate in the laboratory and this is comparable with 41.0% rate observed amongst laboratory scientist in Ibadan, Nigeria and greater than 5.6% amongst workers in Lagos State Emergency Services (LASEMS) in Lagos. It is very interesting to note that 81.2% wear a single pair and of these, 59.7% had experienced torn gloves. None of those who had sustained injuries reported it to the hospital authorities because they felt no positive actions would be taken and could be treated elsewhere. 53.2% of them were treated in laboratory out of which 28.78% of them made use of the first aid boxes. The reasons proffered for the under utilization of the first aid boxes are that they are mere window dressings and as such they are ill equipped, poorly managed and kept in the laboratories in fulfillment of the requirements of the accrediting bodies.

The ultimate responsibility for laboratory safety within an institution lies with its Superintendent, who, along with all immediate associates should have a continuing, overt, commitment to the safety program. It has been shown that perception of senior management support for safety programmers was the most significant factor influencing compliance with infection control and reducing exposure incidents. We observed that 17.5% of them were knowledgeable about post exposure prophylaxis, which is comparable with 8.0% as obtained amongst British surgeons and 10.0% as recorded at LASEMS in Lagos. It has been reported that health workers are generally not aware of what form of prophylaxis measures to be taken in the event of exposure to blood and body fluids. Many needle and sharp injuries can be avoided with proper knowledge and good practices.

The incidence of infection with HBV has declined in health care workers in recent years largely due to the widespread immunization with hepatitis B vaccine. In many health facilities, even though the personnel are vaccinated, the seroconversion status after vaccination is not assessed. The CDC recommendation is to test for antibody after completion of three injections of HBV vaccine, and if negative, give a second three dose vaccine and test again anti-HBsAg antibodies. If there is no antibody response, no further vaccination is recommended. If an employee has a blood exposure to a patient known or suspected to be at high risk of HBsAg sero-positivity, he should be given HBIGx2 (one month apart) or HBIG and initiate revaccination.

In conclusion, knowledge and compliance with universal work precautions among these highly exposed laboratory workers is poor. Suggestions to improve deficiencies identified include elaborate training on universal precaution commitment to safety safer work practices by hospital management. Vaccination of staff against hepatitis B should also be done while guidelines for post prophylaxis should be widely disseminated.

ACKNOWLEDGEMENT

We are sincerely grateful to all the participants for sparing their time to fill the questionnaires. We are also thankful to the management of the laboratories allowing their staff to participate in the study.

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LETTER TO EDITOR

ARTERIAL CANNULATION-COMMON BUT CATASTROPHIC COMPLICATION OF IJV CANNULATION

Kunta Srinivasulu, Nikhil Mudgalkar

Department of Anaesthesia, Prathima Institute of Medical Sciences, Nagnur, Karimnagar, Andhra Pradesh

Sir,

Internal jugular cannulation though common and simple procedure, can cause arterial cannulation in 1% of cases. Ultrasound imaging while performing cannulation and pressure monitoring of cannulated vessel are common methods to prevent the complication. Currently both methods are recommended measures while performing IJ cannulation. If the complication occurs, immediate removal of catheter/guide wire and pressure can give valuable time to obtain vascular surgeon consultation for repair.

Internal jugular cannulation is one of the most commonly performed procedures in Intensive care units worldwide. The procedure is not without risks with arterial puncture and cannulation being one of the most important hazards. The incidences of this risk factor is found to be around 0.1 to 1%, according to various reports. Puncture by small locator needle happens in around 6% of cases, but as the smaller bore needle, harm is much less. The problem is compounded if it is not recognized in time and introducer sheath or catheter is pushed inside the artery.

Ultrasound imaging is one simple, inexpensive way to reduce the complication. Ultrasound imaging allows the presence of the internal jugular vein (IJ) to be confirmed, its patency can be demonstrated, and its anatomical relationship to the carotid artery can be defined. Presently ultrasound guided insertion is preferred method. Second method is pressure monitoring of the cannulated vein. Automated digital pressure monitoring devices are currently available to measure the pressure inside the vessel. Prevention of arterial cannulation though paramount important, possibility is there to still have it.

There are no established guidelines for the treatment. First and foremost treatment is removal of catheter and pressure, surgical repair and endovascular intervention may have better effects as shown by current studies.

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