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Osmani Medical Teachers Association Journal

ORIGINAL ARTICLE

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Clinical profile of low birth weight babies in neonatal ward of a tertiary care hospital in Bangladesh.

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Abstract

The objective of the study was to evaluate clinical profile of low birth weight babies in neonatal ward of a tertiary care hospital in Bangladesh. This cross sectional, descriptive study was conducted at neonatal ward of Jalalabad Ragib Rabeya Medical College Hospital, Sylhet from January 2008 to December 2008. One hundred and ten neonates were selected according to inclusion and exclusion criteria in this study. Among them 59 (53.6%) were male and 51 (46.4%) were female. 98 (89.1%) babies were delivered in hospital and 12 (10.1%) babies were delivered at home whereas 58 (52.7%) were delivered by LUCS and 52 (47.2%) were by normal vaginal delivery. Among 110 low birth weight babies, 84 (76.4%) were preterm and 26 (23.6%) were term infants. Maximum LBW babies (54.6%) were from weight group 1500-1999 gm. Common presenting complains on admission were LBW / Prematurely alone (77.3%), perinatal asphyxia (12.7%) and RDS (5.5%). PROM (36.40%), APH (30%), PIH (23.70%), Maternal Malnutrition (21.80%) were the main risk factor of LBW baby. Co-ordination between obstetric and neonatal services, improvement of nursing care and further improvement of the LBW care within the available resources are essential to prevent complication and death.

[OMTAJ 2014; 13(2)]

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Introduction

Weight below 2500gm at birth irrespective of age of gestation is considered as low birth weight, (LBW).[1] Prematurity and IUGR are the two main causes of LBW. The majority of LBW in developing countries is due to IUGR, while most LBW in industrialized countries is due to preterm birth[2]. Birth weight in particular is strongly associated with fetal, neonatal and post neonatal mortality, infant and childhood morbidity long-term growth, development, and some chronic diseases. According to the World Health Organization (WHO) study of the global burden of disease, LBW and other perinatal causes are a leading causes of death and disability.[3]

World Health Organization (WHO) estimates that 4 million neonatal death occur around the world every year.[4] In Bangladesh NMR is 32% and LBW infants have a much greater risk of dying in the newborn period which is about 11% of total neonatal death in our country.[5] The level of LBW in developing countries (17%) is more than double the level in industrialized countries (7%). In fact more than 96% of LBW babies are born in the developing world.[6]

In general, the health and nutrition of mother are key factors of LBW. Maternal factors such as age (under 16 or over 35 years), weight and height, socio economic and nutritional status, physical work, smoking, alcohol consumption, drugs, acute or chronic medical illness and some foetal factors such as foetal distress, multiple gestation has been related to the birth weight outcome. Certain obstetric complications such as premature rupture of membrane, placenta previa, aboruptio placenta, incompetent cervix are important cause of LBW.[7,8] The aim of this study to identify the clinical profile such as gestational age, birth weight, OFC, length, different presentation of LBW babies and also to find

out the important risk factors that are associated with these LBW babies. Having an idea of common presentation of LBW babies in neonatal word, will help in future planning for the better management of such patient.

Materials and Methods

This was a cross sectional study, conducted in the neonate ward of Jalalabad Ragib Rabeya Medical College Hospital, Sylhet, Bangladesh during the period from January 2008 to December 2008. For this purpose Total 110 admitted low birth weight neonates irrespective of gestational age were selected consecutively as study group. Informed consent was taken from parents before enrolment in this study. Ethical issues were maintained properly. The enrolled newborns were resuscitated on admission properly. History was taken and physical examination was done as per structured questionnaire. Weight was taken on admission using a baby scale and gestational age was determined on the babies of maternal dates (times from the first day of the last menstrual period) and scoring system[9]. After collecting data, editing was done manually and was analyzed with the help of Statistical Package for the Social Science (SPSS) software package version 12.

Result

Total 110 LBW babies are included in this study. Out of 110 babies, 60 are male and 50 infants are female. The ratio is 1.2:1. 98 were delivered in hospital and 12 babies were delivered at home. 52 babies were delivered by spontaneous vaginal delivery and 58 babies were delivered by LUCS. Among 110 low birth weight babies, 84 are preterm and 26 are term infants. Maximum LBW babies (54.6%) were from weight group 1500-1999 gm. OFC of LBW babies ranged from 28cm to 33cm and length ranged from 37cm to 45cm. Common presenting complains on admission were LBW / Prematurely alone (77.3%), perinatal asphyxia (12.7%) and RDS (5.5%). In this study a few clinical risk factors of LBW were found. In order of frequency these were PROM (36.4%), APH (30%), PIH (23.7%), malnutrition of mother (21.8%), GDM (18.20%) and twin pregnancy (10.90%). Most of them presented with more than one cause. Among 110 babies total 83 babies remain in hospital for about 1-10 days. Only 1 baby stay in hospital >40 days and his birth weight was <1000gm.

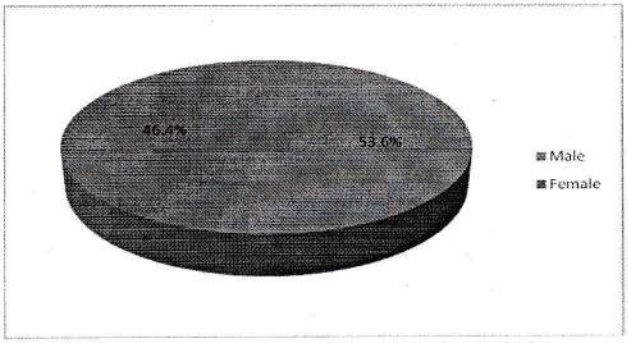


Figure I: Distribution of low birth weight babies by sex.

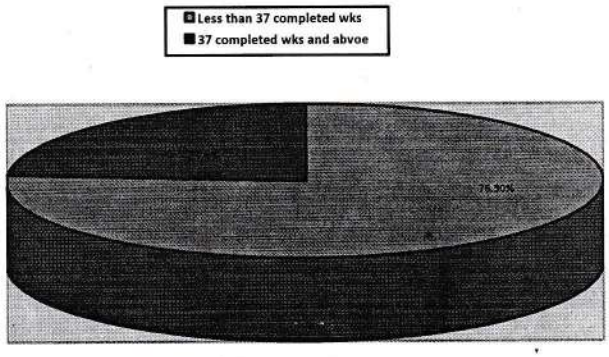


Figure II: Distribution of LBW babies by gestational period.

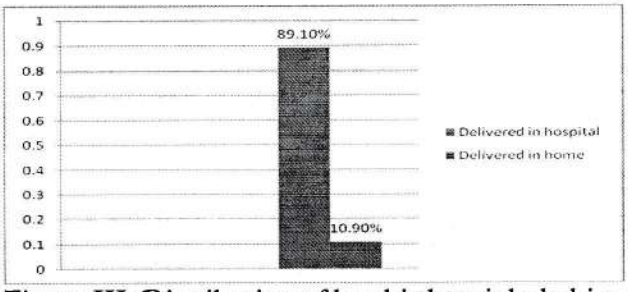


Figure III: Distribution of low birth weight babies by place of delivery.

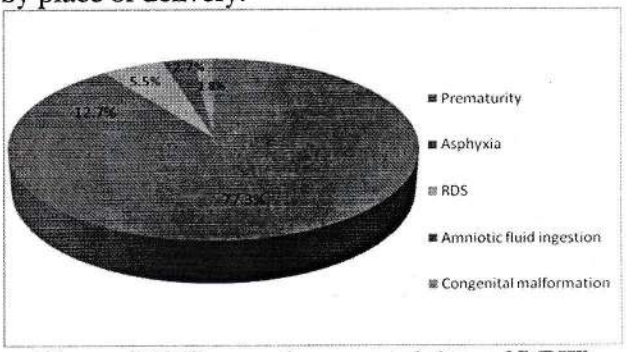
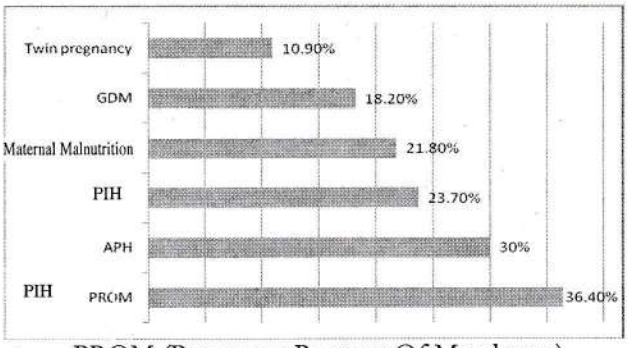


Figure IV: Presenting complains of LBW babies on admission.



- PROM (Premature Rupture Of Membrane)
- APH (Antepartum Haemorrhage)
- PIH (Pregnancy Induced hypertension)
- GDM (Gastational Diabetes Mellitus)

Figure V: Distribution of risk factor of LBW babies.

Table I: Number and percentage of low birth weight babies by weight.

Weight in gram	Frequency	Percent
<1000	5	4.5%
1000-1499	26	23.6%
1500-1999	60	54.6%
2000<2500	19	17.3%
Total	110	100%

Table II: Number and percentage of low birth weight babies of different gestation by different centile.

Gestation (in weeks)	<10th Centile		10th - 90th Centile		Total	
28 and below	2	1.8%	5	4.5%	7	6.3%
29-32	6	5.5%	26	23.6%	32	29.1%
33-36	12	10.9%	33	30%	45	40.9%
37 & above	20	18.2%	6	5.5%	26	23.7%
Total	40	36.4%	70	63.6%	110	100%

Table III: Length of hospital stay in low birth weight babies.

Hospital stay (days)	Total Number	Weight in gram			
		<1000	1000-1499	1500-1999	2000-<2500
1-10	78	4 (4%)	14 (14%)	43 (43%)	17 (17%)
11-20	17	0 (00%)	9 (9%)	7 (7%)	1 (1%)
21-30	4	0 (00%)	4 (4%)	0 (00%)	0 (00%)
31-40	0	0 (00%)	0 (00%)	0 (00%)	0 (00%)
>40	1	1 (1%)	0 (00%)	0 (00%)	0 (00%)

Discussion

This cross sectional study provides evidence from a tertiary care hospital in Bangladesh, of differential clinical profile and aetiology of LBW baby. There is slight preponderance of male babies over female babies in this study comprising 53.6% male and 46.4% female. This is conformity with studies by Tabib et. al [10] Gurav et al.[11] and Wather.[12] In this study 84% (76.3%) are preterm LBW against 26% (23.6%) who are term LBW. It is notworthy that 63.6% of LBW infants are Appropriate for Gestational Age (AGA) and 36.4% are Small for Gestational Age (SGA). This is in similarity with the study by Tabib et al.[10] who found in his series 53.6% were AGA against 46.4% babies of SGA. Bhalla et al.[13] in a study found 70% preterm against 30% SGA babies. So, reduction of preterm birth alone may help to a large extent to bring down the incidence of LBW babies. It is obvious from this study and other studies that among LBW percentage of preterm babies are more and the incidence of VLBW is more among preterm babies.

The percentage of SGA (36.4%) is also significant in this study. As maternal malnutrition and sickness is the main etiology of SGA, so the incidence of LBW can also be reduced by regular antenatal check up and proper treatment of maternal sickness. It is remarkable that 14 (12.7%) babies presented with perinatal asphyxia or without other problems in this study. This is consistent with the study of Gurav et al.[11], Tabib[10] who found 34% and 32% respectively in their series of LBW. Begum et al.[14] found a higher incidence (46.5%) of perinatal asphyxia in their study. Whereas Bhakoo et al.[15] in a study found 9.8% incidence of birth asphyxia. High incidence of perinatal asphyxia in this study may possibly be related to high risk delivery associated with preterm & LBW babies, poor antenatal care, delay in seeking care.

5.5% preterm LBW babies with weight less than 1500gm presented with RDS in this study which is similar with the study of Tabib et at[10] who found in their study an incidence of 4 (12.5%). But Banu et al.[16] an incidence 13.43% RDS which is higher than this study. RDS occurs in all parts of the world and its incidence is of the order of 10-15% in infants less than 2.5 Kg at birth with varying mortality rate. This incidence being highest in lowest weight group which was also observed in this study.

Though congenital anomalies are supposed to be more prevalent in SGA babies, in this study only 2 (2%) babies presented with congenital anomalies. This is consistent with Godbole et al.[17] and other studies.

APH (30%), PIH (23.70%), maternal malnutrition (21.80%) and twin pregnancy (10.90%) were the main aetilogy of LBW which is consistant with Nazmi RS et al.[18] who found 25.6%, 16.5% and 17.6% respectively. In this study incidence of PROM was 36.4% which is higher than Najmi RS et al.[18] who found 18.4%. So, early diagnosis and proper management of those conditions can reduce the incidence of LBW baby.

In conclusion, birth weight is the most important parameter which reflects the status of both maternal and neonatal health and nutrition. In this study, the relative impact of some of the factors related to LBW in reference to our population was high lighted. Further explorations preferably in population based studies are required as LBW related data is essential for monitoring and evaluating the progress towards achieving national goals for lowering neonatal and infant morbidities and mortalities. The study has a number of limitations such as small number of patients, observational study without any control group and samples were only collected from an urban tertiary care hospital setting.

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ORIGINAL ARTICLE

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Lateral Gastrocnemius Muscle Flap For Cover Of Large Popliteal Fossa Defect Following Release Of Burn Contracture

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Abstract

Post burn scar contracture of popliteal fossa is very common. Many of these patients undergoing surgery for release of contracture results in a large defect in popliteal fossa needing soft tissue cover. Lateral Gastrocnemius flap is a very reliable flap which can be used to cover this defect and also it has the additional benefit over skin graft for preventing recurrence of contracture. Moreover if tibial nerve and popliteal vessels are exposed after scar excision and contracture release it is the work horse for soft tissue cover. This cross-sectional study was done in Sylhet MAG Osmani Medical college Hospital, during the period of January 20013 to December 2014 to find out the outcome of post burn popliteal fossa contracture reconstruction with lateral gastrocnemius flap.

[OMTAJ 2014; 13(2)]

Introduction

A burn patient receiving the best treatment is expected to heal without any contracture.[1] Although post burn contracture (PBC) may arise even with adequate treatment of burn injury[2], advances in burn management has led to a decreased incidence of PBC. Yet many of the burn patients present with PBCs. Knee joint is involved in about 22% of all large joint contractures.[3] These patients require surgical interventions. Excision and release of the contracture poses a challenge to the reconstructive surgeon often with the exposed neurovascular bundles in the uneven surface of the popliteal fossa.[4] Options for reconstruction of the soft tissue defect in the popliteal fossa includes gastrocnemius flap, free latissimus dorsi flap, free rectus femoris flap, free or pedicled anterolateral thigh flap, semitendinosus flap and so on.[5,6,7] Even only split thickness skin graft could be a choice as well.[8] Among them pedicled gastrocnemius flap is a reliable option to cover the popliteal fossa. It is easy to harvest and the donor site morbidity is considerably low.[9,10] Flap coverage is the best option following release of post burn contracture as it prevents recurrence and has a better aesthetic outcome.[10] For achieving adequate release of contracture, scar tissue should be excised completely. Unfortunately, in many of the cases after complete scar excision and contracture release popliteal vessels and tibial nerve is exposed.[10] In such cases only split thickness skin graft is not a suitable option. Here lateral gastrocnemius flap is a simple but effective solution for this problem. Even if the nerve and vessels are not exposed split thickness skin graft is difficult to be taken in the depressed area of popliteal fossa.[8] Moreover it cannot prevent the recurrence of contracture. As the gastrocnemius muscle fills the uneven exposed surface of the popliteal fossa and it is highly vascular, split thickness skin graft over that muscle is better taken than a graft over scar tissue.[3]

Fig1: A patient with politeal fossa contracture

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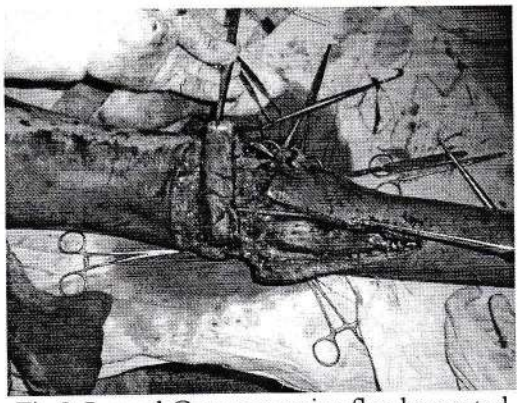
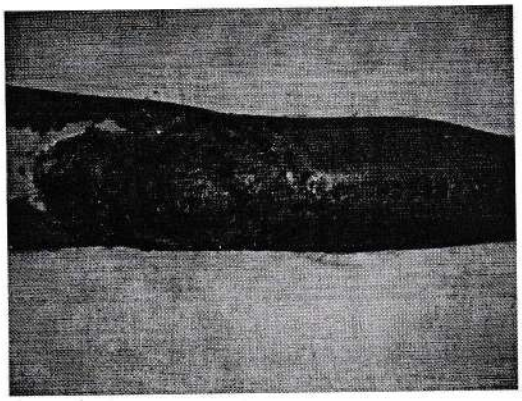


Fig 2: Lateral Gastrocnemius flap harvested



Material and Methods

This cross-sectional study was done in the department of Plastic Surgery, Sylhet MAG Osmani Medical College Hospital, during the period of January 2013 to December 2014 with the aims and objective to find out the range of movement of the affected knee joint before and after popliteal fossa contracture release and reconstruction with lateral gastrocnemius muscle flap, to see the rate of survival of pedicled lateral gastrocnemius muscle flap and also to see the split thickness skin graft take over gastrocnemius muscle flap. For this total 30 patients of both sex, ranging from 12-55 years were included in this study. Sampling method was Consecutive and convenient. All selected patients undergoing post burn popliteal fossa contracture reconstruction by gastrocnemius flap were followed. Detailed history was taken regarding preoperative conditions. General and local examination was done routinely. Preoperative range of movement recorded. Necessary fitness investigations were done. Per operative findings were recorded. Check dressing was done on 5th post-operative day and data was recorded. Contact numbers of all patients were preserved. All patients were followed up to one month after the surgery. During follow up history was taken and local examinations were performed regarding wound and range of movement of the affected joint. Range of movement was measured with degree of extension of the knee joint, graft take in percentage and flap survival with healthy, partial or total loss.

Operative Technique:

Surgery was done under spinal anesthesia. The contracture was released. The large popliteal fossa defect was covered by lateral gastrocnemius muscle flap. The gastrocnemius muscle was exposed by an incision in the middle of the calf (stocking seam incision). The lateral head of gastrocnemius muscle was mobilized by detaching it from the common tendon. It was then rotated 90 to 180° on its origin based on the lateral sural vessel and sutured to cover the defect. The muscle was covered by split skin graft.

Results

In this study the total number of patient was 30, among them 18 (60%) were male and 12 (40%) were female. Bojd et al[11] found in their study the percentage of male and female patient were 55.4% and 44.6% respectively. In another study Wai-sun ho et al[12] found the male to female ratio 1.76:1 whereas in our study it was 1.5:1 (Chart I).The cause of more male burn victim may be the increased risk of burn exposure may be due to occupational hazards.

In our study the minimum age of the patients was 12years and maximum 55years with a mean age was 33.46 years and median age 34 years. Curreri et al[13] found the mean age 33.3 years and median age 29.1 years which are quite nearer to our findings.

33.3% of the patient of our study was house wife, 23.3% were farmer, 20% were day labourer, 13.3% were service holder and 10% patient were doing others. Akhter et al[14] found the 44.12% burn victims were house wives.

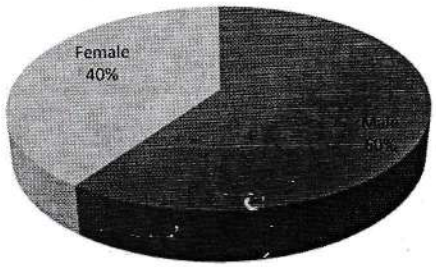


Chart I: Sex distribution of the patients

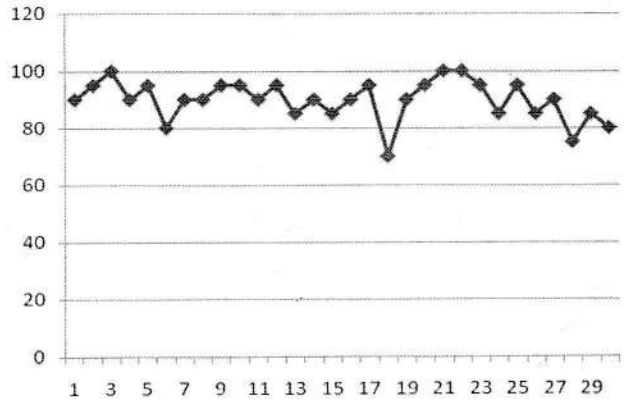


Chart II: curve showing percentage of split thickness skin graft take. X axis showing number of patient and Y axis showing percentage of graft take (Mean graft take was 91.7%, p< 0.000)

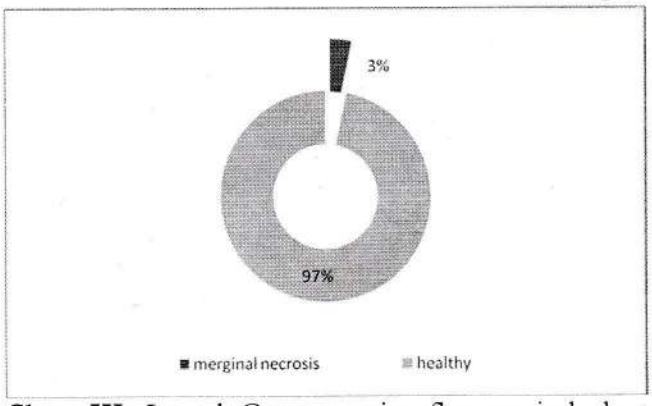


Chart III: Lateral Gastrocnemius flap survival chart shows only 3% cases there were marginal flap necrosis and remaining 97% were healthy.

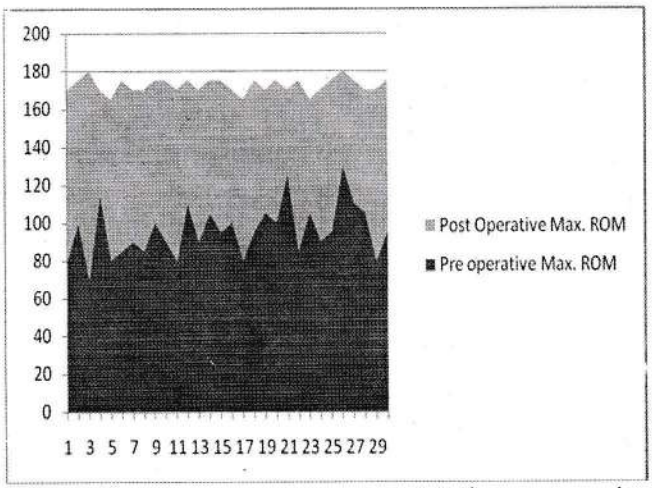


Chart IV: Comparison between pre and post-operative maximum range of movement. X-axis shows the number of patient and Y axis shows the pre-operative (Dark color) and post-operative range of motion (light color) in degree. Mean pre-operative maximum range of movement (ROM) was 95.89°, and mean post-operative maximum range of movement (ROM) was 172.33°.

Discussion

The aims of operation on a patient with post burn contracture of the knee are multifold. A flexion contracture of the knee is a considerable functional problem to the patient and is better prevented than treated. Splinting of the knee joint in extension during the immediate post burn period can prevent the formation of these contractures. The aims of treatment are to minimize scar tissue over the flexor surface of the affected joint, restore the normal position of the joint and prevent recurrent contractures.[15]

Pedicled lateral gastrocnemius flap has a reliable blood supply and relatively easy to harvest.[16] As the vascular pedicle need not to be explored from lateral head chance of injury to the pedicle is very minimum. Careful rotation and marginal bleeding ensures the per-operative viability of the flap. In this study the flap survival rate was 100%. Only one flap had a marginal necrosis (Chart II). In unpaired t-test flap survival rate was found statistically significant (p<0.000). Flap survival rate plays a pivotal role in the ultimate success of the procedure.

After release of the contracture a large area of defect in the popliteal fossa is exposed with neurovascular bundle which is not possible to cover only by the skin graft. Lateral gastrocnemius muscle flap covers both vital structures and the uneven popliteal fossa. Graft-take mostly on the vascularity of the recipient bed and muscle always possess a higher vascularity. In this study the mean skin graft-take rate was 91.17% and it was found highly significant by t-test (p< 0.000).

In this study mean pre-operative maximum Range of Movement (ROM) was 95.89°, maximum pre-operative ROM was 130° and minimum pre-operative ROM was70° and attainment of mean post-operative maximum range of movement (ROM) was 172.33°, maximum ROM was 180° and minimum post-operative ROM was 165° (Chart IV). Gait analysis revealed that ≥15° popliteal fossa contracture does not change the trunk kinematics significantly. However 30° contracture changes the kinematics significantly which may lead to knee-spine syndrome.[9] The effectiveness of this procedure in relation to attainment of maximum ROM is found highly significant statistically by paired t-test (p value <0.000).

Post burn popliteal fossa reconstruction with lateral gastrocnemius flap could be a simple, effective and reliable remedy for these very unfortunate patients. So, multicentre evaluation should be done for its effective implementation.

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ORIGINAL ARTICLE

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Correlation Of Post Mortem Findings, Peroperative Findings Of Cranial Leisons In Cases Of Fatal Head Injury With Computed Tomography Scan Findings Conducted At Sylhet Mag Osmani Medical College And Hospital, Sylhet Bangladesh

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Abstract

Head trauma now represents a major cause of death and disability among young otherwise healthy people, and it is claimed that it is more common than ever. Radiographs are now replaced by computed tomography (CT) scanning as the primary method of assessing head trauma. The purpose of the present study was to evaluate the role of CT scanning in cases of acute head trauma of different severity. A retrospective study has been carried out of 50 cases of acute head trauma with positive CT scanning referred to Sylhet MAG Osmani Medical College (SOMC), Sylhet Bangladesh from March 2011 to December 2013.

All the intracranial sequelae of acute head trauma are documented and analyzed, where the males are found to be involved in 78% of the cases, and in up to 60% of the cases the victims are in the first three decades of life, road traffic accident (RTA) -the main cause shows a dramatic increase compared with other studies. Fractures are present in the majority of the cases indicating a significant trauma; moreover, more than one sequelae can be detected in many cases. A localized brain oedema, contusions, and intracerebral hematomas are the most commonly found sequelae, while other sequelae such as subarachnoid hematomas, subdural hematomas, and epidural hematomas are encountered less. Diffuse brain swelling as has been declared in other studies is more common among children. In conclusion, CT scanning remains the first diagnostic imaging tool to detect the different intracranial post-traumatic lesions of acute head trauma, many of which are life-threatening, on the other hand, magnetic resonance imaging (MRI) is spared for full assessment of head trauma, and for follow up too.

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Introduction

Among all regional injuries, injuries to the head and neck are the most common and important in forensic practice.[1] Head injuries are the most common cause of death in trauma patients throughout the world. As the head accommodates the most vital organ of our body 'brain', so such injuries cause death of victim in most of cases due to brain damage.[2] These injuries occurs due to many cause most common of them being road traffic accidents, followed by fall, assault, child abuse etc.

Such injuries have remained the most challenging task for a neurosurgeon in trauma care. Though the non invasive diagnostic procedures like X-ray, CT scan, MRI, Cerebral angiography have revolutionized the approach towards the treatment of head injury cases, still the incidence of deaths due to head injuries are on the rise throughout the world. Similar situation is prevailing in our region, numbers of medico-legal cases of head injury admitted in 2008 were 150, in 2010 number increased to 226 and in the year 2011 till July it is 123.So the figures themselves explain the gravity of situation. The early and effective detection and timely surgical intervention plays a key role in outcome of the patient. The ability of CT scan to rapidly demonstrate a surgically correctable lesion, fracture, various intracranial hemorrhage makes it

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a modality of choice in evaluation of acute head injury but still the post mortem examination being a naked eye examination is one of the finest tool for injury assessment.[3]

So the need is felt for a co-relational study for interpretation of injuries to the head by CT scan, which is available with the clinician and invasive procedure like post mortem examination, to ascertain the accuracy and importance of CT scan in diagnosis of head trauma and the causes of discrepancies between the two findings with their possible explanations. Such study will help a radiologist to reorient his approach towards CT diagnosis of head injury cases and also draws the attention of forensic expert to the specified areas of the brain mentioned in CT report.

Similar studies has been carried out by many workers in various parts of world where they have drawn their conclusions regarding the efficacy and accuracy of post mortem examination and CT scan in diagnosing various lesions in head injury cases.

Aims and Objectives of the study:

To correlate post mortem examination findings with CT scan findings in head injury cases.

To identify lesions that may be misdiagnosed or remain undiagnosed by CT and can be diagnosed by post mortem examination and vice versa, to understand the cause of discrepancies in the two and suggest possible improvisation of CT investigation.

To ascertain pattern of head injury due to varying etiology.

Materials and Methods

Study was carried out in the department of neurosurgery of Sylhet MAG Osmani Medical College.. Postmortem were done in the department of forensic medicine of the same college during the period of March 2011 to December 2013. Data were collected from the admitted patient of neurosurgery. Operations were done by neurosurgeons of SOMC. All the investigations were done in radiology department of SOMC. It is a prospective study.

All the data were analyzed using SPSS.

Results

Table - I: Type of Injury

Type	No. %
Road traffic accident (RTA)	32 (64%)
Fall	04 (08%)
Assault	12 (24%)
Unknown	02 (04%)
Total	50

Table - II: Age

00-10	02 (04%)
10-20	18 (36%)
20-30	13 (26%)
30-40	08 (16%)
40-50	03 (06%)
50-60	02 (04%)
60-70	02 (04%)
70-80	01 (02%)
80-90	01 (02%)
Total	50

Table - III: CT Scan Findings

Scalp	Hematoma, oedema	02 (4%)
Skull	Fracture	20 (40%)
Meninges	EDH,SDH, SAH	10 (20%)
Brain	Intracerebral haematoma, Oedema	08 (16%)
Cerebrum	Haematoma, Oedema	02(4%)
Cerebellum	Haematoma, Oedema	02 (4%)
Brainstem	Haemorrhage	03 (6%)
Total		

Table - IV: Per-Operative Findings

Scalp	Haematoma	02 (4%)
Skull	Fracture	11 (32%)
Meninges	Extradural haematoma (EDH) Subdural haematoma (SDH0 Subarachnoid haemorrhage (SAH)	04 (8%) 3(6%) 2(4%)
Brain	Contusion Concussion Laceration	1, (2%) 2 (4%) 4 (8%)
Cerebrum	Contusion Concussion Laceration	2 (4%) 1 (2%) 2 (4%)
Cerebellum	Contusion Concussion Laceration	2 (4%) 1 (2%) 1 (2%)
Brainstem	Haemorrhagic	6 (12%)

Table - V: Post mortem Findings

Scalp (Haematoma)	7 (14%)
Skull (Fracture)	22 (44%)
Meninges (EDH/SDH/SAH)	08 (16%)
Brain	4 (8%)
Oedema	3 (6%)
Haemorrhage	2 (4%)
Laceration	1(2%)
Contusion	1 (2%)
Cerebrum-	2 (4%)
Oedema	5 (10%)
Haemorrhage	2 (4%)
Laceration	1 (2%)
Contusion	1 (2%)
Cerebellum –	4 (8%)
Oedema	1 (2%)
Haemorrhage	1 (2%)
Laceration	1(2%)
Contusion	1 (2%)
Brainstem:	
Midbrain -	
Oedema	2 (4%)
Haemorrhage	1 (2%)
Laceration	1 (2%)
Contusion	1 (2%)
Pons -	
Oedema	1 (2%)
Haemorrhage	3 (6%)
Laceration	1(2%)
Contusion	1(2%)
Medulla –	
Oedema	1(2%)
Haemorrhage	1(2%)
Laceration	1(2%)
Contusion	1(2%)

Discussion

In our study, the most vulnerable group fall within 10-30 years, most of the victims were due to RTA (64%). Fracture of the skull bone were (20%), Subdural haematoma (SDH) (10%), Extradural haematoma (EDH) (7%), Brain Injury (14%). Male and female ratio is 3:2. Most of the patients have undergone craniotomy (62%), death (22%). CT (98%) followed by MRI (10%) done. Such type of study done by a relative study on CT scan and post mortem findings on 65 cases of acute head trauma from Mysore region of South India was done during the period 2000 to 2005. They found the incidence of head injury to be common in males above 20 yrs of age and the concurrence between the findings of post mortem examination and CT scan was highest for detecting brain lesions (88%; 57%) followed by intracranial haemorrhages (72%; 47%) and least for skull fractures (38% ; 25%).[4]

From 2001- 2002 another group did a co-relational study of CT scan and PM examination findings with reference to skull fractures in head injury on 140 cases in North India and revealed that CT scan examination gives better information in detecting the fractures of temporal bone as well as type of fracture and helps in planning their treatment in a better way.[5]

In 2004 a retrospective comparative study was performed on 56 cases from the population of Denmark and it was found that CT showed correct skull fracture diagnosis in 60.7% cases. Fractures were diagnosed partially or missed totally on CT-images in 22 cases. The agreement for fracture diagnoses of the anterior, medial and posterior cranial fossae was 20%, 52% and 60%, respectively. The diagnostic agreement regarding brain injuries varied from 0% to 79%.[6]

A study done in Tabriz region of Iran on brain stem findings on 200 cases of head injury during the period 2005-2007 revealed that post mortem examination can detect brain stem lesions in 19.5% cases over 11.5% in CT scan. The most common lesions of the brain stem region were pontine contusions. They found that CT scan is a specific method of evaluating patients with probable brain stem injuries after head trauma, but low sensitivity limits its efficacy.[7]

A comparative study on 50 head injury cases from population of Delhi was done in 2006 and it was found that among all cases in 23.7% skull fractures, 33.3% EDH, 35.7% SAH, 30% ICH, 20% contusions, 16.7% lacerations and cerebral oedema were remained undiagnosed by CT scan examination. Therefore they concluded that post mortem examination has a upper hand in detecting various lesions in head injury over CT scan even if CT is a useful tool in early and effective diagnosis.[8]

A group in 2010 did a co-relational study on 140 cases of acute head trauma from population of Jaipur city in North India and established that males in age group of 21-40 yrs were more vulnerable to road traffic accidents. Evaluation of correlation of injury findings by various modalities showed that CT scan cannot accurately detect

the lacerations of the various lobes of the brain, particularly located on the inferior or medial aspects of the temporal and fronto-parietal lobes. Bony injuries and cerebellar injuries were detected in 41.4% and 6.4% cases at post mortem examination in comparison to 15.7% and 1.4% in CT scan.[3]

In conclusion, RTA is the most killing event among the able persons those who had very valuable lives. CT Scan & MRI give very important clue for the diagnosis of specific lesions. Per operative findings usually correlate with the CT and MRI reports. But sometimes (10% cases) were missed by non-invasive procedures. Per operative findings and post operative findings are the single naked eye examination where actual scenario is available.

Recommendations:

1. CT can diagnose 90% of the head injury lesions..
2. Per operative findings are important clue to identify the type of injury.
3. Post Mortem findings help in the diagnosis in undiagnosed cases of head injury.
4. All school children should be trained up by Bangladesh Road Transport Authority (BRTA) personnel for prevention of RTA.
5. Road signs (Zebra Crossing, Speed limiter, etc.) should be displayed by road side properly.
6. Adequate number of neurosurgeon should be trained for proper management of bulk of the patients.
7. Awareness among the general people about RTA should be built up.
8. Condition of the roads should be improved.
9. Violence by political activists should be controlled by mutual dialogue.
10. Elderly patients should remain under regular medical check-up.

Government, NGOs, and International agencies should fund for this project.

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ORIGINAL ARTICLE

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Treatment Outcome of Tuberculosis Patients at DOTS Corner in a Tertiary Care Hospital

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Abstract

Tuberculosis is a serious public health problem in the developing countries. Early diagnosis, effective treatment and continuous assessment outcome are important indicators of TB control. The objective was to study the treatment outcome of tuberculosis patients under Directly Observed Therapy Short course (DOTS).

This retrospective study was conducted in the DOTS corner of Sylhet M.A.G. Osmani Medical College Hospital, Sylhet from January 2008 to December 2012. Total 1341 TB patients who were registered in patient record sheets were selected in this study.

Treatment outcome of patients were evaluated in accordance with world health Organization recommendation. Regarding treatment outcome of the patients, treatment success rate (TSR) among new cases and retreatment cases were 95% and 84.9% respectively. Among total registered cases 674 (50.3%) patients were cured, 595 (44.4%) had completed treatment, 32 (2.4%) were died where as treatment failure cases were 9 (0.7%), default cases were 17 (1.3%) and 14 (1%) cases were transferred out. Continuous follow up, supervision of treatment adherence and defaulters tracing should be strengthen to improve TSR and reduce TB burden in the region.

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Introduction

Tuberculosis (TB) is the leading cause of death from a curable infectious disease.[1] It causes a great deal of ill health and enormous burden on population of most low and middle income countries.[2] According to the 2010 world Health organization (WHO) Global Health Report there were an estimated 9.4 million cases of TB globally.[3] The target set within the context of Millennium Development Goal (MDG) is to halt and reverse the incidence of TB by 2015. [4] For effective TB control it is very important to detect the disease as early as possible and to ensure that those diagnosed, complete their treatment and get cured. [5] Incomplete treatment may result in prolonged excretion of bacteria which may resist the drug, causes disease and leads to increase morbidity and mortality and the spread of the disease[6].

The highest incidence of TB and the highest number of death due to TB occur in Asia and Sub-Saharan Africa. [3] Bangladesh ranked sixth among the 22 high burden countries of tuberculosis globally. Estimates suggested that daily about 880 new cases were diagnosed and 176 deaths occurred in Bangladesh[7]. The incidence and prevalence of all from of TB in Bangladesh per 100000 was 225 and 411 respectively in 2011. Government of Bangladesh lunched DOTS strategy in 1993[8]

DOTS during at least the first 2 months of treatment, in which patients take drugs directly under the observation of health care providers, has been recommended by international tuberculosis authorities. [9,10] and has been shown to be effective in achieving a high successful treatment rate, from 86% to 96.5% [11] The utility of DOTS was significantly associated with a higher treatment success rate than self-administered therapy (97.8% vs 88.6%, P< 0.002) and a lower tuberculosis related mortality rate (0% vs 5.5%, P=0.002)[12]. DOTS also leads to significant

reduction in the frequency of primary drug resistance, acquired drug resistance and relapse[13]. Even though the objectives of TB treatment are curing the pt, preventing the spread of tuberculosis infection, and preventing the emergence of new drug resistant strains, these plans are not achieved in many regions of the world due to several factors that affect treatment success. These include: the severity of disease co infection with HIV and or other disease, multi drug resistance, poverty, and also the support provided to the patient[10].

Treatment outcome results serve as a proxy of the quality of TB treatment provided by a health care system. Recommendation on how to evaluate treatment outcome using standardized categories have been issued by the world health organization (WHO) in conjunction with the European Region of the International Union Against tuberculosis and lung Disease (IUATLD).[14] These Categories were defined to assess the risk of future relapse and drug resistance. This study is aimed to assess treatment outcomes of pulmonary tuberculosis and extra pulmonary tuberculosis cases at DOTS corner of Sylhet M.A.G. Osmani Medical College Sylhet.

Materials and Methods

This was a retrospective study, conducted in the DOTS Corner of Sylhet M.A.G. Osmani Medical College Hospital, Sylhet, Bangladesh during the period from January 2008 to December 2012. DOTS Programme was started in the centre attached to the Medical College Hospital in 2004 covering the entire population of 1, 27, 524. The sources of information were the TB registrar and patient record sheets. The registration documents reviewed containing basic information such as patient's gender, forms of tuberculosis (Pulmonary or extra pulmonary tuberculosis), type of tuberculosis (smear positive or smear negative), Category of tuberculosis (new case or retreatment case), and treatment outcome Treatment outcome of patients was evaluated in accordance with world health Organization recommendation and classified as Cured (finished treatment with negative bacteriology result at the end of treatment), Completed treatment (finished treatment but without bacteriology result at the end of treatment), failure (remaining smear positive at five months despite correct intake of medication), defaulted treatment (patients who interrupted their treatment for two consecutive months or more after registration), died (Patient who died from any cause during the course of treatment) transferred out (patients whose treatment results are unknown due to transfer to another health facility) and successfully treated (A patient who were cured or completed treatment). After collecting data, editing was done manually and was analyzed with help of statistical Package for the Social science (SPSS) software package version 17.

Results

For the 5 years (2008-2012) a total of 1341 TB patients were registered out of which 773 (57.6%) were male and 568 (42.4%) were female. Among them 1275 (95%) were new cases and the rest 66 (5%) were retreatment cases. Out of the total new cases 688 (54%) were smear positive pulmonary TB (SPPTB), 172 (13.5%) were smear negative pulmonary TB (SNPTB) and the rest 415(32.5%) were Extra pulmonary TB (EPTB) cases. Regarding treatment outcome of the patient, treatment success rate (TSR) among new cases and retreatment cases were 95% and 84.9% respectively. Among total registered cases 674 (50.3%) patients were cured, 595 (44.4%) had completed treatment, 32 (2.4%) were died where as treatment failure cases were 9 (0.7%), default cases were 17 (1.3%) and 14 (1%) cases were transferred out. Female tuberculosis patients had higher treatment success rate (97.4% vs 93%) than males. The highest treatment success rate was observed among smear negative patient 96.0% compared to smear positive PTB 93.6% and EPTB 95.7%.

Table I: Number and percentage of the patients (new cases) treated with category 1

Type of PT	Male N (%)	Female N (%)	Total N (%)
Smear positive PTB	435(34.1 %)	253(19.9 %)	688(54 %)
Smear negative PTB	107(8.4 %)	65(5.1 %)	172(13.5 %)
Extra pulmonary TB	188(14.7 %)	227(17.8 %)	415(32.5 %)
Total	730(57.2 %)	545(42.8 %)	1275(100 %)

Table II: Number and percentage of the patients (Re-treatment cases) treated with category 2

Re-treatment case		Male	Female	Total
Smear(+) pulmonary TB	Re lapse	19(28.8 %)	4(6.0 %)	23(34.8 %)
	Treatment Failure	7(10.6 %)	1.(1.5 %)	8(12.1 %)
	Default	1(1.5 %)	0(0 %)	1(1.5 %)
Smear(-) pulmonary TB		14(21.2 %)	15(22.7 %)	29(43.9 %)
Extra pulmonary TB		2(3 %)	3(4.5 %)	5(7.6 %)
Total		43(65.1 %)	23(34.8 %)	66(100 %)

Table III: Treatment outcome of all registered TB patient in SOMCH. DOTs center, from 2008 to 2012.

Variable		Cured	Treatment Completed	Died	Treatment Failure	Default	Transferred Out	Total
TB pt Category								
New		651(51.0%)	562(44.0%)	32(2.5%)	8(0.6%)	12(0.9%)	10(0.8%)	1275(95%)
Re-treatment case								
Smear(+) pulmonary TB	Re lapse	19(82.6%)	-	0(0%)	0(0%)	2(8.7%)	2(8.7%)	23(1.7%)
	Treatment Failure	4(50%)	-	0(0%)	1(12.5%)	1 (12.5%)	2(25%)	8 (0.6%)
	Treatment after default	0(0%)	-	0(0%)	0(0%)	1(0.07%)	0(0%)	1 (0.07%)
Smear(-) pulmonary TB		-	28(96.6%)	0(0%)	0(0%)	1(3.4%)	0(0%)	29 (2.2%)
EPTB		-	5 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5 (0.4%)
Type of TB								
Smear(+) PTB		674(93.6%)	-	19(2.6%)	8(1.1%)	11(1.5%)	8(1.1%)	720 (53.7%)
Smear(-) PTB		-	193(96.0%)	6(2.9%)	0	1(1.05%)	1(0.5%)	201 (15%)
EPTB		-	402(95.7%)	7(1.7%)	1(0.3%)	5 (1.2%)	5(1.2%)	420 (31.3%)
Sex of the pt								
Male		420(54.3%)	296(38.3%)	24(3.1%)	7(0.9%)	16 (2.0%)	10(1.3%)	773(57.6 %)
Female		254(44.7%)	299(52.6%)	8(1.4%)	2(0.4%)	1 (0.2%)	4(0.7%)	568 (42.4%)

Table IV: Treatment outcome of total Subjects (n= 1341)

Treatment outcome	Number	Percentage
Successfully Treated	1269	94.6 %
Died	32	2.4 %
Treatment Failure	9	0.7 %
Default	17	1.3 %
Transferred out	14	1.0 %
Grand total	1341	100 %

Table V: Treatment success rate of all registered TB pt in SOMCH DOTS corner from 2008-2012.

Patient Category	Total Patients	Cured	TSR
New Cases	1275	1213	95%
Retreatment Cases	66	56	84.9%
Total	1341	1269	94.6

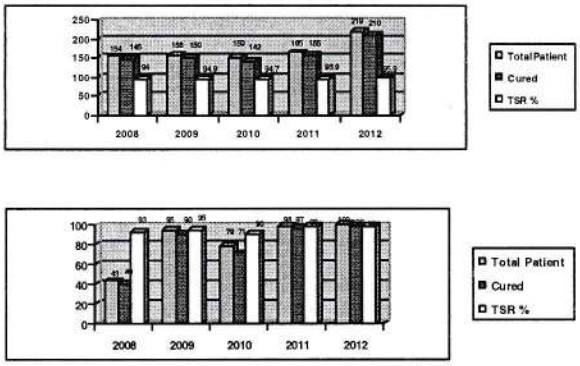

Figure II: Year wise distribution of TSR of new EPTB case registered during 2008-2012.

Discussions

The great burden of tuberculosis incidence and mortality in developing countries is in adult aged 15 – 60 years which includes the most Socio-economically productive members of the society such as parents, workers, community leaders etc. Due to their age factor and socio-economic dependence of family they involve themselves in earning and get exposed to other cases in community.[15] In present study tuberculosis was seen more in males 773(57.6%) compared to female 568(42.4%).Similar results were seen in study by Chennaveerappa et al of south India [16] and in Hamburg study by R Diel,[17]. Mir Azam Khan et al[18] reported equal number of case in both sex. In contrary to the study, a study from Addis Ababa, Ethiopia[19] showed 53.2% of documented patients were female.

In present study, the incidence of smear positive pulmonary TB (SPPTB) is more 720 (53.7%) in compare to smear negative pulmonary TB (SNPTB) 201 (15%) and extra pulmonary TB (EPTB) 420(31.3%) which is alarming for this region as SPPTB is more contagious and able to infect other members of the society. So early diagnosis and management of these patients are mandatory for proper control of tuberculosis. On the contrary, a study conducted in Gondar University Hospital, Northwest Ethiopia[20] showed the number of SNPTB cases (54.9%) remained highest compared to SPPTB and EPTB might be due to high proportion of TB – HIV co infection at the study area.

According to the WHO 2005 report on global tuberculosis control[21], the treatment successes rates (TSR) under the DOTS programmes among 22 high-burden countries (HBCs) Varied from 60% in Uganda to 93% in China with an average of 83%. Likewise study from south India[16] has reported a treatment success rate at 83%, and another study from Addis Ababa Ethiopia[19] found TSR at 82.7% Furthermore, a study conducted in Gondar University Hospital, Northwest Ethiopia[20] showed that the TSR of all tuberculosis cases was only 29.5%

In our study, treatment outcome among total 1341 patient, 674 pt (50.3%) got cured, 595 (44.4%) treatment completed, 32 (2.4%) patient died, 9 (0.7%) were treatment failure, 17 (1.3%) were treatment defaulter and 14(1%) were transferred out. Treatment success rate of present study was 94.6% which is quiet satisfactory might be due to low transferred out rate (1%), default rate (1.3%) and death rate (2.4%).

The default rate (1.3%) was lower than the average 6.2% among the 22 HBC,[21] study of south India[16] (8%) and study of Northwest Ethiopia[20] (18.3%) and also study form Addis Ababa Ethiopia.[19] (5.1%) This lower defaulter rate in this study might be due to proper supervision and health education in the study area.

According to studies conducted in central India[22] and in malawi[23] patients who completed treatment had a better understanding of the duration of TB treatment than patients who interrupted treatment. In other settings, Counseling[24], best supervision,[25] home visits and motivation[26] , and health education.[27] have been used successfully as interventions to reduce default rate of tuberculosis patients. The complementary results obtained from the quantitative and qualitative components of the study conducted in Northwest Ethiopia also indicate that the TB club approach has a significant impact in improving patients' compliance to anti-TB treatment and in building positive attitudes and practice in the community regarding TB.[28]

The treatment failure rate varied from 0.1% in Zimbabwe to 9.1% in the Russian Federation with an average of 1.5% in HBCs.[21] the treatment failure rate in this study was 0.7% which is lower than the average failure rate of HBCs. This might be due to lower prevalence of multi drug resistant strains of M tuberculosis at the study area.

In compare with the study conducted in Pakistan[29], the current study demonstrated the higher TSR among female TB patients (97.4%) compared to male TB pt (93%). On other hand high default rate (2%) and death rate (3.1%) were observed among male TB patients compare to female TB patients which were 0.2% and 1.4% respectively. However, the proportion

of female patients registered for anti TB treatment were relatively low compared to male patients that may probably reflect gender difference in TB epidemiology.

In present study the incidence of both pulmonary and Extra pulmonary TB was gradually increasing from 2008 onwards and side by side the TSR was also improved in 2012(96%) in compare to 2008 (94%). This progress may be partly explained by the improvement in the diagnosis of the disease and partly by the practice of using triple and double FDC drugs which might have provided advantages to supporting adherence and programme delivery[30, 31].

Our study tried to provide base line information about treatment outcome of TB patients. The result of this study also indicates that TB is still a major public health problem in this region.

In conclusion, year of enrollment and treatment center were significantly associated with treatment success. Although the overall treatment success obtained in this study is in line with the world Health Organization target, to improve treatment outcome of tuberculosis patients we recommend enhanced supervision and monitoring, improved counseling during the intensive and continuation phases of treatment, home visits and motivation of patients (defaulter tracing) and health education to reduce treatment interruption.

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ORIGINAL ARTICLE

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Antimicrobial Sensitivity Pattern of Microbial Agents In Obstetrical And Gynaecological Post Operative Wound Infection

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Abstract

The objective of the study was to find out the common bacterial pathogens responsible for wound infection in Obstetrical and Gynaecological post operative patients and their antibiotic sensitivity pattern. It was a prospective cross sectional study done in Obstetrics and Gynaecology Ward Unit-IV of Sylhet MAG Osmani Medical College (SOMC), Sylhet-3100, Bangladesh from a period, July to December-2012. Approval was taken from the Ethical Committee of (SOMC). All information of each patient was recorded in pre designed data collection sheet with written consent of the subject. Wound swab was taken adapting standard procedure with a sterile swab stick from all infected Obstetrical and Gynaecological post operative wound infection cases and was cultured, identified and antimicrobial sensitivity was performed by disk diffusion method.

A total of 98 wound swabs from post operative wound infection cases were studied, 84 were from Obstetrical patients and 14 were from gynaecological patients. There was growth in 32 samples and yielded no growth is 66 samples. Out of 32 bacterial growth 24 were *Staph.aureus* and 8 isolates were *E.coli*. No offending organisms were totally resistant to all antimicrobial agents tested. All isolates were sensitive to Imepenam.

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Introduction

Surgical wound infection is clinically defined as purulent discharge from surgical wound or insertion wound of the drain, or spreading cellulites from the wound.[1] Surgical site infection can also be defined as the presence of pus along with sign of infiltration in the surgical wound margin[2]. In spite of new antibiotic available today, surgical wound infection remains a threat due to secondary bacterial contamination. Wide spread use of prophylactic antibiotic leads to emergence of multi drug resistant bacteria.[3] Post-operative wound infection (PWI) are important cause of morbidity in patients undergoing surgery and add substantial financial burden to government exchequer as well as undue discomfort.[4,5,6,7]

One of the major problems faced by Surgeons is to deal with post operative surgical wound infection, as most of these cases are due to multiple drug resistant bacteria. Gram positive cocci and Gram negative bacilli are being implicated in most of such cases[8,9] Risk factors other than the microbiological agents are the systemic factors affecting the patients healing response, local wound characteristics or operative characteristics. It's risk depends on bleeding, the amount of devitalized tissue created, need for drains within the wound, obesity and Diabetes mellitus.[10]

They are the third most frequent nosocomial infection associated with increased hospital stay, cost and use of antimicrobial agents.[11] Antibiotic resistance can be controlled by appropriate anti microbial prescribing, prudent infection control, new treatment alternatives and continued surveillance.[12] Prevention of surgical infection rate by adapting basic principles of asepsis is the key to the solution of this problem.

Due to significant changes in the microbial genetic ecology, resulting from indiscriminate use of antimicrobials the spread of antimicrobial resistance is now a global problem. This study was undertaken to identify the prevailing bacterial pathogens and their sensitivity patterns in a surgical unit of Obstetrics & Gynecology department. It will assist the clinicians in

appropriate selection of antibiotics, especially against hospital acquired infections.

Materials and methods

This prospective cross sectional study was carried out after prior approval by the institutional Ethical Committee. Total 98 wound swabs collected randomly from patients developing surgical site infection during a period of, July to December-2012 were included in this study. Infected cases were identified using Centre for Disease Control (CDC) definition for surgical site infection. This study was carried out in Obstetrics & Gynecology Ward, Unit-IV and Department of Microbiology of Sylhet M A G Osmani Medical College and Hospital, Sylhet-3100, Bangladesh. It is a tertiary care hospital serves as a referral hospital for rural and urban centers. All patients who underwent surgery during the study period were included in this study.

In all cases preoperative, Intra-operative and postoperative details were studied. Patient's information was recorded in a pre-designed case record form which included the Name, Age, Parity, indication for operation, type of surgery (emergency or elective), duration of pre-operative and post-operative stay in the hospital and associated socioeconomic condition of each patient. All patients were followed up in wards till discharge from the hospital.

Samples from infected surgical wounds collected with a sterile swab-stick by standard procedure, labeled and were transferred to the Department of Microbiology, Sylhet MAG Osmani Medical College, Sylhet, immediately and inoculated in Blood agar and Mc Conkey's agar plates and were incubated at 37°C for 24 hours. Growth was observed and bacterial isolates were identified by standard laboratory procedure. Antimicrobial sensitivity study was performed by disk diffusion method.

Results

During 6 (six) months study period post operative wound swab was collected randomly from 98 patients who underwent surgical procedure in the Obstetrics & Gynaecology ward of Sylhet AMG Osmani Medical College Hospital (SOMCH). There were 14 (14.29%) Gynaecological & 84 (86.73%) Obstetrical post-operative wound infections, shown in Table-1.

Table I: shows distribution of surgical wound infection (SWI) amongst obstetrical and gynaecological patients.

Ward	SWI Number	SWI (%)
Obstratrical	84	86.73
Gynecological	14	14.29

Growth was observed in 32 (32.65%) cases and no growth was observed in 66 (67.35%) cases. *Staph. aureus*, n =24 (75%)was the most commonly isolated pathogen, followed by *E. coli*, n =8 (25%), shown in Table - II.

Table-II: Pathogens isolated from surgical site infection.

Total swab samples	No growth	Growth observed	Pathogens	Number (n=32)	Percent (%)
98	66 (67.35%)	32 (32.65%)	*S. aureus*	24	75
			E. coli	8	25

Resistance and sensitivity patterns of the organism to commonly prescribed antibiotics is shown in Table - III.

Table- III: Resistance pattern of pathogens isolated from surgical site infection.

Sl. No	Antibiotics	Total Resistance	Total Sensitive
1	Amikacin	81	17
2	Amoxiclav	83	15
3	Ceftriaxone	88	10
4	Ciprofloxacin	93	05
5	Cefixime	95	03
6	Cefuroxime	96	02
7	Gentamicin	79	20
8	Imepenam	00	98
9	Vencomycin	78	10
10	Natalmycin	79	09

Discussion

Surgical wound infection has been a major concern among health care practitioners, not only in terms of increased trauma to the patient but also in view of its burden on financial resources & the increasing

requirement for cost effective management within the health care system[1]. The risk of infection after surgery depends upon the factors including the type & length of surgical procedure, age, underlying conditions & previous history of the patient. Skill of the surgeon; diligence with which infection control procedures are applied & the type & timing of preoperative antibiotic prophylaxis.[14] The risk of developing SWI also depends on the number of bacteria that colonies the surgical wound[16]. While the operating wound following surgery is considered to be "clean" the surgical wound may be contaminated by air born bacteria in the operating room & intensive care units, by bacteria from endogenous sources, the hands of theater personal or by direct contamination by the patients normal skin micro flora.[17] The organisms most frequently involved in surgical infections change from time to time & also vary with hospital settings.[15]

In this study 98 patient with SWI were investigated. That is not similar to the study conducted in India by Nutanbala N. *et al* [15], where 31.15% pathogens were gram-positive. & 68.85% were gram-negative. In our study gram positive organisms were 75% and gram negative organisms were 25%.

Bacterial culture of infected wound swab depicted *S.aureus* & *E.coli*, as the common pathogens. These results are similar to other studies carried out in Iran & Nepal.[19,20] In a study by Comfort *et al*,[18] it is shown that majority of surgical wound infections are caused by *S.aureus*. In addition to this *E.coli*, Klebsiella *spp.*, Streptococcus, Enterococcus & other less common pathogens have been isolated from infected wound. In our study only *S. aureus* & *E.coli* were identified.

Predominance of gram-negative organism in PWI is reported in Pakistan by Safia Bibi *et al*.[22] The predominance of gram-negative organism may be the fact that, all of the surgery was abdominal surgery & gram negative organisms are predominantly reported in all intra-abdominal surgery,[21] which is different to our findings.

Post operative sepsis rate in any hospital depends much on the case material, hospital environment, irrational use & availability of antibiotics, antibiogram might vary depending on the study group & hospital setup. So the trend now-a-days is comparative studies in the same hospital over years.[15]

Large number of PWI in our hospital may be due to lack of personal hygiene, overcrowding of the patients and visitors, less cleanliness of hospital floor and linens, due to shortage of bed and space patient has to lie on floor. Many of the obstetrical operations are done by the trainee doctors on an emergency basis. Avoidance of antibiotic dose mainly the injectables due to shortage of supply and lack of affordability of the patient also contribute. Local factors, suture materials or surgical technique and handling of Obstetrical patients prior to hospitalization may also be responsible.

The reasons for large number of PWI with no growth in culture could be due to empirical use of systemic antimicrobial agents in the subjects from the beginning. It would be un-ethical to stop antibiotics prior to collection of wound swab.

Limitation of this study is that huge number of patient gets admitted in this hospital & so the number of PWI cases are also large. We could not collect wound swab from all PWI cases. We only took purposive sample of 98 cases for short assessment.

In conclusion, there is alarming increased infection caused by antibiotic resistant bacteria. Non-existence of or non-compliance to hospital antibiotic policy & indiscriminant use of antibiotics may have lead to emergence of resistant bacterial strains. So the only hope lies in the prevention of such PWIs. To achieve this goal fundamental principles of asepsis should be adopted and practiced. Individual patient risk factors must be identified & modified whenever possible. Resource mobilization to address the problem is a prime necessity. Restricting patient admission to available beds in the hospital may not be a feasible option as it may seriously jeopardize the access to free / low-cost medicare by the marginalized sections of the society. In addition to skin asepsis & preoperative prophylactic antibiotics, care, attention to the theater environment is also very important. Last but not the least, surgical expertise, monitoring & theater discipline is also the essential component.

For this, proper infection control system should be established & continually monitored and the source, pattern of different pathogens & their antimicrobial sensitivity pattern should be followed up regularly.

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ORIGINAL ARTICLE

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Efficiency of HbA1c over blood glucose parameters to explore prediabetes

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Abstract

Diagnostic criteria for diabetes mellitus- identifies those persons with hyperglycemia that if untreated, is associated with a significant risk of microvascular diseases. There is a window between normoglycemia and diabetic level hyperglycemia. This mild hyperglycemia is a prediabetic condition, associated with increased risk of macrovascular diasese, including coronary atheroma and risk of developing Diabetes mellitus (DM) in future compared with normoglycemic population. Traditionally it is estimation of blood glucose level to diagnose normal or impaired glycemic status. As hormones and physical activity regulate blood glucose level at different feed/fast states, mere blood glucose value at a point of time fails to diagnose impaired glycemia. HbA1c- a glycated Hb so far used to monitor diabetic control, reflects an average blood glucose level of previous 8-10 weeks, is now recommended for diagnosis of DM as well as impaired glycemia but clinical practice still relies on blood glucose level. In this perspective this study was performed to evaluate impaired glycemia by HbA1c due to its simplicity of performance without preparation, and reflecting long term glycemic status. It was a cross sectional study, done in the department of Biochemistry, Sylhet MAG Osmani Medical College, from January 2012 to December 2012. Healthy 110 adults of both sexes, 25-35 years of age, with no history of DM were included. Venous blood sample from each subject was used for estimation of HbA1c and two sample Oral Glucose Tolerance Test (OGTT)- fasting & 2 h post glucose load. χ^2 test and Pearson's Correlation Coefficient test were done. SPSS, version 16.0 was used for statistical analysis. Among 110 subjects, all were normoglycemic diagnosed by FBS, only 4 prediabetics (3.6%)by 2 h post glucose load in contrast to 46 subjects were prediabetics by HbA1c(41.8%). It may be concluded that HbA1c better identified prediabetic people in comparison with blood glucose parameters.

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Introduction

Diagnostic criteria for DM (& normality) by WHO(2000)[1]: Blood glucose(mmol/L)- fasting<6.1(normal), ≥7.0(DM); 2h post glucose load<7.8(normal), ≥11.1(DM). There is a window between normoglycemia and diabetic level hyperglycemia, expressed by two new terms, IFG (Impaired fasting glycemia: fasting 6.1-6.9,but after 2 h normal<7.8)& IGT(Impaired glucose tolerance: fasting 6.1-6.9,after 2 h 7.8-11.0), are combinedly termed as Prediabetes. Though less severe than DM,prediabetic patients have a substantially increased risk of cardiovascular disease & death compared to normoglycemic persons.[2,3] Traditionally, we relied on blood glucose cut off values for diagnosis of diabetes & prediabetes on the basis of increased risk of diabetes related complications. Although significant relation exists between blood glucose levels & cardiovascular disease, there is no threshold level for cardiovascular disease.[4] HbA1c- a glycated Hb so far used to monitor diabetic control, reflects an integrated blood glucose level over previous 8-10 weeks, is now recommended for diagnosis of DM as well as impaired glycemia. According to American Diabetic Association (ADA) as of 2012, HbA1c <5.7% is normal, >6.5% is DM & 5.7-6.4% is prediabetes.[5] This study was performed to evaluate relative performance of 'blood glucose' and 'A1c' to explore impaired glycemic status.

Materials and methods

It was a cross sectional study carried out in the department of Sylhet MAG Osmani Medical College Hospital from January to December, 2012. Applying convenient consecutive sampling method 110 healthy non diabetic adults of both sexes 25-35 years age, among doctors, nurses & staffs with informed written consent were included as study subjects. Ethical approval was taken from ethical committee of Sylhet MAG Osmani Medical College. Individuals with known DM, hemoglobinopathies, pregnancy & obesity were excluded. Study subjects were prepared for OGTT. On the day of test, 3 mL of venous blood was taken from each in fasting state from which 1 mL was taken in a test tube containing EDTA for HbA1c and 2 mL in test tube without anticoagulant. Then glucose drink (75 gm glucose in 300 mL water) was given and 2 mL of venous blood was drawn after 2 h and taken in test tubes without anticoagulant for blood glucose estimation. Data were expressed as mean (±SD), frequency and percentage as applicable. Pearson's correlation coefficient & χ^2 test were done.SPSS version 16.0 was used for statistical analysis. P<0.05 was considered as significant.

Results

Total 117 participants were enrolled. Among them 7 were diagnosed as DM and were excluded for further study. Remaining 110 were included and their OGTT and HbA1c were estimated. Baseline characteristics of participants were presented in table I. Correlation of A1c with blood glucose parameters was shown in table-II.

Table I: Baseline characteristics of participants (n=110)

Variables	Mean ± SD
Age(years)	29.61 ±3.8
Male	59
Female	61
Height(cm)	163.55
Weight(kg)	±8.27
Basal metabolic index BMI(kg/m^2)	65.15 ±9.94
Systolic Blood Pressure(mmHg)	24.2 ±2.6
Diastolic Blood Pressure (mmHg)	116.0 ±9.6
Fasting blood glucose FBG (mmol/L)	76.3 ±5.1
Blood glucose 2h after oral glucose load	4.35 ±0.59
(mmol/L)	5.76 ±0.92
HbA1c(%)	5.51±0.47

Table II: Correlation of HbA1c with OGTT blood glucose parameters

Parameters	r value	p value
HbA1c vs FBG	0.210	0.028
HbA1c vs blood glucose 2 h after oral glucose load	0.360	0.001

Pearson's correlation coefficient done, p<0.05 was taken as significant.

HbA1c had significant positive correlation with OGTT blood sugar values (both fasting and 2 h after oral glucose drink).

Fasting blood sample in OGTT setting failed to identify impaired glucose level and 2 h blood sample identified only 3.6% impaired blood glucose level. In contrast, 41.8% asymptomatic healthy young adults were identified as prediabetes by HbA1c.(Table-III)

Table III: Glycemic status of study subjects by OGTT and HbA1c(n=110)

Variables	Category	Frequency	Percentage
FBG (mmol/L)	<6.1 (normal)	110	100
	6.1-6.9 (prediabetic)	0	0
2h OGTT sample (mmol/L)	<7.8 (normal)	106	96.4
	7.8-11.0 (prediabetic)	4	3.6
HbA1c (%)	<5.7 (normal)	64	58.2
	5.7-6.5 (prediabetic)	46	41.8

There was significant difference of frequency of prediabetes by A1c in comparison with 2 h OGTT sample. A1c identified prediabetes better than OGTT, analysed by χ^2 test, and presented in table-IV

Table-IV: Comparison of OGTT and A1c for diagnosis of prediabetes (n=110)

Test for diagnosis	Normal	Prediabetes	□^{2}-value	P-value
Blood glucose (2h OGTT)	106	4	21.75	<0.001
A1c	64	46		

Discussion

Diagnostic criteria of DM is based on blood glucose values in different settings of measurements-above a degree which is a risk level for vascular complications. There is a level which in general population have no risk of vascular complications and thus is considered as normal. There is a window in between normal and diabetic levels, considered as prediabetes. It is asymptomatic, most people are unaware of existence of a blood glucose level that is not normal and not diabetic, but may develop diabetes at a rate of 2% per year.[6] So, these persons need careful follow up. Traditional blood glucose parameters-FBG or 2h post glucose load in OGTT setting, may not explore prediabetes as it measures blood glucose at a certain point of time. Instead, HbA1c which reflects average blood glucose over previous few weeks-may be more useful. In this perspective, this cross sectional study was carried out to evaluate the individual ability of blood glucose parameters by OGTT and HbA1c to diagnose prediabetes.

Study subjects were 110 nondiabetic healthy young adults 25-35 years of age of both sexes. Nearly 62% of participants had family history of DM. Seventy (70) participants had normal BMI ($<24.9 kg/m^2$), 40 participants were overweight (BMI $\geq$ 25-29.9 kg/m^2). Though there were positive significant correlation of HbA1c with FBG (P=0.02) and 2h after oral glucose load(P=0.001), blood glucose parameters significantly differed to expolore prediabetes. Fasting blood sugar was normal in all participants; 2 h after oral glucose load was prediabetic level in 4 participants (3.6%). In contrast, 46 participants (41.8%) were prediabetic by HbA1c.

Kim et al (2011)[7] found significant positive correlation of HbA1c with FBS & 2h post glucose load value(P<0.01)which is similar to our study and is a consistent finding as a definite fraction of blood glucose is permanently bound with HbA1c. In a Bulletin of WHO (2014), the prevalence of Diabetes and Prediabetes in Bangladesh was 9.7% and 22.4% as observed in a recent study in which criteria for diagnosis of prediabetes was based on blood glucose levels (Fasting and 2h post glucose load)[8]. Consistent to WHO & IDF recommendation of use of HbA1c for diagnosis of Diabetes and Prediabetes, ADA (2012) recommended use of HbA1c value 5.7%-6.4 % to diagnose prediabetes.[5] In this study we made an attempt to see the frequency of prediabetes in healthy young population, who are mostly enjoying a sedentary lifestyle. We used both traditional and well accepted blood glucose parameters as well as newly introduced diagnostic use of HbA1c. In the WHO bulletin (2014) it was shown that prevalence of prediabetes in Bangladesh was 22.4%, diagnosed by blood glucose parameters, but we found 41.8% had prediabetes diagnosed by HbA1c.[8] We had limitation of smaller sample size. However, it may be concluded that glycated Hb performed better to diagnose prediabetes, than conventional blood glucose parameters. Further study is needed with larger sample size and longitudinal follow up for occurance of diabetes among prediabetics using A1c alongwith blood glucose parameters. Message from the study was to consider HbA1c to diagnose prediabetes.

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Pretreatment With Dutasteride Decreases Perioperative Bleeding Associated With Transurethral Resection Of The Prostate

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Abstract

The efficacy of dutasteride in the treatment of gross hematuria associated with benign prostatic hyperplasia is well established. The aim of this study was to evaluate whether pretreatment with dutasteride for six weeks before surgery can reduce surgical blood loss.

A total of 70 patients with benign prostatic hyperplasia who underwent transurethral resection of prostate were enrolled and randomized into two groups. The dutasteride group comprising of 35 patients, was treated with dutasteride (0.5 mg/day) for 6 weeks before surgery and the control group, comprising of other 35 patients, did not receive dutasteride. Blood loss was evaluated in terms of the reduction of hemoglobin and hematocrit levels before and 24 hours after surgery.

None of the patients treated with dutasteride reported any side effects. A significantly lower mean blood loss was observed in the dutasteride group compared to the control group (Hemoglobin level 1.88 ± 0.92 versus 3.19 ± 1.17, respectively, p <0.0001; and Hematocrit level 6.48 ± 2.84 versus 11.22 ± 3.52 respectively, p<0.0001)

In conclusion, this study showed that pretreatment with dutasteride for 6 weeks before transurethral resection of prostate reduces the surgical bleeding considerably without any major side effects.

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Introduction

Transurethral resection of prostate (TURP) still represents the gold standard in the surgical treatment of benign prostatic hyperplasia (BPH). The most prevalent peroperative and postoperative complications of TURP are urinary retention, significant bleeding which require transfusion and clot retention. Blood loss is one of the most important causes of morbidity during TURP. Dutasteride, which acts as an inhibitor of type 1 and type 2 isoenzymes of 5-alpha-reductase inhibitors (5-ARI), was found to reduce prostate tissue vascularity within 6 weeks of therapy.[1] In this study, we tried to evaluate whether pretreatment with dutasteride can reduce the surgical blood loss.

Material and Methods

The study was conducted in the department of Urology, MAG Osmani Medical College, Sylhet between January 2012 and December 2013. 70 patients with lower urinary tract symptoms with BPH who were candidates for surgery were included in this prospective study. The patients were randomized into two groups. In the first group 35 patients received dutasteride 0.5 mg/day for 6 weeks prior to surgery and 35 patients in the second group remained as the control. Patients who underwent prior prostate or urethral surgery and had a diagnosis of prostate cancer or chronic renal failure, patients who received finasteride or dutasteride, aspirin or similar anticoagulant drugs prior to surgery and patients who had capsule perforations or open sinuses during the surgery were excluded from the study. All the patients signed an informed written consent form before their enrolment in the study.

To evaluate the prostate volume, transrectal ultrasonography was performed 03 days before surgery. A routine hematologic analysis and prostate specific antigen (PSA) was performed. Intake of non steroidal anti-inflammatory drugs and aspirin was discontinued two weeks before surgery. All the

operations (TURP) were performed by same surgeon under spinal anesthesia using a 24Fr resectoscope (Karl Storz, Germany). Furthermore, the surgeon was blind to each patient's profile (with or without dutasteride pretreatment) to prevent a possible bias. Blood loss, indicated by the reduction of hemoglobin (Hb) and hematocrit (HCT) levels, was estimated before surgery and 24 hours after surgery.

Operation time was recorded at the end of the procedure and the prostatic tissue resected was weighed and sent for histopathological examination. The catheter was removed 72 hours after surgery for all patients. All the data were analyzed with SPSS software for windows. Student's t-test was used to compare the patient's variables of the two groups. P-values less than 0.05 were considered as statistically significant.

Results

The mean ages in the dutasteride group and control group were 65.80 ± 8.34 and 65.20 ± 4.81 years respectively (Table 1). The mean age, PSA, prostate volumes, preoperative Hb and HCT, in the dutasteride and control group were similar (Tables 1 and 2). There wasn't any statistically significant difference between the dutasteride group and the control group regarding age, PSA, prostate volumes, resected prostate weight, operation time, preoperative serum Hb and HCT values. The mean operating time was 56.45 ± 18.54 min in the dutasteride group and 58.34 ± 22.37 min in the control group. The weights of the resected prostate tissue in the dutasteride and the control groups were 30.85 ± 14.96 and 31.41 ± 18.87 gm respectively (Table 1).

Table 1: The mean Age, PSA, Prostate volume, Resected tissue and Operation time

	Dutasteride group	Control group	p-value
Age (years)	65.80 ± 8.34	65.20 ± 4.81	>0.05
PSA (ng/ml)	3.12 ± 3.08	3.02 ± 2.82	>0.05
Prostate volume (gm)	53.91 ± 18.94	54.67 ± 22.86	>0.05
Resected tissue (gm)	30.85 ± 14.96	31.41 ± 18.87	>0.05
Operation time (minutes)	56.45 ± 18.54	58.34 ± 22.37	>0.05

Values are represented as mean ± SD (Standard Deviation)

The postoperative Hb and HCT values were determined and the preoperative and postoperative changes were evaluated. There was a significant decrease in Hb and HCT values in both groups in the early postoperative period, but the decrease in the dutasteride group was significantly lower when compared to the control group ($p<0.0001$, Table 2).

Table II: The mean Hb, HCT, pre and post operative HB and HCT decrease

	Dutasteride group	Control group	p- value
Preoperative Hb (gm/dl)	14.57± 1.38	14.54± 1.82	>0.05
Preoperative HCT (%)	43.19± 4.28	43.65± 6.09	>0.05
Prepostoperative HB decrease (gm/dl)	1.88 ± 0.92	3.19 ± 1.17	p<0.0001
Prepostoperative HCT decrease (%)	6.48 ± 2.84	11.22± 3.52	p<0.0001

Values are represented as mean ± SD (Standard Deviation)

In the early postoperative period none of the patients required blood transfusion or reported any side effects with dutasteride treatment. Only two patients of the control group needed transfusion of one unit of blood and only one patient required new catheterization for clot retention. There was a significantly lower blood loss in the dutasteride group compared to control group.

Discussion

Transurethral resection of prostate (TURP) results in intra and perioperative bleeding, which sometimes leads to urine retention because of blood clots. BPH is characterized by increased proliferation of stromal and acinar cells around the urethra sustained by increased gland vascularity. Some studies demonstrated the effect of finasteride in reducing BPH related hematuria.[2-4] Finasteride, which blocks the conversion of testosterone to dihydrotestosterone, decreases the activity of androgen- controlled growth factors responsible for angiogenesis. This feature was used to prevent intraoperative bleeding in patients undergoing TURP. Some studies supported the

pharmacological use of finasteride to reduce surgical blood loss.[5-6] Dutasteride is an inhibitor of type 1 and 2 isoenzyme of 5-alpha reductase commonly used, as like finasteride, for the treatment of symptomatic BPH.

Some studies attempted to resolve whether dutasteride could be used to reduce bleeding after TURP in the same way that finasteride does.[7-9] Hahn et al used dutasteride for 2-4 weeks before TURP without significant reduction in blood loss compared to the placebo group.[7]

Previous reports have demonstrated that preoperative administration of dutasteride for 3 months prior to TURP decreases peroperative bleeding in prostates larger than 30 g and there was not much significant difference with the control group in smaller prostates.[4] However in the present study we demonstrated that short-term administration of dutasteride is effective in reducing blood loss regardless of prostatic volume in as short a time as 6 weeks. Additionally, there wasn't any statistically significant difference between the dutasteride and the control groups regarding prostate volume and the amount of resected tissue.

In our study mean resected prostate tissue was 30.85 ± 14.96 gm in dutasteride group and 31.41 ± 18.87 gm in control group. The postoperative Hb decreases 1.88 ± 0.92 gm/dl in the dutasteride but 3.19 ± 1.17 gm/dl in the control group. Also the postoperative HCT decreases 6.48 ± 2.84 % and 11.22 ± 3.52 % in dutasteride group and in control group respectively.

In the study conducted by Sandfeldt et al[10] a positive correlation between blood loss and resection weights was reported. Additionally, they proposed that for prostates with resection weights greater than or equal to 18.6 g, dutasteride was associated with less blood loss than in controls. In their study, dutasteride was administered for 3 months and there was a decrease in the mean prostatic volume. On the contrary, in our study the effect of dutasteride was regardless of prostate volume and six weeks of pretreatment with dutasteride was effective in decreasing peroperative bleeding.

In the present study, there was a significant decrease in the postoperative Hb and HCT levels in the control group when compared to the dutasteride group ($P<0.0001$), which indicates that, dutasteride may potentially result to decrease complications related to blood loss. Similarly, Donohue et al[6] reported an increased Hb loss in the placebo group whereas the dutasteride group had a lesser amount of Hb loss.

Martov found a significant reduction in blood loss in patients by using dutasteride for at least 1 month before TURP compared to the control group.[11] Kravchick demonstrated that 6 weeks of treatment with dutasteride reduced prostatic vascularity, specially in the periurethral area.[1] Based on these evidences, we attempted to evaluate if pretreatment with dutasteride (0.5 mg/day) for 6 weeks before TURP could reduce surgical bleeding. The results of the present study showed that treatment with dutasteride for 6 weeks before TURP reduces surgical bleeding.

After TURP, two of the most common complications are bleeding requiring transfusion (3.9%) and clot retention (3.3%), as reported by Mebust.[12] In our study no blood transfusion was needed in the dutasteride group whereas in control group, 5.71% required transfusion and 2.86% returned to emergency room for gross haematuria. No differences were found with regard to prostate volume, resected prostate weight and operation time between dutasteride and control group. Aim of our study was to verify that pretreatment with dutasteride helps in reducing surgical blood loss.

In conclusion, in the present study 6 weeks pretreatment with dutasteride provided a significant decrease in bleeding regardless of prostate volume without major side effects. Pretreatment with dutasteride has a potential effect on decreasing the need for blood transfusion by decreasing the perioperative blood loss. So, 6 weeks of pharmacological treatment with dutasteride can significantly reduce prostate tissue vascularity and hence perioperative blood loss.

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ORIGINAL ARTICLE

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Less invasive old tendo Achilles injury reconstruction a new method of technique

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Abstract

Six years (2009 to 2014) prospective study was conducted in 8 cases of old tendo Achilles (TA) injury. All male, 19 to 41 (mean 26.13) years old patients underwent less invasive tendo Achilles reconstruction by peroneus brevis and assess functional outcomes and complications. Fallow-up time was 6 to 12 months. All the patients were evaluated according to Nada criteria to grade the patient's out comes and get satisfactory result in all cases. This technique is preserving skin integrity over the site of TA; most prone to wound breakdown, negligible scar formation. This technique can be used especially to reconstruct the old TA in the presence of previous surgery.

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Introduction

Tendo Achilles (TA) injures may occur due to sports injuries, accidental cuts by sharp household tools, penetrating injuries, road traffic accidents, slipping of the foot in pans and spontaneous rupture; local corticosteroid for retrocalcaneal bursitis or peritendinitis causes rupture after minimal trauma.[1,2] Acute TA injury may be managed either operatively or non-operatively. However, generally six weeks following an injury of TA (old/neglected) a direct repair opposing the tendon ends becomes increasingly difficult. Through this time scar tissue forms, disuse muscles atrophy and the tendon ends weaken.[3] The old TA injury is debilitating; their optimal management is surgical.[4] Operative procedures for reconstruction of the TA include flap tissue turn down using one[5] or two flaps[6], local tendon transfer[2,7-10] and autologous hamstring tendon harvesting.[11] All of these techniques use a single longitudinal incision for exposure of TA. Following these procedures wound breakdown and infection (9%) is not uncommon; probably related to the lack of the soft tissue vascularity and require surgical reconstruction to cover significant soft tissue defects.[12,13] All previously procedures were open technique to allow full exposure for reconstruction of old TA tears using peroneus brevis.[2,10,14,15] The aim of treatment is the restoration of continuity of the TA at a tension which gives normal power of plantar flexion, avoid difficulty of skin closure and thereby minimize the skin necrosis over TA injury site which is a major problem.[16] We describe our current method (MAGA's procedure), using less invasive surgery than an open reconstruction. Our technique uses multiple small incisions (1-2cm) preserving skin integrity over the site most prone to wound breakdown.

Material and Methods

This prospective study was conducted in the department of Orthopaedic Surgery in Sylhet Women's Medical College Hospital and other private hospital in Sylhet, between June 2009 to May 2014. We have performed 08 cases of old TA injury. All age and sex, patient with old/neglected of TA injury, re-rupture after primary repair of TA, length of the distal stump of the injured TA=2 or > 2 cm were included in this study. Fallow-up time was 6 to 12 months.

In MAGA's procedure the patient is positioned prone with a mid-thigh tourniquet. Skin preparation is performed in the usual fashion and sterile drapes are applied. Pre-operative anatomical markings include the palpable tendon defect, lateral malleolus and the base of the fifth metatarsal (Figure 1a, 2a) First skin incision (2.5-3 cm) is made just posterior to the shaft of fibula, 5cm above the lateral malleolus, identified the peroneus brevis (Figure 1b, 2b). The second incision is a 2cm longitudinal incision at the base of the fifth metatarsal (Figure 1b, 2b). The tendon of peroneus brevis is identified at the base of the fifth metatarsal & release

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from the metatarsal base (Figure 1b, 2b). The tendon of peroneus brevis delivered through the first incision (Figure 1c). A No.1/0 Vicryl locking suture is applied to the tendon end; passes it subcutaneously and delivered at lateral side to distal stump of TA (Figure 2c). In the distal stump of the tendo Achilles the peroneus brevis graft is passed through the tenotomy from lateral to medial (Figure 1d, 2d). The tendon of peroneus brevis is then passed subcutaneously beneath the intact skin to bridge the gap of TA and delivered through a small incision at medial side to proximal stump of TA; again passed from medial to lateral through a tenotomy in the proximal stump and withdrawn through a small incision over lateral site of TA (Figure 1e, 2e) then secured with no 1/0 Vicryl at both tenotomy site. Care is taken to prevent damage to the sural nerve. The wounds are closed subcuticular suture with 3/0 Vicryl (Figure 2f). A well padded cotton bandage with a short anterior plaster slab was applied with the ankle in maximum plantar flexion for 6 weeks. Post operatively, patients are allowed to toe touch walking with the help of axillary crutches. After 6 weeks, the plaster slab is removed and physiotherapy is commenced focusing on proprioception, plantar and dorsi flexion of the ankle, inversion and eversion for reduce further muscle atrophy. During this period of rehabilitation the patient is permitted to weight bear as comfort allows. We are advised to use a heel raise shoe after 10 weeks for further 6 weeks (Figure 1f).

Case report-1

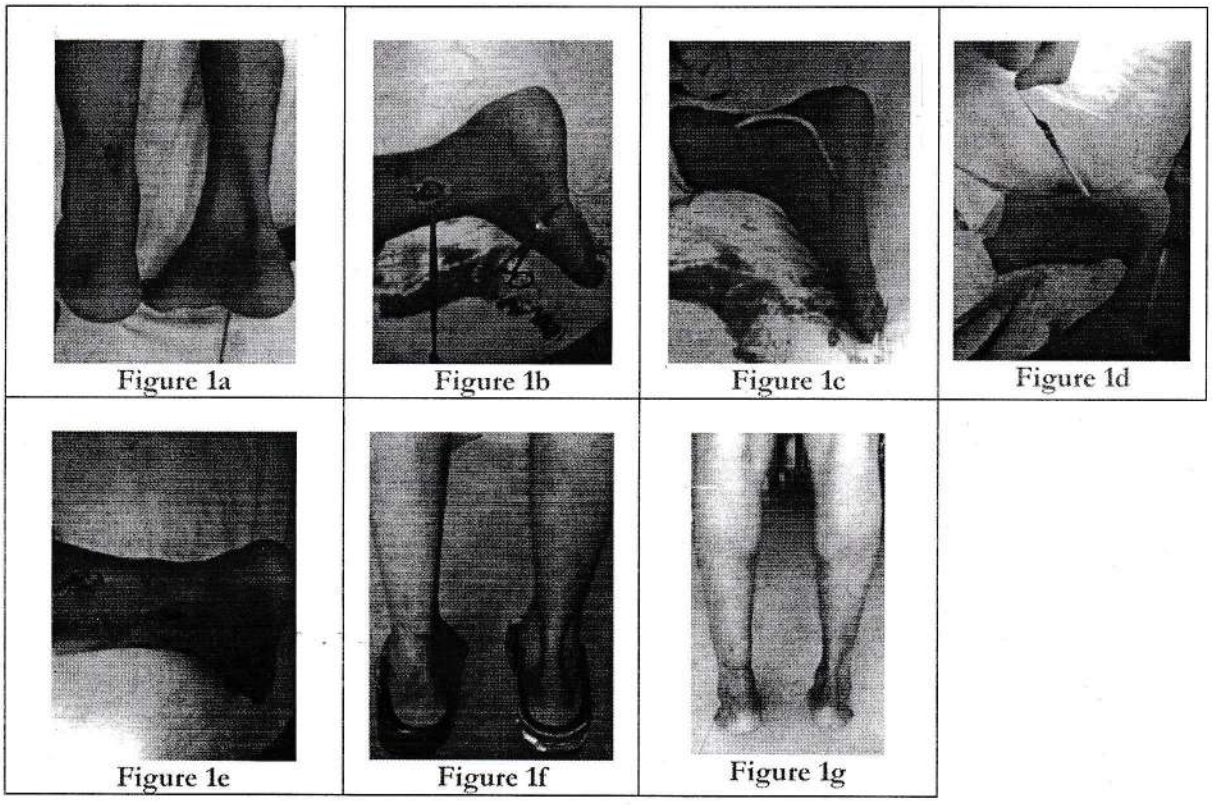

Figure 1a | Figure 1b | Figure 1c | Figure 1d

Figure 1e | Figure 1f | Figure 1g

Case report-2

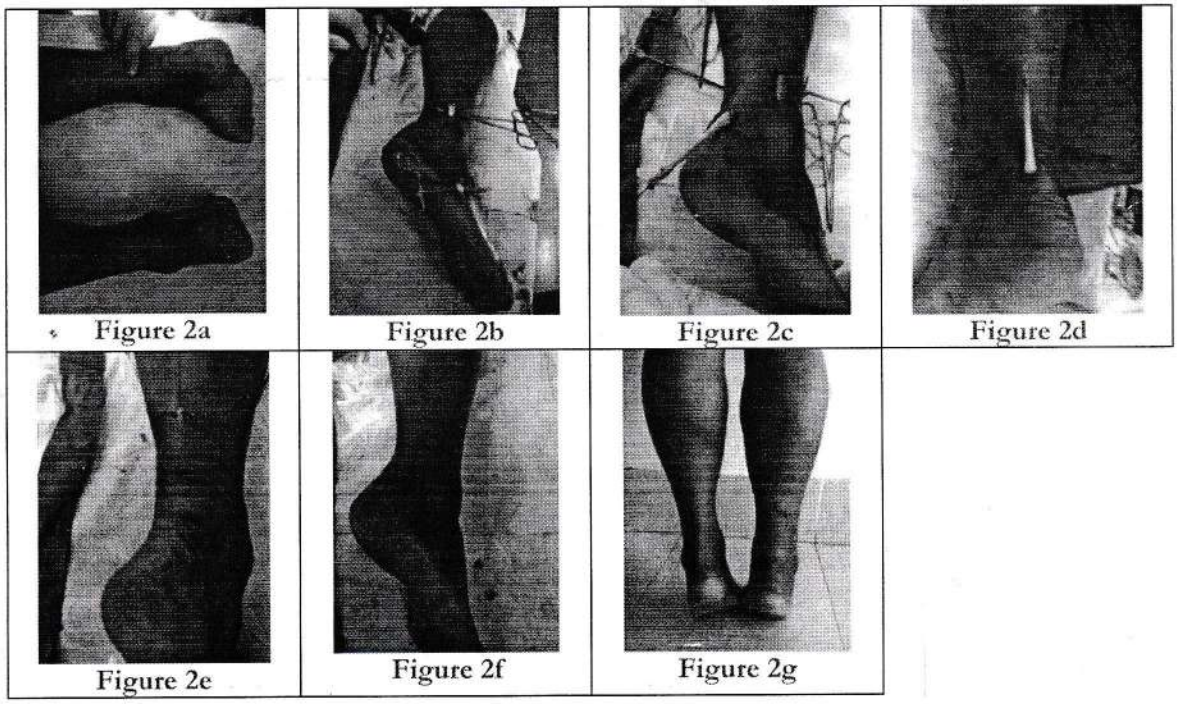

Figure 2a Figure 2b Figure 2c Figure 2d

Figure 2e Figure 2f Figure 2g

Results

Age distribution in our study from 19 to 41 years with mean the age of 26.13 years and all were male. Broken toilet pan 4 (50%) were main cause of TA injury; other causes were spontaneous rupture 2 (25%), motor vehicle accident 2 (25%). Left sided TA injury is predominant (62.5%) in our study, because the left side is less dominant in maximum person. Follow-up time was minimum 6 months. All the patients were evaluated according to **Nada criteria** [17] to grade the patient's out comes in 4 categories- Excellent, Good, Fair and Poor.

Excellent: No symptoms, Returned to normal activities including sport, No more than 5 degree loss or increase in the range of movement. **Good:** No symptoms; Returned to normal activities excluding sport; No more than 10 degree loss in the range of movement.**Fair:** Minor complaints; Returned to normal activities excluding sport; More than 10 degree loss of the range of movement. **Poor:** The patient had a significant complaint, or infection, or marked loss of movement and power, or a limp, or re-ruptured. The results are summarized in Table I.

Table I: Clinical characteristics of the patients

Patient no.	Age/Sex/ Side involved	Cause of TA injury	TA Injury to operation duration (Weeks)	Complication	Outcome
1	25/M/L	TP	10	None	Excellent
2	28/M/L	TP	8	None	Excellent
3	41/M/L	SR	14	Anaesthesia LBF (L)	Good
4	19/M/L	TP	6	None	Excellent
5	24/M/R	LSI	12	Limit AD	Good
6	26/M/L	MVA	7	None	Excellent
7	21/M/R	TP	6	None	Excellent
8	25/M/R	MVA	8	None	Excellent

Abbreviations: M-Male; L- Left; R-Right; TP-Toilet pan; MVA- Motor vehicle accident; LSI- Local steroid injection; SR- Spontaneous rupture; AD- Ankle dorsiflexion; LBF- lateral border of foot.

The present study shows after operation one patient (12.5%) developed anaesthesia along the lateral border of foot due to injury to cutaneous branch of sural nerve at the site of detachment of peroneus brevis tendon at base of fifth metatarsal but spontaneous recovered after 3 weeks. The final result was categorized as satisfactory in all cases in which included excellent 6(75%) and good 2(25%) functional outcome patients. All patients went back to their own professional activity as before as operation (Figure 1g, 2g).

Discussion

In 1974 Teuffer[14] first described the use peroneus brevis as a graft and modified by Turco and Spinella.[15] Our technique was like Turco and Spinella procedure but minimal invasive without opening the TA injured site. Tendo Achilles reconstruction with peroneus brevis is advantageous in patients involved in sports, leaving minimal or no objective plantar flexion weakness following the procedure[18] and minimal re-rupture rates.[19] Peroneus brevis fulfils many of the essential criteria for tendon transfer.[20] The tendon has an acceptable strength, similar line of pull, adequate excursion, easily identified and expendable.[21] Reconstruction techniques include passing the tendon (peroneus brevis) through a tunnel drilled through the calcaneus and a tenotomy in the proximal Achilles tendon stump;[14] through tenotomy in the distal and the proximal tendon stumps as an open procedure.[2,3,10,15] These techniques use relatively long longitudinal incisions with wound breakdown and infection may occur (9%).[18] In many instances, after tendo Achilles reconstruction plastic flap coverage may be required to facilitate skin closure.[12] Following surgery, the ankle is kept in equinus to prevent disruption of the reconstruction. Vascularity of the soft tissues is maximal at 20° of plantar flexion and at 40° of plantar flexion the blood supply of the skin is reduced by 49%.[22] Therefore, the tightness of the repair may influence wound healing. In patients with old TA injury, the skin over the gap retracts over several weeks and remains so until the operation (Fig-1A). In open surgery, this skin is incised and stretched out to accommodate the reconstructed tendon. Therefore, following the reconstruction of TA the skin over the gap may be stretched more that vascular supply is impaired.[10] Preservation of skin cover during reconstruction procedures is clearly an advantage, as the skin is not injured by the operation and protects the reconstruction beneath.[3] On the other hand we were not excised the interposed connective tissue which gives extra strength to the reconstructed part of TA. As with all surgery performed through less invasive incisions, this procedure is technically demanding. The technique is designed to preserve skin cover of the reconstruction site and reduce the complications with excellent cosmetic and functional outcome.

Although reconstruction is always risky, this less invasive new method of tendo Achilles reconstruction (MAGA's procedure) by peroneus may extend the indications for surgery in groups prone to wound complications such as vasculopaths, diabetic's and presence of previous surgery.

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Ultrasonically guided fine needle aspiration cytology in diagnosing mediastinal and peripheral pulmonary masses

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Abstract

This cross sectional study was conducted in the Department of Radiology and Imaging, Sylhet MAG Osmani Medical College Hospital, Sylhet, Bangladesh during the period of June 2012 to November 2013, to determine the usefulness of ultrasound guided fine needle aspiration cytology in the diagnosis of mediastinal and peripheral pulmonary masses. A total 100 patients (74 male and 26 female) with intrathoracic masses in which 91 peripheral pulmonary and 9 mediastinal masses were included in this study. Ultrasound guided fine needle aspiration was done.

Out of 100 aspiration 67 (67%) were categorized as malignant, 25 (25%) were benign and 8 (8%) were non-representative, as it contained only blood. Most of the malignant lesions were adenocarcinoma 31 (31%) and among the benign lesions most were tuberculosis, 16 (16%). The age range was 26-89 years with highest number of patients in the age group 50-59 years (36%).The results showed a sensitivity of 92%. Post aspiration pneumothorax and hemoptysis developed in 8 (8%) and 10 (10%) respectively which were mild and improved by conservative treatment.

Ultrasonically guided fine needle aspiration cytology is a safe, simple .effective and non–radiation exposure procedure to reach the door-step of accurate diagnosis in mediastinal and peripheral pulmonary masses. In most cases this technique is sufficient examination considering the poor economic status of people of developing countries.

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Introduction

Diagnosis of intrathoracic mass is a common problem. Many techniques have been used in the diagnosis of intrathoracic pathology. Image guided fine needle aspiration cytology (FNAC) superseding them as the diagnostic modality of choice in most patients. FNAC is a diagnostic technique which involves study of the cell smears prepared from aspirated materials. It is much easier and less traumatic technique than excision biopsy and widely employed in cytological diagnosis with good diagnostic accuracy.[1,2]

Most of the larger lesions abutting the chest wall can be well visualized by ultrasound, whereas deeply seated smaller lesions and juxtrahilar lesions may not be visualize sonographically. In those cases computed tomography (CT) guidance can become beneficial.

Imaging techniques do not always distinguish between malignant and benign lesion morphologically. A confirmed tissue diagnosis is essential for both the treatment and staging of cancer.[3] Fine needle aspiration cytology is a well established diagnostic technique and is increasing in popularity as a means of diagnosis peripheral pulmonary masses. With use of radiological guidance for needle placement, this technique is an effective way to obtain diagnostic material for rapid and accurate diagnosis.[4,5] Although computerized tomography/real time ultrasound guided fine needle aspiration is practiced extensively throughout the world, not routinely practiced in our country. Ultrasound guided fine needle aspiration cytology is rapid, economical and safe diagnostic procedure without any radiation hazard.[6]

The procedures low complication rate is an additional advantage which allows fine needle aspiration cytology to be performed as an outpatient procedure. It is also

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suitable procedure when patients are debilated or have multiple lesions.[7]

Pneumothorax is a common complication. The rate of pneumothoraces reported in the literature varied from 6 to 57 %)[8,9], and those requiring intercostals catherization range from 1.5 – 20%.[10,11] Immediate cytological assessment of materials allows the number of needle passes to be reduce, an also reduces the rate of pneumothorax.[12] Other complications like pneumomediastinum, air embolism and haemothorax are extremely rare after FNA of lung. Less than 5% of patients complain of minor hemoptysis. A small hemorrhage into the surrounding lung occurs in up to 10% of cases withouout being detrimental to the patient.[13] Contraindications to FNAC are unconscious or uncooperative patients or in those with respiratory failure, hemorrhagic diathesis, intractable coughing or pulmonary hypertension.[14]

This study was designed to evaluate the accuracy of ultrasound guided fine needle aspiration cytology is the diagnosis of mediastinal and peripheral pulmonary masses.

Material and Methods

This cross sectional study was conducted in Department of Radiology & Imaging Sylhet MAG Osmani Medical College Hospital, Sylhet, Bangladesh from June 2012 to November 2013. A total of 100 patients with intrathoracic masses adjacent to chest wall were examined and underwent ultrasound guided FNAC.

Patients were to be referred when the masses according to chest x-ray film were abutting the thoracic wall or diaphragm. Mediastinal masses which did not abut the chest wall or diaphragm were also to be included as they might be visualized from jugulum through the upper thoracic inlet or from the episgastium through the liver.

A short clinical history was taken; relevant investigations including BT, CT, prothombin time, Hb%, ESR platelet count were done. Recent x-ray posterior and lateral views were made available before aspiration. Ultrasonogram of chest was done to confirm that it was approachable by ultrasound. Written information was given to all patients before the procedure and informed consent was obtained in a written form all patients and/or the attending person.

The Ultrasonogram was performed with ultrasounc unit (GE logic 5) with 3.5 Mhz and 7.5 MHZ transducer. Patient was positioned prone, supine or sitting depending on the skin entry site chosen. Ultrasound guided, fine needle aspiration was done using 23 gauge fine needle attached to a 10 ml disposable syringe for superficial lesion and 9 cm 23 to 25 gauge spinal needle (9 cm) with a central stylet for deeper lesions. The skin entry site was sterilized with standardized antiseptic solution and the cutaneous and subcutaneous tissues were infiltrated with 2% Jasocaine up to a maximum dose of 5 ml. The aspiration needle was then introduced directing towards the lesion during suspended respiration. Presence of the needle tip within the lesion was ensured by the monitor display. The plunger of the syringe is then pulled back. Continuous suction was then applied while rotating and moving the needle to and fro during suspended respiration.

After aspiration smears were prepared and were sent to the cytopathologist in a Koplin's jar containing 95% alcohol.

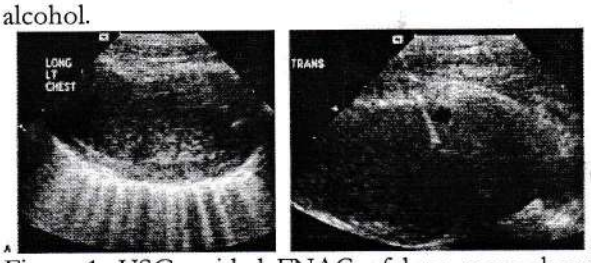

Figure-1: USG guided FNAC of lung mass showing placement of needle inside the lesion

Immediately after aspiration smears were made as quickly as possible to avoid coagulation of blood. Smears slides were fixed in 95% alcohol in a Koplin's jar for cytological evaluation, whereas large fragments were placed in a formalin solution for histopathological examination. The pneumothorax was characterized by the disappearance of lung tumour and disappearance of respiratory excursions of visceral pleura.

Results

100 patients with mediastinal and peripheral pulmonary masses were included in this study of which 74 men (74%) and 26 female (26%). The age range 26-89 yrs with highest number of patients in the age group 50-59 (5th decade).distribution of age of the patients were shown in Figure–2.

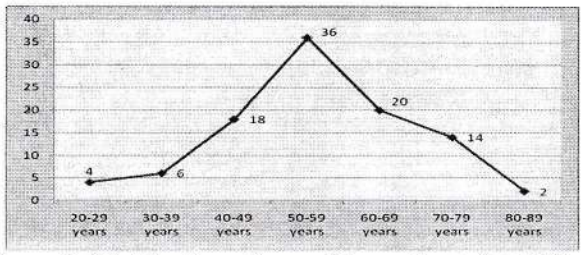

Figure 2: Distribution of age of the patients (n=100).

Pulmonary masses were 91 and mediastinal masses were 9. Eighty patients had a single lesion and 20 patients had multiple thoracic lesions. The distance of the lesion from pleura ranged from 1.6 cm to 5.0 cm.

Of the 100 patients underwent ultrasound guided FNAC, definitive diagnosis for 8 patients could not made by cytolopathologist due to insufficient tissue materials. Of this 100 patients 67 (67.0%) had malignant lesion and 25 (25.0%) had benign diseases. The highest number of malignant cases was adenocarcinoma 31(31.0%) and highest number of benign cases was tuberculosis 16 (16.0%) (Table-I).

The result showed a sensitivity of 92%.

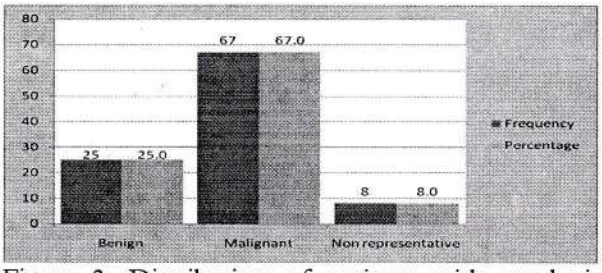

Figure 3: Distribution of patients with cytological diagnosis (n=100)

Table III: spectrum of benign and malignant cytodiagnosis(n=100)

Cytological diagnosis	Frequency	Percentage
Malignant		
Adenocarcinoma	31	31
Undifferentiated carcinoma	6	6
Squamous cell carcinoma	4	4
Large cell carcinoma	10	10
Lymphoma	5	5
Germ cell tumour	2	2
Metastases	9	9
Benign		
Tuberculosis	16	16.0
Pneumonia	1	1.0
Hamartoma	8	8.0
Non representative	8	8.0

Mild to moderate pneumothorax developed only in 8 (8.0%) cases and subsided with conservative treatment. Most of the pneumothorax occurred in deeper lesions. Post biopsy haemoptysis developed in 10 (10.0%) patients and were subsided spontaneously without specific treatment.

Discussion

In the present era ultrasound guided FNAC is considered as a proved technique for the diagnostic evaluation of mediastinal and peripheral pulmonary masses. There is wide range of variation in reported diagnostic accuracy of FNAC between different institutions ranging from 64% to 97%.[5] In the present series of 100 patients of intrathoracic masses were subjected to USG guided FNAC conclusive cytodiagnosis were made in 92 cases resulting in diagnostic accuracy of 92%

Out of 100 patients of intrathoracic mass 36% patients were in age group 50-59 years; male predominate with a ratio of male to female of 3:1 This correlate with the well known fact that intrathoracic mass occur most commonly in older age group and in males than in female..

Most of cases were adenocarcinoma among malignant lesions and granulomatous lesion (tuberculosis) among benign lesions.

Complications such as pneumothorax or hemoptysis were noted in larger lesions and in deeply located lesions. Hence in its serried depth of the lesion and the lesion size was directly related to the prevalence of pnumothorax and haemoptysis; whereas hemorrhage inside the lesion was noted mostly in smaller and deeper lesions. These findings are closely observed by other authors.[16,13]

Regarding imaging diagnosis, on an average the benign lesion were smaller in size than malignant one. Necrosis within the lesion was seen in metastatic lesion, tuberculosis and in cases of larger malignant lesions. Irregular margin was seen in malignant lesion and also seen in TB. Rib erosion and mediastinal invasion was seen in malignant lesions.

Several authors have demonstrated that, US can be as effective as CT for guidance of thoracic biopsy of peripheral thoracic lesions.[14-16] CT guidance was necessary only in cases of deeper or smaller nodules or where the nodules were located near the heart and great vessels.

US has a number of advantages over CT including bedside approach. Lower cost and no radiation

exposure which lead to our preference to perform US guided FNAC of peripheral lesions with real time monitoring. Real time monitoring itself helped avoid puncturing the aerated lung and the fact that many of the lesions were located peripherally also may have contributed to the lower rate of pneumothorax among our patients.

We therefore conclude that, ultrasound guided FNAC of mediastinal and peripheral pulmonary masses allow an early diagnosis which provides improved opportunity for the cure or expeditious treatment. Transthoracic FNAC using 23-25 gauge needles is a highly specific and sensitive technique with a good diagnostic accuracy and can be used safely as an outdoor procedure. Ultrasound-guided FNAC is a quick cheap ionizing radiation-free procedure and may be a valid option in the diagnosis of peripheral lesions. .Real time US visualization allows accurate needle placement, shorter procedure time and performance in debilitated and less co-operative patients.

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OCCAITONAL NOTE

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The Cryptic tumor marker for colorectal cancer- A Meta-analysis

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Abstract

The objective of our study was to compare different study and find a unified and conclusive decision regarding the correlation of different tumor markers with its various stages. According to the annual report (2005) of National institute of Cancer Research and Hospital, Dhaka that the total prevalence of GIT cancers were 14.7% and colon cancers were 1.2% and rectal carcinoma patients were 1.8%. Total 1.31% patients were from Sylhet division. The single most prognostic indicator of colorectal carcinoma is the extent of the tumor at the time of the diagnosis, the stages Prognostic factors derived from clinical, laboratory and pathologic data are important for determining the high risk of recurrence of disease. Better knowledge of these factors allows us more careful follow up of high risk patients and to decide possible adjuvant treatments. Many studies have been performed on the prognostic value of parameters such as lymphatic involvement, preoperative CEA levels, histologic type and grade of the tumor, radial surgical margin, and pattern of tumor spread. Most of those parameters have been shown to have a prognostic value, while studies on some are yet to be completed. Nonetheless, pathologic stage is the most important prognostic indicator of colorectal cancer

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Introduction

Colorectal cancer cells make substances, like Carcinoembryonic antigen (CEA) and CA 19-9, that are released into the bloodstream. Blood tests for these tumor markers are used most often along with other tests to monitor patients who already have been diagnosed with or treated for colorectal cancer. They may help show how well treatment is working or provide an early warning of a cancer that has returned.

These tumor markers are not used to screen for or diagnose colorectal cancer because the tests can't tell for sure whether or not someone has cancer. Tumor marker levels can sometimes be normal in a person who has cancer and can be abnormal for reasons other than cancer. For example, higher levels may be found in the blood of some people with ulcerative colitis, non-cancerous tumors of the intestines, or some types of liver disease or chronic lung disease. Smoking can also raise CEA levels.

Carcinoembryonic antigen antibody reacts with CEA and CEA-like proteins such as NCA (non-specific cross-reacting antigen), NCA2 and biliary glycoprotein (BGP1). In all tissues, the NCA of neutrophil granulocytes are stained positive. In colon adenocarcinoma, the antibody labels the cytoplasm of the tumor cells strongly. In the normal colon, the luminal enterocytes is strongly labeled. In breast carcinoma, a low percentage of glandular epithelial cells are stained. Gland lumina and some epithelial cell membranes in the normal breast tissue show positive staining. In the liver, the biliary canaliculi are positive. In general, CEA will mark adenocarcinoma of the stomach, colon, lung and pancreas; CEA is weakly or occasionally positive (less than 10%) for prostate cancer, bladder cancer and hepatoma. CEA is negative for squamous cell carcinoma of the skin and esophagus, mesothelioma, lymphoma, melanoma and sarcoma.[1] On the other hand, Cancer antigen 19-9 (CA 19-9) is a tumor-associated mucin glycoprotein antigen that is related to the Lewis blood group protein. This antigen is present in epithelial tissues of the pancreas, biliary ductular cells, stomach, gall bladder, colon, endometrium, salivary glands, and prostate.[2] Normal pancreatic juice, bile (in benign conditions), and even seminal fluid contain CA 19-9.- Blood levels may be elevated in healthy patients as well as in patients with benign and malignant conditions.

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Material and Methods

The study was conducted in the department of Anatomy, Sylhet Women's Medical College. We searched for similar related studies and guidelines in the web and correlated their findings in our conclusion. Pretreatment serum levels of carbohydrate antigen 19.9 (CA 19.9) and Carcinoembryonic antigen were measured in 293 patients by Filella X and et al . Carbohydrate antigen (CA) 19-9 was above the cut off limit of 37 U/ml in 35% patients. CA 19-9 was related to tumor stage. CEA was above the cut off limit 3,5 ng/ml in 61% patients and the simultaneous use of these two markers increased the sensitivity to 66%. The main use of CA 19-9 was loco regional in prognosis. In patients with Dukes C tumor. Additional information was obtained for allocating these patients into low and high risk of recurrence. Prognostic information of CEA was not independent of Dukes staging. They opined that CA19-9 should be considered as a useful prognostic factor for colorectal cancer.[3]

Abdullah sisik and et al performed a similar study with a population size of 116. In their study CEA and CA 19-9 levels with TNM stages in colorectal and gastric cancer patients revealed that increased CA
19-9 level was an indicator of advanced stage (3-4) in both patient groups. Also, positivity for both tumor markers was found to be an important indicator of advanced stage. There was no significant correlation of CEA and CA 19-9 values with the histologic grade, tumor location, pathological diagnosis, presence of synchronous tumor and mean age. Zheng et al. (2001) investigated the prognostic value
of CEA, CA 19-9, and CA 72-4 in colorectal cancer patients by evaluating Dukes stages and tumor marker values, and found that patients with advanced stage had significantly increased levels of CEA, CA 19-9, and CA 72-4.[12]

The study of Basbung et al (2011) evaluated the prognostic value of the preoperative CEA and CA 19-9 levels on the survival time and TNM staging in patients with colorectal cancer. In conclusion they said colorectal cancer patients with elevated levels of both CEA and CA 19-9 have a significantly poorer prognosis than those with normal levels of these tumor markers.
Most of the studies found a significant correlation between CEA and advanced stage, while only some of them show a relationship between CA 19-9 and advanced stage. Park YJ et al evaluated data from 2230 consecutive patients who underwent resection for colorectal cancer at the Seoul National University Hospital. The prognostic variables used for the analysis included patient's age, gender, bowel obstruction, bleeding, symptom duration, preoperative leukocyte count, preoperative serum Carcinoembryonic antigen (CEA) level, Dukes' stage, tumor location, tumor size, depth of bowel wall invasion, number of lymph node metastases, histologic differentiation, and gross morphology of tumor. The overall 5-year survival rate was 62%. In the univariate analysis, all the factors except sex, symptom duration, and tumor size were associated with prognosis. Among the factors significant in the univariate analysis, Dukes' stage ($p < 0.001$), number of lymph node metastasis ($p < 0.001$), CEA level ($p < 0.001$), tumor location ($p = 0.003$), gross morphology of tumor ($p = 0.017$), and depth of bowel wall invasion ($p = 0.031$) were significant in the multivariate analysis. Several differences in prognostic factors between colon cancer and rectal cancer were observed. In the multivariate analysis, gross tumor morphology was significant only for colon cancer, and histologic differentiation was significant only for rectal cancer. Lymph node metastasis was an independent prognostic variable for both colon and rectal cancer, but its significance was more prominent for rectal cancer. Although Dukes' stage is the most reliable prognostic predictor, this study shows that other factors (preoperative CEA level, gross morphology of tumor, location of tumor, nodal status) also provide important information for the outcome of the patient.[14]

E Polat and et al conducted a study and study prospectively enrolled 131 consecutive patients with a confirmed diagnosis of colorectal carcinoma and 131 age- and sex-matched control subjects with no malignancy. The relationships of the tumor markers carcinoembryonic antigen (CEA) and carbohydrate antigen (CA) 19-9 with disease stage, tumor differentiation (grade), mucus production, liver function tests, T stage, N stage, M stage were investigated. Serum concentrations of CEA were significantly higher in the patient group than in the control group ($p = 0.001$); they were also significantly higher in stage iii ($p = 0.018$) and IV disease ($p = 0.001$) than in stage i. Serum concentrations of CEA were significantly elevated in the presence of spread to lymph nodes ($p = 0.005$) in the patient group. Levels of both tumor markers were significantly elevated in the presence of distant metastasis in the patient group ($p = 0.005$ for CEA; $p = 0.004$ for CA 19-9). Preoperative levels of CEA and CA

19-9 might provide an estimate of lymph node invasion and distant metastasis in colorectal cancer patients.[7]
Pancreatic cancer is just one of several conditions that may cause elevated levels of CA 19-9. Increased levels can be seen in healthy individuals, in benign conditions, and in other malignant conditions.[8,9] In particular, cholestasis and jaundice, such as from bile duct disease, cirrhosis, or pancreatitis, can falsely elevate CA 19-9 levels and cause diagnostic uncertainty. CA 19-9 levels correlate with alkaline phosphatase levels, which further associates the 2 mechanisms of CA 19-9 elevation by secretion from pancreatic cancer cells and cholestasis. Serial determination of levels after relief of jaundice and/or the use of higher cut-off levels in patients with jaundice could be necessary to exclude pancreatic cancer in patients with normal imaging and clinical studies.[10] Since this marker cannot be synthesized in approximately 5% of the population (i.e., those who lack the Lewis antigen or are Lewis A-B-), CA 19-9 levels may be falsely low even in the presence of pancreatic cancer.

Results

CEA may be ordered preoperatively in patients with colorectal carcinoma if it would assist in staging and surgical treatment planning. Although elevated preoperative CEA (> 5 mg/mL) may correlate with poorer prognosis, data are insufficient to support the use of CEA to determine whether to treat a patient with adjuvant therapy. Carcinoembryonic antigen (CEA) be ordered preoperatively, if it would assist in staging and surgical planning. Postoperative CEA levels should be performed every 3 months for stage II and III disease for at least 3 years if the patient is a potential candidate for surgery or chemotherapy of metastatic disease. CEA is the marker of choice for monitoring the response of metastatic disease to systemic therapy. Data are insufficient to recommend the routine use of p53, ras, thymidine synthase, dihydropyrimidine dehydrogenase, thymidine phosphorylase, microsatellite instability, 18q loss of heterozygosity, or deleted in colon cancer (DCC) protein in the management of patients with colorectal cancer. For pancreatic cancer, CA 19-9 can be measured every 1 to 3 months for patients with locally advanced or metastatic disease receiving active therapy. Elevations in serial CA 19-9 determinations suggest progressive disease but confirmation with other studies should be sought. New markers and new evidence to support the use of the currently reviewed markers will be evaluated in future updates of this guidelines.[4]

Present data are insufficient to recommend CA 19-9 for screening, diagnosis, staging, surveillance, or monitoring treatment of patients with colorectal cancer. No support was identified in a review of the literature published since 1999 for CA 19-9 having a role in the management of colorectal cancer.[4]
Lack of sensitivity and specificity preclude the use of any available serum markers such as Carcinoembryonic antigen (CEA), CA 19-9, CA 242, CA 72-4, tissue polypeptide antigen (TPA) or tissue polypeptide-specific antigen (TPS) for the early detection of CRC. CEA should be measured every 2-3 months for at least 3 years after diagnosis. Insufficient evidence exists to recommend routine use of tissue factors such as thymidylate synthase, microsatellite instability (MSI), p53, K-ras and deleted in colon cancer (DCC) for either determining prognosis or predicting response to therapy in patients with CRC. Microsatellite instability, however, may be used as a pre-screen for patients with suspected hereditary non-polyposis colorectal cancer. Fecal occult blood testing but not fecal DNA markers may be used to screen asymptomatic subjects 50 years or older for early CRC.[6] This is currently known as the European Group on Tumor Markers (EGTM) guidelines.

Discussion

Ninety-eight percent of colorectal cancers above the anal verge are adenocarcinomas. Cancers of the anal verge are most often squamous cell or basaloid carcinomas. Carcinoid tumors cluster around the rectum and cecum and spare the rest of the colon. Two-thirds of colorectal cancers occur in the left colon and one-third in the right colon. About 20% of colorectal cancers develop in the rectum. Rectal tumors are detected by digital rectal examination in 75% of cases. Nearly 3% of colorectal adenocarcinomas are multicentric, and 2% of patients develop a second primary tumor in the colon. The common clinical complaints of patients with colorectal cancer relate to the size and location of the tumor. Right-sided colonic lesions most often result in dull and ill-defined abdominal pain, bleeding, and symptomatic anemia (causing weakness, fatigue, and weight loss), rather than in colonic obstruction. Left-sided lesions lead commonly to changes in bowel habits, bleeding, gas pain, decrease in stool caliber, constipation, increased use of laxatives, and colonic obstruction. Metastases to the regional lymph nodes are found in 40% to 70% of cases at the time of resection. Venous invasion is found in up to 60% of cases. Metastases occur most frequently in the liver, peritoneal cavity, and lung, followed by the

adrenals, ovaries, and bone. Metastases to the brain are rare. Rectal cancers are three times more likely to recur locally than are proximal colonic tumors, in part because the anatomic confines of the rectum preclude wide resection margins and in part because the rectum lacks an outer serosal layer through most of its course. Because of the venous and lymphatic drainage of the rectum into the inferior vena cava (as opposed to the venous drainage of the colon into the portal vein and variable lymphatic drainage), rectal cancer often recurs first in the lungs. Colon cancer more frequently recurs first in the *liver.*

- After the clinical diagnosis of colorectal cancer is made, several diagnostic and evaluative steps should be taken. Biopsy confirmation of malignancy is important. If an obstructing lesion cannot undergo biopsy, brush cytology may be feasible. Carcinoembryonic antigen (CEA) screening is favored by some physicians as a means of identifying early recurrence despite the limited specificity and sensitivity of this test. A preoperative CEA can be useful as a prognostic factor and in determining if the primary tumor is associated with CEA elevation. Preoperative CEA elevation implies that CEA may aid in early identification of metastases because metastatic tumor cells are more likely to result in CEA elevation in this circumstance. CT or magnetic resonance imaging (MRI) with contrast of the abdomen and pelvis may identify liver or intraperitoneal metastases. Endoscopy or barium enema is indicated to assess the entire colonic mucosa because about 3% of patients have synchronous colorectal cancers and a larger percentile have additional premalignant polyps. EUS significantly improves the preoperative assessment of the depth of invasion of large bowel tumors, especially rectal tumors. The accuracy rate is 95% for EUS, 70% for CT, and 60% for digital rectal examination. In rectal cancer, the combination of EUS to assess tumor extent and digital rectal examination to determine mobility should enable both precise planning of surgical treatment and definition of those patients who may benefit from preoperative chemo radiation. Trans rectal biopsy of perirectal lymph nodes can often be accomplished under EUS direction.
- CEA is a cell-surface glycoprotein that is shed into the blood and is the best-known serological marker for monitoring colorectal cancer disease status and for detecting early recurrence and liver metastases. CEA is too insensitive and nonspecific to be valuable for screening of colorectal cancer. Elevation of serum CEA levels, however, does correlate with a number of parameters. Higher CEA levels are associated with histological grade 1 or 2 tumors, more advanced stages of the disease, and the presence of visceral metastases. Although serum CEA concentration is an independent prognostic factor, its putative value lies in serial monitoring after surgical resection. New markers, such as CA 19-9, may be of value in monitoring recurrences and complement CEA. Monoclonal antibodies (anti-CEA, antiâ€"TAG-72) may also be useful in immunohistological chemical staining of tissues. The presence of an abnormal number of chromosomes in the tumor cells (aneuploidy) confers a worse prognosis than is observed in patients with diploid tumors. Light microscopic features and stage, however, remain the most reliable prognostic measures. Early reports suggest that tumor DNA and circulating tumor cells may also have utility both as initial diagnostic tools and for early diagnosis of recurrent disease. Staging using the TNM system has been recommended over the Astler-Coller modification of the Dukes system.

Stage is the most important prognostic factor:

- Histological grade significantly influences survival regardless of stage. Patients with well-differentiated carcinomas (grades 1 and 2) have a better 5-year survival than those with poorly differentiated carcinomas (grades 3 and 4).
- The anatomic location of the tumor appears to be an independent prognostic factor. For equal stages, patients with rectal lesions have a worse prognosis than those with colon lesions, and transverse and descending colon lesions result in poorer outcomes than ascending or recto sigmoid lesions.
- Clinical presentation. Patients who present with bowel obstruction or perforation have a worse prognosis than patients who present with neither of these problems.
- Chromosome 18. The prognosis of patients with an allelic loss of chromosome 18q is significantly worse than that of patients with no allelic loss. The survival of patients with stage II (B) disease is the same as that for stage I (A) when there is no allelic loss and the same as for stage III (C) when there is allelic loss. Other abnormalities that have been identified and that are of potential value for determining prognosis are located on chromosomes 1, 5, 8, 17, and 22. Identification of these genes or their products is possible using gel electrophoresis or

immunohistochemical probes. These observations may ultimately prove to be helpful in selecting patients with stage II (B) disease for adjuvant therapy or stage III (C) patients with better than average prognoses who can avoid the potential toxicity and expense of adjuvant therapy.

- Other tumor characteristics. Investigators have examined a number of tumor characteristics as judged by immunohistochemical or PCR-based assays for use either as factors for predicting prognosis or as characteristics that could potentially predict the likelihood of an individual patient's response to a specific regimen. These evaluations include levels in the tumor of thymidylate synthase (TS), dihydropyrimidine dehydrogenase (DPD), proliferation markers (Ki-67 or MIB-1), and tumor suppressor deletions (such as 18q deletions), among others. None have yet been determined to be standard parameters that should be ordered outside the context of a research study.

Conclusion: Different results available in the literature suggest that further studies including larger populations are required. So the ultimate search for the marker for colorectal cancer goes on.

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Departmental Activities Of Orthopaedic Surgery In Sylhet MAG Osmani Medical College Hospital

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Introduction

Orthopedic surgery or orthopedics is specialized branch of science concerned with conditions involving the musculoskeletal system. Orthopedic surgeons use both surgical and nonsurgical means to treat musculoskeletal trauma, sports injuries, degenerative diseases, infections, tumors, and congenital disorders. Nicholas Andry coined the word "*orthopaedics*" in French as *orthopédie*, derived from the Greek words *orthos* ("correct", "straight") and *paidion* ("child") [*Ref: Orthopedie* (translated as *Orthopaedia: or the Art of Correcting and Preventing Deformities in Children*) in 1741] Though as the name implies it was initially developed with attention to children, the correction of spinal and bony deformities in all stages of life eventually became the cornerstone of orthopedic practice.[1-2]

In the US the majority of college, university and residency programs, and even the American Academy of Orthopaedic Surgeons, still use the spelling with the Latinate digraph *ae*. Elsewhere, usage is not uniform; in Canada, both spellings are acceptable; *orthopaedics* usually prevails in the rest of the British Commonwealth, especially in the UK.

EVOLUTION OF ORTHOPAEDIC SURGERY:

A) Children's orthopedics

Many developments in orthopedic surgery resulted from experiences during wartime. On the battlefields of the Middle Ages the injured were treated with bandages soaked in horses' blood which dried to form a stiff, but unsanitary, splint. Originally, orthopedic surgery was restricted to the correcting of musculoskeletal deformities in children. Nicolas Andry advocated the use of exercise, manipulation and splinting to treat deformities in children.

Jean-André Venel: Established the first orthopedic institute in 1780, which was the first hospital dedicated to the treatment of children's skeletal deformities. Developed the club-foot shoe for children born with foot deformities, various methods to treat curvature of the spine.

Advances made in surgical technique during the 18th century, such as

John Hunter's research on tendon healing and Percival Pott's work on spinal deformity, Antonius Mathijsen invented the plaster of Paris cast in 1851.

However, up until the 1890s, orthopedics was still a study limited to the correction of deformity in children.

B) Modern orthopedics

Examples of people who aided the development of modern orthopedic surgery:

Hugh Owen Thomas: a surgeon from Wales, 'Thomas Splint'- stabilize a fractured femur and prevent infection. 'Thomas's collar'- treat tuberculosis of the cervical spine, 'Thomas's manoeuvre'- orthopaedic investigation for fracture of the hip joint, `Thomas test`- a method of detecting hip deformity by having the patient lying flat in bed, 'Thomas's wrench' - reducing fractures, as well as an osteoclast to break and reset bones

Sir Robert Jones: Organized the first comprehensive accident service in the world. Physicians from around the world came to Jones' clinic to learn his techniques. Along with Alfred Tubby founded the British Orthopaedic Society in 1894. The hospital in Ducane Road, Hammersmith became the model for both British and American military orthopaedic hospitals. His advocacy of the use of Thomas splint for the initial treatment of femoral fractures reduced mortality of compound fractures of the femur from 87% to less than 8% in the period from 1916 to 1918.

The use of intramedullary rods to treat fractures of the femur and tibia was pioneered by Gerhard Küntscher of Germany. This made a noticeable difference to the speed of recovery of injured German soldiers during

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World War II. However, traction was the standard method of treating thigh bone fractures until the late 1970s when the Harborview Medical Center in Seattle group popularized intramedullary fixation without opening up the fracture. The modern total hip replacement was pioneered by Sir John Charnley, at Wrightington Hospital, England (1960). Continuous improvements in the design and technique of joint replacement (arthroplasty) were made by W. H. Harris. He pioneered uncemented arthroplasty techniques with the bone bonding directly to the implant. Knee replacements using similar technology were started by McIntosh in rheumatoid arthritis patients and later by Gunston and Marmor for osteoarthritis in the 1970s developed by Dr. John Insall in New York utilizing a fixed bearing system, and by Dr. Frederick Buechel and Dr. Michael Pappas utilizing a mobile bearing system.[3]

External fixation of fractures was refined by American surgeons during the Vietnam War and Gavril Abramovich Ilizarov in the USSR, while looking after injured Russian soldiers in Siberia in the 1950s. With no equipment at hand, Ilizarov was confronted with crippling conditions of unhealed, infected, and malaligned fractures. With the help of the local bicycle shop he devised ring external fixators tensioned like the spokes of a bicycle. With this equipment he achieved healing, realignment and lengthening to a degree unheard of elsewhere. His Ilizarov apparatus is still used today as one of the distraction osteogenesis methods. [1-2]

Modern orthopedic surgery and musculoskeletal research has sought to make surgery less invasive and to make implanted components better and more durable.

C) THE HISTORY OF ORTHOPAEDIC SERVICE PROGRAMME IN BANGLADESH

The history of Orthopaedic Service Program in Bangladesh runs somewhat concurrently with the development of the Rehabilitation Institute and Hospital for the Disabled. With the War of Liberation, the new nation of Bangladesh was left with a great number of wars injured. Although a few of the Freedom Fighters from among the wounded were taken by foreign countries for treatment, the great bulk of the wounded including the civilians had to be taken care of by the new nation itself. The vast majority of these patients had orthopaedic problems, and at that time there was only one qualified Bangladesh Orthopaedist in the country and he left within a matter of months. In early June 1972, they admitted into the Orthopaedic Unit of the Sher-E-Bangla Nagar Hospital. The name Sher-e-Bangla was soon to give way to Shaheed Suhrwardy Hospital of which the Orthopaedic Department remained a part being the in-patient Hospital in this Out-patient Building upto 1978. On January 5th, 1973 the Faculty of Medicine of Dhaka University acted on suggestion and appointed a committee to inspect the Shahid Suhrawardy Hospital as an acceptable place for establishing the course. On 15-3-73 the Master of Surgery (Orthopaedics) was started at Shahid Suhrawardy Hospital. The M.S. (Orthopaedics) course was the very first Medical Post Graduate Degree Course of its kind in Bangladesh.

During the time, plans were being implemented to begin the building of the new 400 bedded Rehabilitation institute and Hospital for the Disabled (RIHD). Construction of the Building went ahead rapidly and the new RIHD was ready for occupancy in April, 1978. On August 24, 1979, the men who had qualified as Orthopaedic Surgeons met and formed the Bangladesh Orthopaedic Society, and invited all qualified Orthopaedic Surgeons of Bangladesh to join. One of the pioneer batch, Professor Salek Talukder, was elected the first President. By early 1980 it became possible to send locally trained Orthopaedic Surgeons to every medical college of Bangladesh. Auxiliary services are being organized and necessary personnel being trained and four of the medical colleges have started providing this service. In coming years other important district hospitals will be provided with the service. Orthopaedics in Bangladesh is on its way.

D) DEPARTMENT OF ORTHOPEDIC SURGERY, SYLHET M. A.G. OSMANI MEDICAL COLLEGE & HOSPITAL.

The department of orthopedic surgery was established in 1979 with Assistant Professor Dr. Syed Jamshed Ali with full-fledged outdoor and very limited indoor facilities. Full-fledged post of an associated professor along with Registrar and Assistant registrar support was established in 1985. The present staffing pattern of this department was started from 1996. Present staffing pattern of orthopedics department: Professor- 1, Associate Professor -1(2), Assistant Professor -2, Resident surgeon (casualty) -1, Registrar -2 and Assistant registrar- 5

BRANCHES OF TRAUMA & ORTHOPAEDICS

1. Foot and ankle 2. Soft-tissue knee reconstruction 3. Knee arthroplasty 4. Hip arthroplasty 5. Spinal 6. Upper limb (shoulder & elbow) 7. Wrist & hand8.Osteosarcoma and limb reconstruction 9. Trauma surgery and 10. Paediatric & congenital osteochondrodysplasia

These specialty areas of orthopaedics are not exclusive to orthopedic surgery. For example- Hand surgery is practiced by some plastic surgeons. Spine surgery is

practiced by most neurosurgeons. Foot and ankle surgery is practiced by Doctors of Podiatric Medicine (D.P.M.) in the United States. Family practice physicians practice sports medicine; however, their scope of practice is non-operative.[4]

Leading Trauma & Orthopaedics organizations are: British Orthopaedic Association, American Academy of Orthopaedic Surgeons and AO Foundation

- **Academic Activities:**

o The department deals with both undergraduate and postgraduate students.

Table I: Course curriculum of undergraduate and postgraduate students:

Student	Learning objective and contents	Duration
Undergraduate (4th & 5th yr MBBS)	Lecture	40 hrs (40 days)
Undergraduate (3rd,4th & 5th yr MBBS)	Clinical	3rd yr 2wk 4th yr 4wk 5th yr block posting 1wk
Post graduate MS Part -III	Traumatology Orthopedics Thesis	24 months

Table II: Clinical activities (8.am to 2.30pm)

Day	Unit I	Unit II
Saturday	Routine OT	Ward round , Clinical teaching
Sunday	Ward round, Clinical teaching	Ward round, Clinical teaching
Monday	Ward round, Outdoor service	Emergency OT
Tuesday	Emergency OT	Ward round , Outdoor service
Wednesday	Ward round , Clinical teaching	Routine OT
Thursday	Grand round	Grand round

Routine patients are admitted in the units through orthopedic outdoor with the consent of RS (casualty) six days a week but emergency patients are admitted round the clock everyday (including holidays) in unit through emergency department. Routine operations are performed as per schedule by the senior and junior surgeons and emergency operations are done at anytime daily by trainee and resident surgeons under supervision by senior surgeons.

Table III: Bed number:

	Male	Female	Total
Non paying	32 (60)	16(36)	48(96)
Paying	8	4	12
Grand total	40(68)	20(40)	60(108)

Within bracket indicate existing bed

Last year the bed occupancy rate was 270% for male and 300% for female.

Academic Activities:

The department deals with both undergraduate and postgraduate students. Course curriculum of undergraduate and postgraduate students.

Table IV: Learning objective & duration

Student	Learning objective and contents	Duration
Undergraduate (4th & 5th yr MBBS)	Lecture	40 hrs (40 days)
Undergraduate (3rd,4th & 5th yr MBBS)	Clinical	3rd yr 2wk 4th yr 4wk 5th yr block posting 1wk
Post graduate , MS Part -III	Traumatology Orthopedics Thesis	24 months

Operative statistics (2013)

- Routine-1120
- Emergency-6032

Total-7152

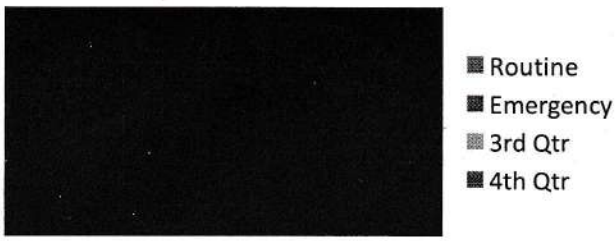


Fig1 : Routine Cases

- Hip related: Total-126
  - DHS-28
  - Hemiarthroplasty-32
  - Hip screw-19
  - DCS-25
  - PF-LCP-22
- Fracture Femur: Total-92
  - Plain I/M nail-57
  - Interlocking I/M nail-35
- Fracture tibia & fibula: Total -28
  - Interlocking I/M nail-08
  - DCP-20
- Fracture humerous
  - DCP-12
- Fracture radius & Ulna: Total-74
  - DCP-65
  - Rush Nail-09
- K-wire fixation: Total 27
  - Supracondylar fracture-13
  - Phalanx-14
- Reconstruction surgery: Total -30
  - (Tendon Transfer, PMA, ETA)
    Others: Total: 42
- **Emergency**
  Total: 5568. Among those Wound toiletting:3340, Tendon surgery: 825, Close reduction : 1106, K wire fixation : 213,Implant removal : 48 and others: 36

Table V: Disease profile (2013)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Congenital	10	15	13	09	10	12	15	08	13	11	12	09
Infection	29	24	31	37	52	49	57	50	40	62	45	39
Metabolic Endocrine	13	09	17	10	11	14	05	07	06	08	09	08
Arthritis & Rheumatic Disease	02	05	22	13	03	15	07	10	08	09	17	09
Peripheral Nerve Injury	04	07	21	25	12	10	11	14	09	10	13	12
Neoplasm	05	06	09	07	13	06	04	08	06	13	10	08
Trauma	638	705	808	652	742	734	787	653	650	760	781	751
Total	701	771	912	753	843	840	886	750	832	873	887	836

- OPD
- The outdoor is serving orthopedic patients six days a week headed by the Resident surgeon (casualty). All new and follow up patients of indoor are being noted by the RS (casualty). Resident students are placed in the OPD as per schedule. Specialized medical boards are formed on Tuesday & Wednesday regularly by the unit II & I respectively for management of complicated cases. Close reduction of fracture & dislocation, plaster changing, dressing of wound and minor orthopedic procedure are carried out in OPD under supervision of RS (casualty).

Table VI: Patient statement 2013

	male	female	children	total
January	1000	800	561	2361
February	550	405	310	1255
March	400	300	364	1064
April	581	460	340	1381
May	850	650	400	1900
June	867	550	500	1917
July	710	571	400	1689
August	500	354	258	1104
September	710	540	328	1578
October	746	550	300	1596
November	600	500	327	1427
December	640	435	325	1400
Total	8152	6015	4395	18562

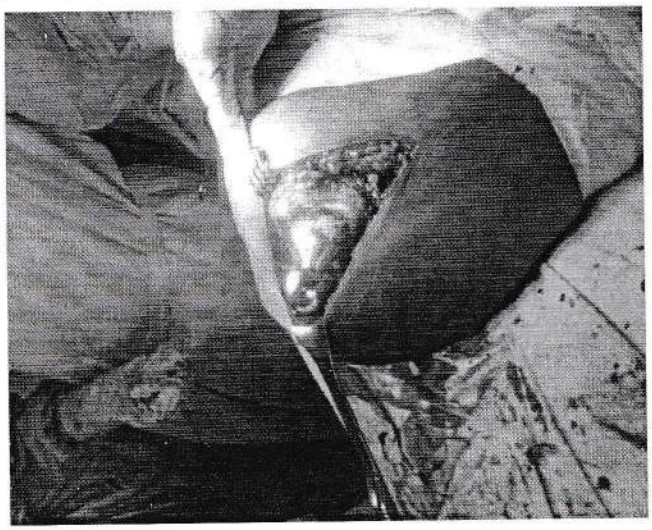
- ✓ The department of orthopedics regularly takes part in journal club presentation and scientific seminar in the college conference room on Monday as per schedule. It also participate in clinical presentations for 3rd, 4th & 5th yr students on Thursday in the lecture gallery of college and for intern doctors on Saturday in the conference room of hospital as per schedule.
- ✓ As per rule of BCPS trainee doctors of surgical discipline has to take training in orthopedics and casualty surgery for 6 months and doctors are regularly posted in this department for that purpose. In addition honorary doctors are taking training in this department after proper selection.

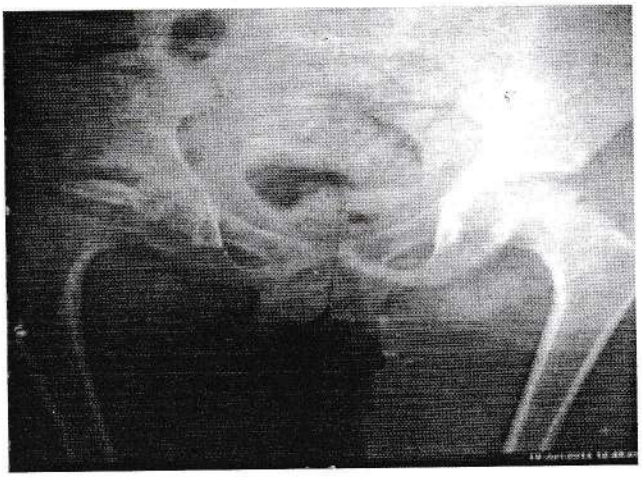
- **Research activities**
- Completed (Thesis):
  - Proximal femoral locking plate versus dynamic hip screw in trochanteric fracture femur
  - Spine fixation in spondylolisthesis
  - Distal femoral locking plate with dynamic condylar screw in Supracondylar fracture femur
- Ongoing
  - By Dept:
    - ✓ congenital and acquired deformity
    - ✓ Pediatric Orthopaedics
    - ✓ Hand surgery
  - By Residence
    - ✓ Outcome of fracture union with or without drain in diaphyseal closed forearm bone fracture
    - ✓ A comparative study of the management for closed comminuted fracture of the Tibial Diaphysis between Ilizarov ring fixators and MIPO technique by using LCP.

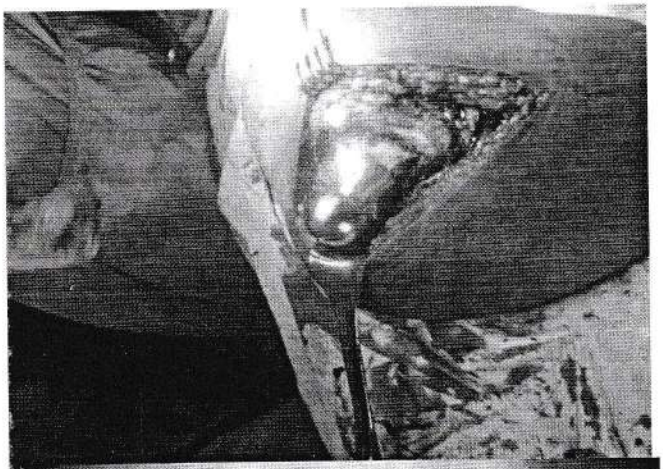
- **Comments** :
- Sophisticated operations like total hip replacement was done last year for the 1st time in Sylhet and operations like interlocking nailing, replacement hemiarthoplasty and locking plating are done routinely with success. Operations on spine fixation are also started with limited facility.
- **Future vision:**

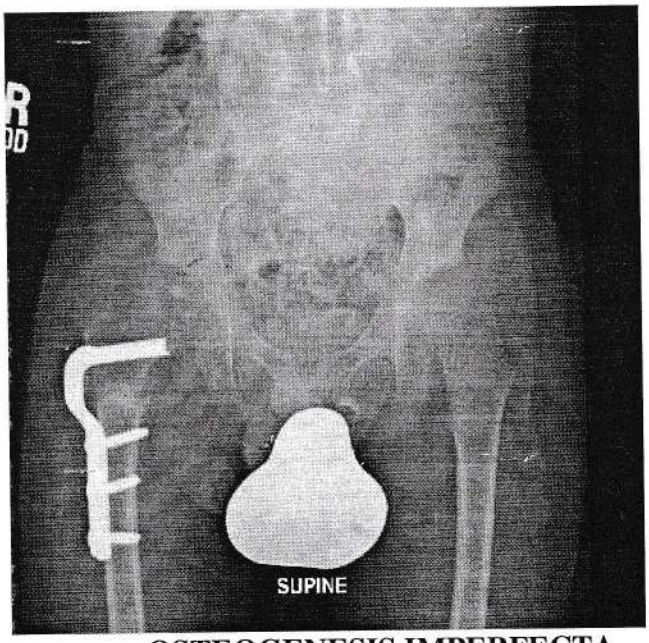
Full-fledged, well equipped Academic & Clinical facilities for undergraduate & postgraduate students in near future, expansion of up to date indoor, outdoor and operative facilities, expansion of research works. Establishment of sophisticated surgery like Spinal Surgery, Arthroscopy, Replacement surgery, Hand surgery and Casualty unit will be required to keep pace with advanced services available elsewhere.

- **Hemiarthroplasty-Hip**



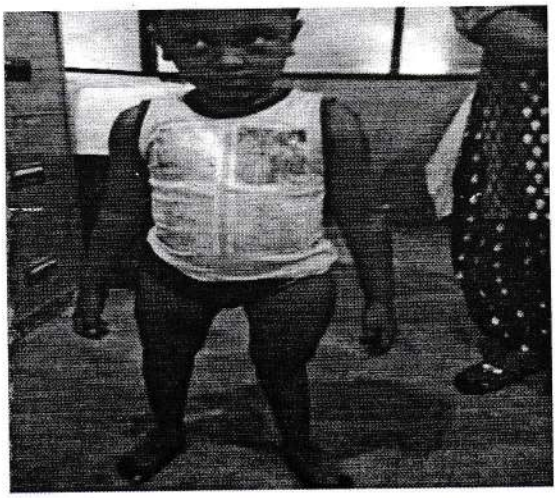


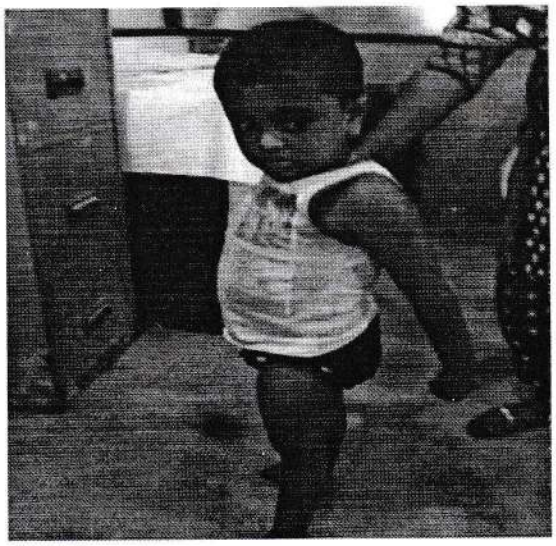




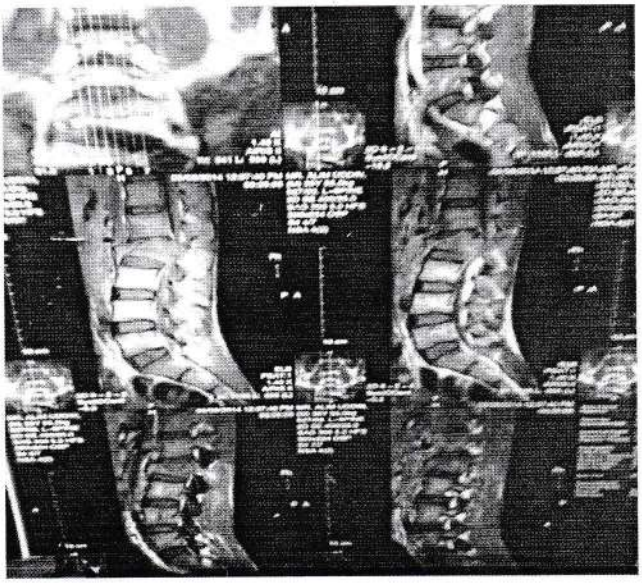
Perthes Disease

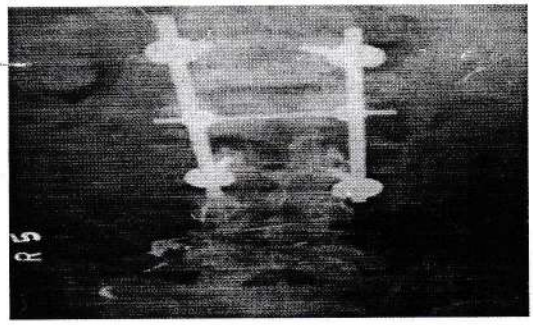
- **OSTEOGENESIS IMPERFECTA**

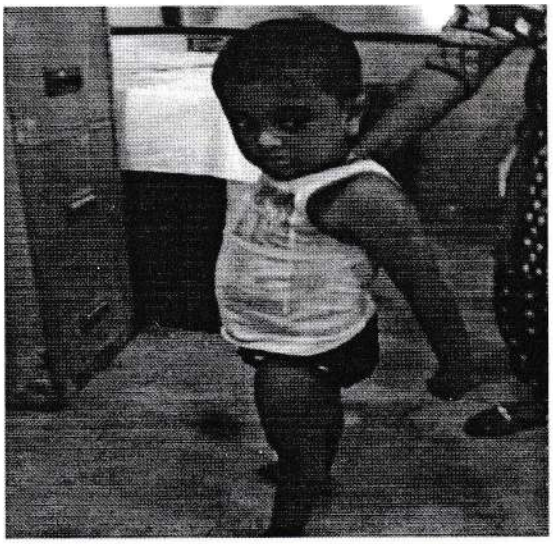


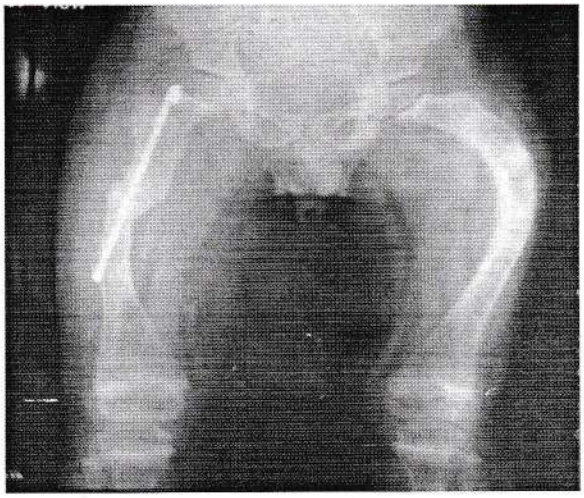


- Spine Fixation

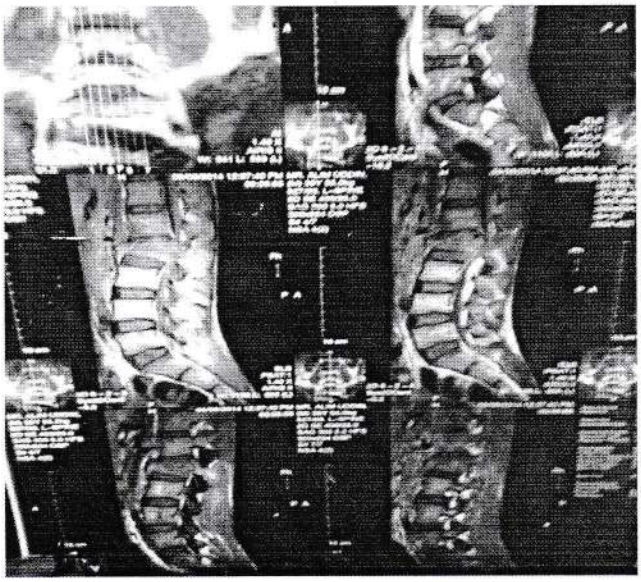


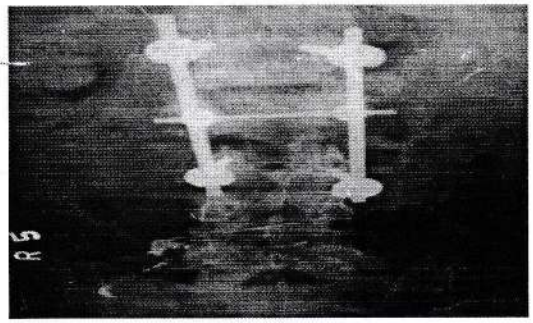


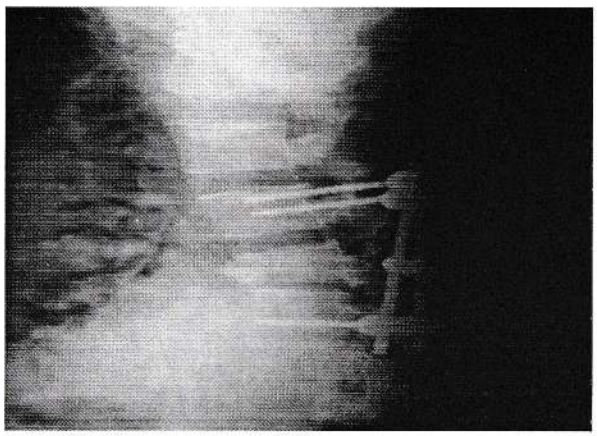




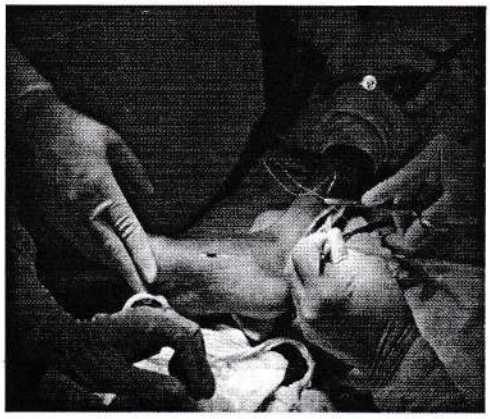
- Spine Fixation

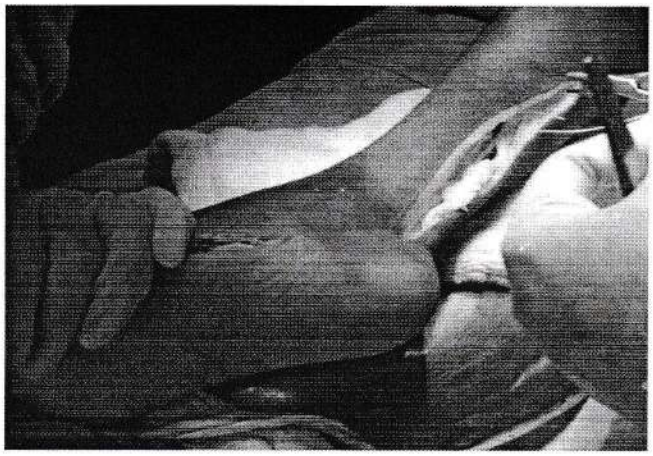






Cerebral Palsy





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CASE REPORT

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Thoracic Outlet Syndrome Caused by Cervical Rib

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Abstract

Thoracic outlet syndrome is an uncommon disease. It may causes by cervical rib, scar tissues which compress to structure at thoracic outlet area such as subclavian artery, subclavian vein and brachial plexus. The symptoms which are caused by compressing these structures are pale, swelling, numbness, weakness and pain. The author reports a case of twenty one years old female who complained mass at right supraclavicular area and numbness at right hand and forearm. Her electrodiagnostic study diagnosed thoracic outlet syndrome. Partial right cervical rib resection was done in this case. After operation for 4 months, the symptoms were improved. Therefore, the diagnosis of this syndrome is important that helps clinicians to correctly plan of treatment.

[OMTAJ 2014; 13(2)]

Introduction

Thoracic outlet syndrome is characterized by the presence of compressing to structure at thoracic outlet such as subclavian artery, subclavian vein and brachial plexus. The causes are cervical rib, abnormal posture, trauma, scalene muscle hypertrophy and fibrous band.[1] Cervical rib is a congenital anomaly which is originated from enlargement of the transverse process of C7. This anomaly occurs 1% of the population but induces the symptoms about 5%.[2] The symptoms are depended on compressed structure such as pale, swelling, edema, numbness, weakness and pain.[3] As a result of various symptoms, the diagnosis of this syndrome is very complex.[4]

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Case report:

Case twenty one years old female complained a hard palpable mass at right supraclavicular area for one year. She underwent tissue biopsy that was diagnosed reactive lymphoid tissue.

She felt numbness at right hand and forearm. Sometimes, she felt pain radiating from right shoulder to little finger. She denied other abnormalities. There was no previous history of trauma or systemic disease. Physical examination revealed a firm mass at right supraclavicular area and no muscle atrophy.

There were normal brachial and radial pulsations. Motor power was grade 5 all.

Decreased pinprink sensation and temperature sensation at medial side of right hand were noted. Tinel' sign was positive at right supraclavicular area. Adson's test at right side was negative.

The cervical spine radiograph showed bilateral cervical ribs with the right being more angulation . Nerve conduction studies (NCS) and needle electromyography were conducted. NCS showed prolong latency, normal amplitude and normal nerve conduction velocity at right ulnar motor and sensory nerves while right median motor, lateral antebrachial cutaneous and medial antebrachial cutaneous nerves were within normal range. In needle electromyography showed normal study at right deltoid, biceps, brachioradialis and dorsal interosseous muscles. This result was summarized to sign of focal demyelin involvement at right ulnar nerve which may be caused by neurogenic thoracic outlet syndrome.

Table I: Motor Nerve Conduction Studies

NERVE	STIMULATION	LATENCY (MS)	AMPLITUDE (MV)	VELOCITY (M/S)
RIGHT ULNAR	WRIST	4.6*	10.4	63
	BELOW ELBOW	7.6	10.0	
RIGHT MEDIAN	WRIST	3.8	13.0	56
	ELBOW	7.0	13.0	

* prolong latency.

Table II: Sensory Nerve Conduction Studies

NERVE	STIMULATION	LATENCY (MS)	AMPLITUDE (MV)	VELOCITY (M/S)
RIGHT LATERAL ANTEBRACHIAL CUTANEOUS	FOREARM	2.6	5	61
RIGHT MEDIAL ANTEBRACHIAL CUTANEOUS	FOREARM	2.6	7	
RIGHT ULNAR	WRIST	3.9*	37	
	ELBOW	6.5	33	

* prolong latency.

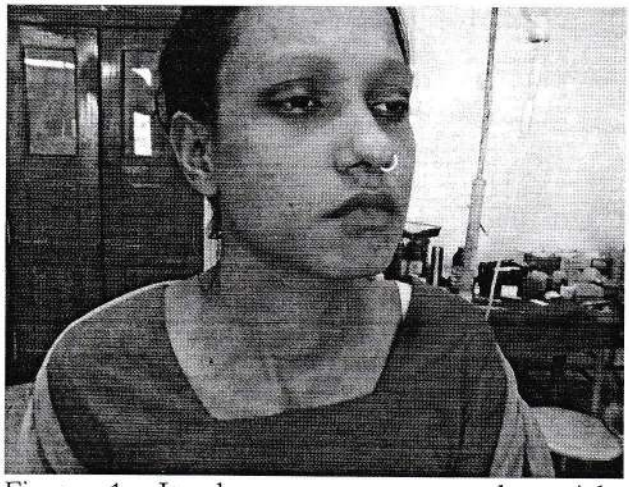

Figure 1: It shows a mass on her right supraclavicular region.

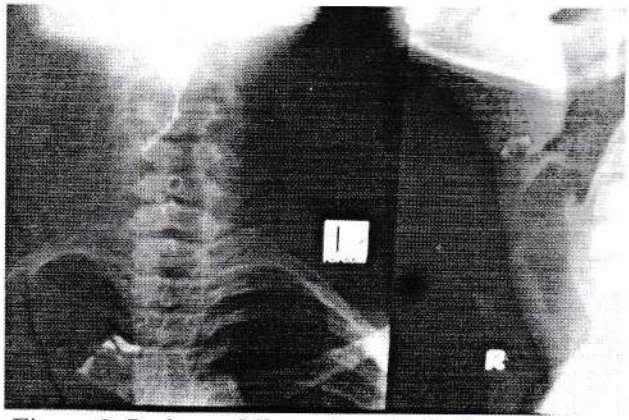

Figure 2: It shows bilateral cervical ribs

Therefore, operation was done under general anesthesia.

There was an angulated right cervical rib which was compromised to division of right brachial plexus. Partial right cervical rib resection was undergone through supraclavicular approach.

There was neurapraxia developed after operation, which was gradually improved & no other operation related complications. Four months after operation, she had no pain and felt better in sensation at right hand and forearm.

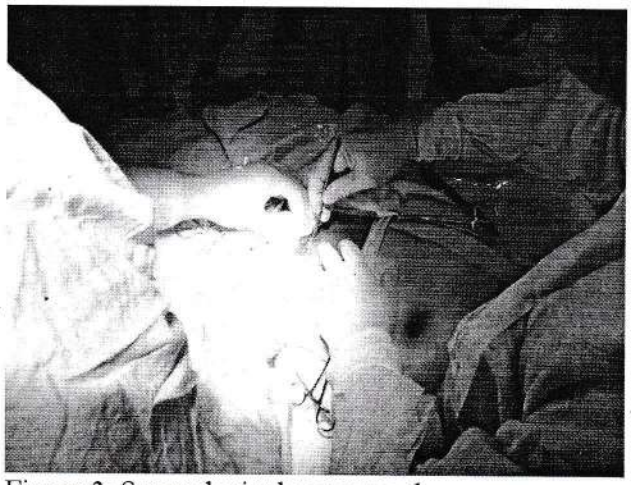

Figure 3: Supraclavicular approach.

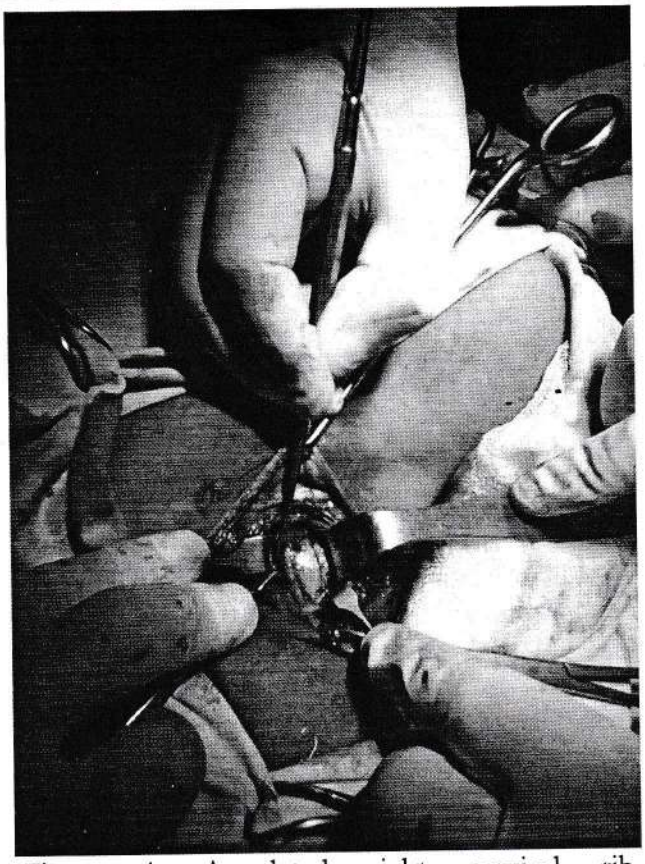

Figure 4: Angulated right cervical rib compressing brachial plexus.

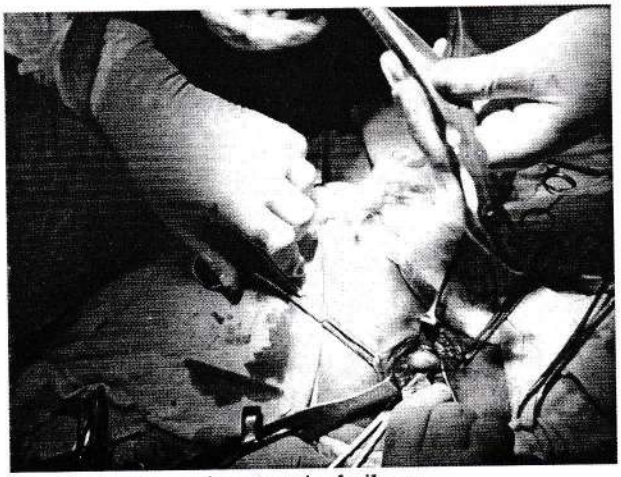

Figure 5: Resecting cervical rib

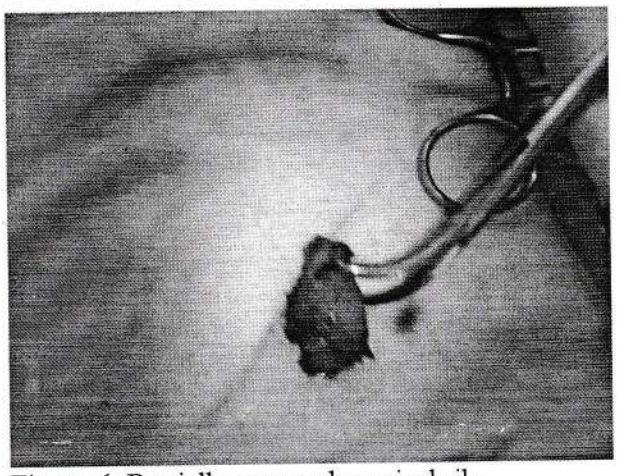

Figure 6: Partially resected cervical rib

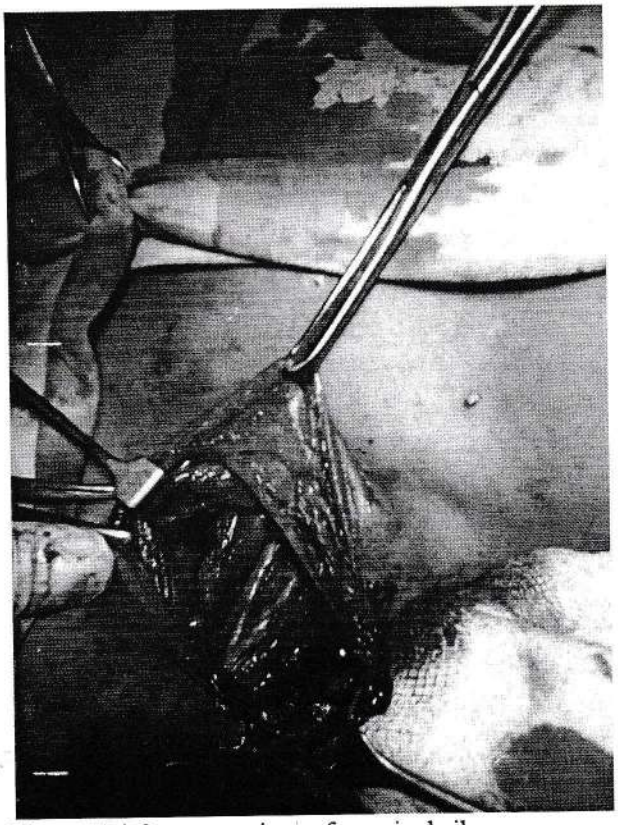

Figure 7:After resection of cervical rib

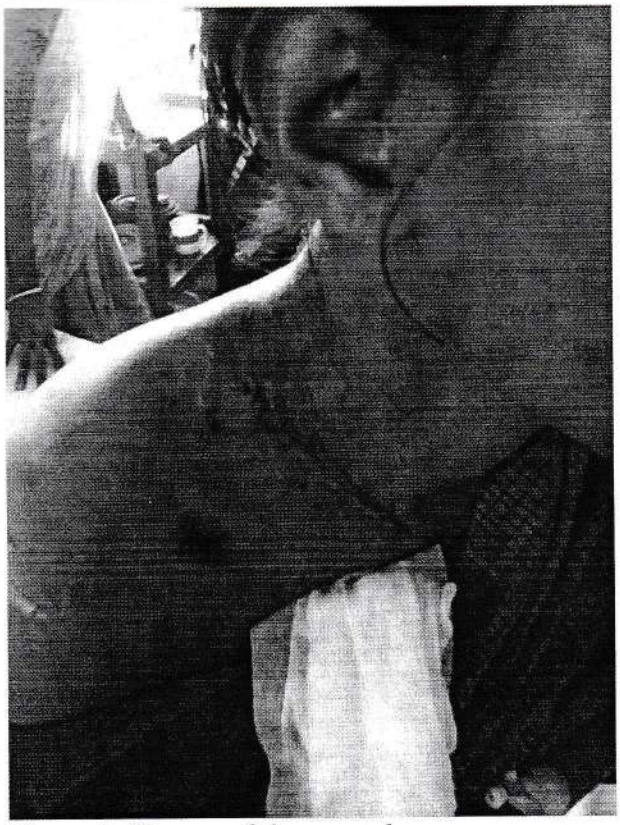

Figure 8: Closure of the wound

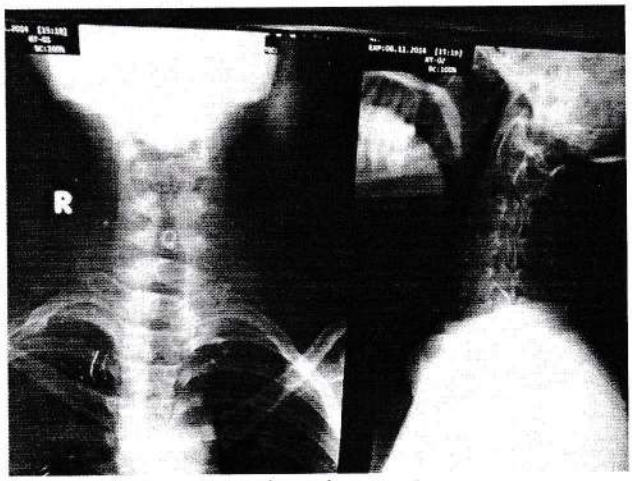

Figure 9: Post-operative view

Discussion

The neurogenic thoracic outlet syndrome most commonly involves the lower cervical nerves of the brachial plexus.[5] The symptoms are most frequently impact the ulnar distribution as this case. The Adson's test is done to mainly assess compression of the subclavian artery which is special test for vasculogenic thoracic outlet syndrome. This report showed neurogenic thoracic outlet syndrome from cervical rib, so the Adson's test was also negative. Due to the relatively uncommon presentation of cervical rib, patients presenting with a neck mass should be thoroughly assessed to rule out any other pathology such as lymphadenopathy and carcinoma.[6] Cevical rib is usually asymptomatic and may not require any treatment.[7] However, in this case reveals neck mass with persistent pain and numbness. So, it is an indication for surgery.

Conclusion

Diagnosis and treatment of thoracic outlet syndrome is not simple routine. Adequate investigations are required. It is important for physician to be careful to detect cause of thoracic outlet syndrome.

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CASE REPORT

The Osmani Medical Teachers Association Journal Volume 13 Number 2

Mediastinal mature cystic teratoma: A case report with characteristic & uncommon presentation.

Swajal Chandra Das[1], Nila Kantha Paul[2], Mostaque Ahmed Bhuiyan[1], Md. Ashikur Rahman Mazumder[2] Paresh Chandra Singha[1] Nibedita Das Pew[3]

Abstract

The mediastinum is the most common extragonadal primary site of germ cell tumours, and mediastinal lesions account for 60% of all germ cell tumours in adult. Germ cell tumours usually occur in young adults. Most malignant germ cell tumours (>90%) occur in men, whereas benign lesions (mature teratomas) occur with equal incidence in men & women.[1] A teratoma of the mediastinum is an uncommon germ cell tumour, principally when heart structures are involved.[2] Most mediastinal teratomas produce no symptoms, and they are more commonly associated with compression of adjacent structures, predominantly those of the respiratory system.[3]

We present a case of a 35-year-old man with complains of chronic abdominal cramp and loose motion for 2-3 months. Incidentally he was diagnosed as having a large mediastinal mass where heart structure involved. A non-invasive investigation demonstrated a tumoral mass which was continuous to the pericardium and caused extrinsic compression to the adjacent heart. Surgical and anatomo- pathologic findings led to the diagnosis of a mature cystic teratoma. We present an original report of a mature teratoma causing obliteration of the right cardiophrenic sinus with extrinsic heart compression.

[OMTAJ 2014; 13(2)]

Case report:

A 35-year-old man with complains of chronic abdominal cramp and loose motion for 2-3 months. Incidentally he was diagnosed as having a large mediastinal mass on conventional radiography. Chest X-ray revealed opacity at right chest by a mass with widening the cardiac shadow (Figure1). The young man was healthy and had good functional capacity. He denied fever, weight loss, previous disease, or any neoplasm history in his family.

There was no previous chest X-ray. His physical examination revealed that he was apyrexic and normotensive. His thyroid, lymph node, chest, abdomen and testes examinations were normal. A 12-lead electrocardiogram demonstrated sinus bradycardia. His chest X-ray showed a mass in the right chest with homogeneous, hazy density and a partially well-delineated margin continuous to cardiac shadow and diagnosed as a mediastinal mass. A multi-detector computed tomographic scan showed a well-defined cystic mass containing fatty tissue with fat-fluid level & calcifications measuring 8.1cm× 6.0 cm. compressing the adjacent right lung. The medistinal structures along with heart mildly shifted towards left. The mediastinal structures did not show any abnormal lymph node or infiltration (Figure2). The suspected diagnosis was a mediastinal mass—dermoid. Transthoracic two-dimensional and real-time echocardiography revealed a normal-sized heart with normal function and blood flow velocities.

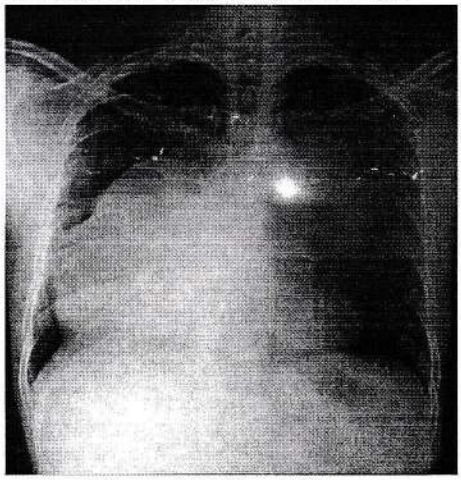

Figure 1. Chest X-ray.

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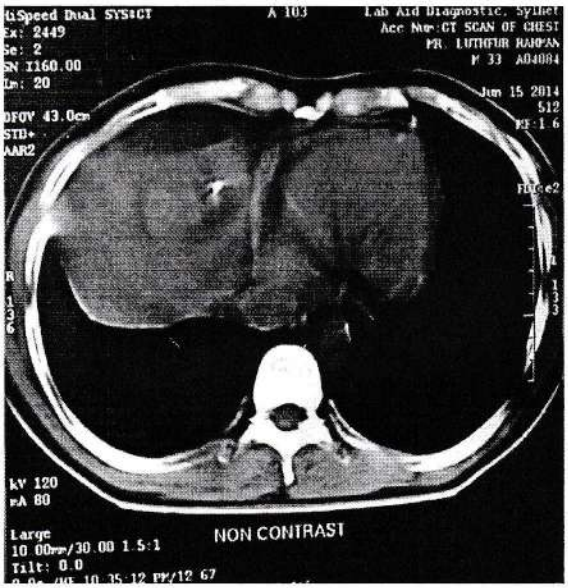
Mass in the right chest with homogeneous, hazy density and a partially well-delineated margin continuous to cardiac shadow



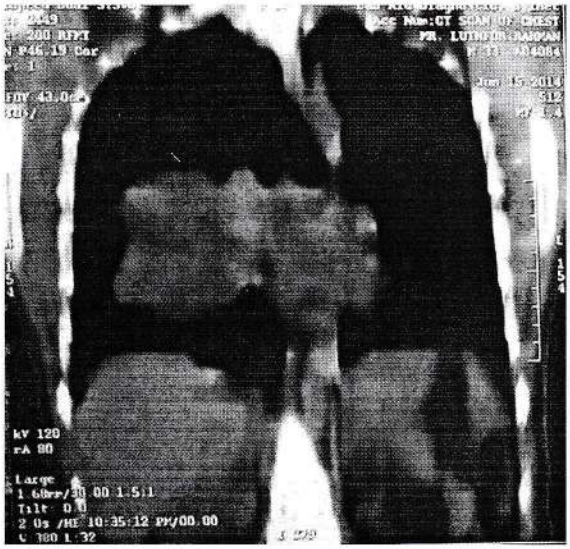


Figure 2: Computed tomographic scan showed a well defined cystic mass containing fatty tissue with fat-fluid level & calcifications, compressing the adjacent right lung. The medistinal structures along with heart mildly shifted towards left.

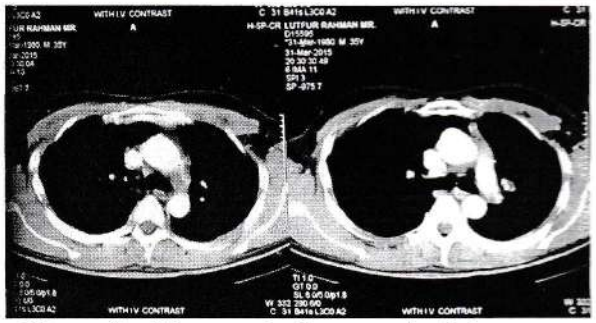


Figure 3: After surgical removal of the mass.

Surgical excision was accomplished via right antero-lateral thoracotomy through 5th intercostals space. There was a large globular well capsulated mediastinal mass(measuring about 15 cm x8 cm x5 cm) occupying the anterior mediastinum with extension to right pleural cavity. The mass was adherent to medial surface of upper and middle lobe of right lung and pericardium just in front of the heart and great vessels. The whole mass was resected after separating from adhesions by blunt and sharp dissection. The surgical approach was successful.

Gross examination showed a capsulated globular piece containing sebaceous material and hair. Microscopically, reveals the features of mature cystic teratoma. The patient had a good post-operative recovery and discharged to home accordingly.

On follow up Computed tomographic scan shows no significant abnormality related to the mass with normal lung fields(fig.3)

Discussion

Germ cell tumours (teratomas, semonomas, embryonal carcinomas, endodermal sinus tumours and choriocarcinomas) are thought to arise from mediastinal remnants of embryonal cell migration.[1] The mediastinum is the most common extragonadal primary site of germ cell tumours, and mediastinal lesions account for 60% of all germ cell tumours in adult. Germ cell tumours usually occur in young adults(mean age,27 years).Most malignant germ cell tumours (>90%) occur in men, whereas benign lesions(mature teratomas) occur with equal incidence in men & women.[1] A teratoma of the mediastinum is an uncommon germ cell tumor, principally when heart structures are involved[2] Most mediastinal teratomas

produce no symptoms, and they are more commonly associated with compression of adjacent structures, predominantly those of the respiratory system[3].

Mature or benign teratomas are composed of different tissue types (ectoderm, endoderm, mesoderm), with ectoderm derivatives predominating. The term dermoid cyst is commonly applied to the tumoursin which the ectodermal components predominate.Mature teratomas are common, accounting for 70% of germ cell tumor in childhood and 60% of mediastinal germ cell tumours of in adults. Mature teratoma occurs most frequently in children and young adults. Patients may be asymptomatic, but chest pain, dyspnoea and cough, caused by compression of adjacent structures, are common symptoms. By definition, patient with mature teratoma have normal serum levels of B-human chorionic gonadotropin hormone and alpha-feto-protein(AFP);elevation of either of these markers implies a malignant components. Complete resection is the treatment for teratomas and results in a complete cure. Although these tumours are benign, these tumours may be difficult to remove because they are adherent to local structures.[1]Our patient is adult male with the diagnosis of mature teratoma which is adherent to the pericardium.

The patients are often asymptomatic (up to 53% of cases), and the tumor is discovered incidentally on chest radiographs obtained for other reasons.[4] In our case ,also the mass was diagnosed incidentally. Rarely, these tumours may rupture or erode into adjacent structures, such as the pleural space, the pericardium, the lung, or the tracheobronchial tree. In these instances, pleural effusions, pericardial effusions, lipoid pneumonia, or expectoration of oily substances or hair (trichoptysis) may occur. 5

The typical radiographic appearance of mature teratoma is that of a rounded, sometimes lobulated anterior mediastinal mass with the borders of the mass sharply marginated against the adjacent lung. Calcification has been reported in approximately 20–43% of cases and may be central, curvilinear, or peripheral.[4,5] The radiographic visualization of teeth is pathognomonic of teratoma.[6]

Computed tomography (CT) is the modality of choice for the diagnostic evaluation of these tumours. It exquisitely shows the location and extent of the tumours as well as intrinsic elements including soft tissue, fat, fluid, and calcification.[7] Mediastinal mature teratomas typically manifest on CT as heterogeneous sharply marginated, spherical or lobulated anterior mediastinal masses containing soft tissue, fluid, fat, or calcium attenuation, or any combination of the four. . The presence of fat, calcification, as in this case report, is sufficient to characterize a teratoma. Fat-fluid levels, considered highly specific for the diagnosis of mediastinal mature teratoma, are uncommon. [8]

In our patient, calcifications as well as fatty components with fat-fluid level on CT scan was found which is highly specific for the diagnosis of mature teratoma.

CT is also useful in the evaluation of adjacent structures. Complications such as rupture into the pleural space or pericardium with associated effusions can be evaluated.[5] Rupture of the teratoma can also be suspected if the wall of the lesion appears disrupted and consolidation is evident in adjacent lung field.[9]

MR is also very sensitive in depicting the infiltration of adjacent structures by fat plane infiltration, characterization of the components of the mass.[7]

In conclusion, we relate an original report of a mature teratoma adherent to the pericardium with extrinsic heart compression having specific radiologic features .However, correct diagnosis was made by using a surgical approach and histopathology.

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REVIEW ARTICLE

The Osmani Medical Teachers Association Journal Volume 13 Number 2

Macroprolactinemia in asymptomatic hyperprolactinemia

Taharat Fatema Chowdhury[1], Ahmad Maksud Hasan Laskar[2], Dilip Kumar Bhowmik [3], Bidhan Chandra Debnath [4]

Abstract

Anterior pituitary hormone Prolactin (PRL) plays an important role in pregnancy, lactation, osmoregulation, angiogenesis, immunoregulation etc. Hyperprolactinemia often develops symptoms such as amenorrhea and galactorrhea in women and impotence in men. Anti-PRL autoantibody was found to be one of the major causes of "idiopathic" hyperprolactinemia(29%). It binds to PRL (molecular mass of 23 kDa) forming a large immune complex of PRL with IgG (macroprolactin) and tends to increase serum PRL concentrations. Hyperprlactinemia without symptom may be due to Macroprolactinemia. The prevalence of macroprolactinemia is 15 to 46% in subjects with hyperprolactinemia and 3.7% in general population. Macroprolactinemia does not require any specific treatment and no response to the anti-prolactinemic therapy has been observed. Symptoms of hyperprolactinemia are usually less frequent or even absent in patients with macroprolactinemia. Screening of macroprolactinemia is important for the differential diagnosis of hyperprolactinemia to avoid unnecessary investigations and inappropriate treatments in patients with hyperprolactinemia.

[OMTAJ 2014; 13(2)]

Introduction

Human prolactin (PRL) is a hormone secreted by the anterior pituitary lactotropic cells. Like any other anterior pituitary hormone, secretion of PRL also falls under hypothalamic control. PRL is unique amongst the adenohypophyseal hormones, in that the primary control of its secretion is inhibitory rather than stimulatory. Dopamine is believed to be the principal prolactin inhibiting factor (PIF) that regulates PRL secretion; γ-aminobutyric acid (GABA) can also inhibit PRL release, but thyroid releasing hormone (TRH) tends to stimulate its secretion.[1]

In addition to role in pregnancy and lactation it has many other biological functions like- osmoregulation, angiogenesis, immunoregulation etc. PRL facilitates the maturation of T cells via IL-2 receptor expression, impairs B cell tolerance to self-antigens through the anti –apoptotic effect, develops antigen-presenting cells, and enhances immunoglobulin production.[2]

Hyperprolactinemia often develops symptoms such as amenorrhea and galactorrhea in women and impotence in men. It is caused by various disease like- PRL secreting pituitary adenoma (prolactinoma), hypothalamic and pituitary diseases compressing pituitary stalk, antidopaminergic drugs, hypothyroidism, hepatorenal disorders etc. However, a good proportion of hyperprolactinemia has been classified as "idiopathic".

Anti-PRL autoantibody was found to be one of the major causes of "idiopathic" hyperprolactinemia [3]. It binds to PRL (molecular mass of 23 kDa) forming a large immune complex of PRL with IgG (macroprolactin) and tends to increase serum PRL concentrations. Macroprolactinemia is defined as having macroprolactin (molecular mass greater than 150 kDa) in the predominant molecular form of PRL in sera.[4] This review aims to make awareness about macroprolactinemia, its diagnostic strategies, its clinical implications and the importance of its detection in clinical settings.

Biochemistry of prolactin:

Prolactin is a protein hormone with 199 amino acids. There are three isoforms of prolactin-

1.Monomeric PRL-is a polypeptide with MW -23 *kDa* also known as **little PRL**, which is both biologically and immunologically active. 2. Dimeric PRL or **big PRL** with MW 45-50 *kDa.* 3.Polymeric PRL or **big-big PRL** with MW >100 *kDa,* also known as **Macroprolactin.**

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Distribution of serum PRL:
60–90% little PRL, 15–30% big PRL, and 0–10% big-big PRL (Macroprolactin).[5]
Normal prolactin (µg/L): Male: 3-14.7, Female: 3.8-23, Pregnancy-3rd trimester: 95-473.[6]
Presence of abnormally high levels of prolactin in the blood is hyperprolactinemia.
Causes of Hyperprolactinemia: Physiological: Pregnancy, Stress, and Exercise. **Pathological:** PRL secreting pituitary adenoma, Hypothalamic and pituitary diseases compressing pituitary stalk, Antidopaminergic drugs, Hypothyroidism, and Hepato-renal disorders. About 29% of hyperprolactinemia has been classified as "idiopathic". Anti-PRL autoantibody found to be one of the major causes of "idiopathic" hyperprolactinemia. Anti-PRL-Ab binds to PRL - forming a large immune complex with IgG (macroprolactin) and tends to increase serum PRL concentrations. [4]
Clinical presentation of hyperprolactinemia: Women with hyperprolactinemia usually present with irregular menstrual periods (prolactin inhibits follicle-stimulating hormone and luteinizing hormone), often accompanied by galactorrhea. Other symptoms include infertility and decreased libido. Men typically present with impotence, infertility and other signs of hypogonadism.[7] Hyperprlactinemia without symptom– is due to macroprolactinemia.
Prevalence of Macroprolactinemia:
The prevalence of macroprolactinemia is 15 to 46% in subjects with hyperprolactinemia and 3.7% in general population. Macroprolactinemia occurs when >60% of the patient's prolactin is in the form of macroprolactin. Symptoms of hyperprolactinemia are usually less frequent or even absent in patients with macroprolactinemia. However, patients with Macroprolactinemia cannot always be distinguished from true hyperprolactinemic patients on the basis of clinical features alone. [8]
Mechanism of development of hyperprolactinemia in macroprolactinemia:
1. Macroprolactin is big enough and confined to vascular spaces.
2. Not readily cleared by the kidneys- contributes to increased blood conc.
3. Lack of negative feedback, because macroprolactin cannot freely access the hypothalamus .[9]

Symptoms of hyperprolactinemia like- Menstrual irregularity, galactorrhea , infertility in female and decreased libido, sexual dysfunction, infertility and gynaecomastia in male are usually less frequent or even absent in patients with macroprolactinemia.[5]
Possible reasons for asymptomatic presentation of macroprolactinemia: Binding of antibodies to the epitopes for PRL receptors, thus reducing the bioactivity, Macroprolactin cannot cross blood vessel walls to reach prolactin receptors in target tissues and so is less likely to cause the classical symptoms of hyperprolactinaemia.[3]
Laboratory Investigation for Diagnosis of Macroprolactinemia:
The screening of macroprolactinemia is performed by-Polyethyleneglycol(PEG)-precipitation & Gel filtration chromatography (GFC) [5].
Discussion:
Macroprolactin is not age-related. Both sexes are affected, although the majority of patients are female. Patients with macroprolactinemia usually have normal menstrual cycles, minimal galactorrhea and spontaneous conception. However, some patients may present with clinical symptoms of hyperprolactinemia, if high levels of both macroprolactin and little PRL are present.
In a study undertaken in 14 to 40 year old hyperandrogenic women with hyperprolactinemia, presence of macroprolactin was demonstrated in 55% of the patients.[10] Taghavi et al. investigated 17 infertile women with hyperprolactinemia for macroprolactin using PEG. About 35% of those women were found to have macroprolactinemia. Galactorrhea was present in 81.8% of women with true hyperprolactinemia and 33.3% of women with macroprolactinemia, whereas oligomenorrhea was found to be present in 90.9% in true hyperprolactinemia and 16.6% of the women with macroprolactinemia. However, the pituitary images were normal in 45.5% of the women with true hyperprolactinemia and 100% of women with macroprolactinemia.[11] However, the patients with MPRL and menstrual irregularities, galactorrhea, infertility or alteration in libido should be investigated for other causes different than hyperprolactinemia.
Macroprolactinemia does not require any specific treatment and no response to the anti-prolactinemic therapy has been observed.[3]
Conclusion:
Macroprolactinaemia leads to unnecessary investigation, incorrect diagnosis and inappropriate treatment. The presence of macroprolactin should always be suspected when a patient's clinical history and/ or radiographic data are incompatible with his/ her PRL values. Awareness amongst the medical

laboratories is also very important. Many laboratories do not take into account the interference of macroprolactin in PRL assays. Therefore screening of macroprolactinemia is important for the differential diagnosis of hyperprolactinemia to avoid unnecessary investigations and inappropriate treatments in patients with hyperprolactinemia.

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Abbreviations

Except for units of measurements, abbreviations are discouraged. The first time an abbreviation appears, it should be preceded by the words for which is stands.

Drug name

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