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# JOURNAL OF SATKHIRA MEDICAL COLLEGE (JSMC)

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## CONTENTS

EDITORIAL

# Mometasone Nasal Spray in Children with Snoring due to Adenoids

**A S M Moosa**

Adenoid hypertrophy is known to be associated with several harmful clinical conditions(1,2) which range from mild nasal obstruction, otitis media to severe obstructive sleep apnea syndrome (OSAS). Delayed diagnosis and treatment of these diseases may result in consequences such as behavior alterations, low growth and weight gain, craniofacial alterations secondary to mouth breathing, mastication and swallowing disorders, in addition to cor pulmonale and left heart failure.(3) OSAS in children is usually managed with adenotonsillectomy which needs general anesthesia and sometimes is associated with complications. As adjunctive treatments, medical methods for reduction of adenoid size are limited. However, recent studies showed that topical nasal corticosteroid spray reduced adenoid size and improved symptoms of nasal airway obstruction and OSAS.(4) The clinical data in Bangladeshi population is still limited.The palatine and pharyngeal tonsils, along with the lingual and tubal tonsils and the lateral pharyngeal bands are the important structures of Waldeyer's ring. They are secondary lymphoid organs, part of the mucosa-associated lymphoid tissue (MALT), which present immune activity mainly between 4 and 10 years of age.(6) Adenoidal hypertrophy is most common cause of obstructive sleep apnea and the cardiopulmonary syndrome, as severe complication. Adenoidal hypertrophy is one of the most frequent indications for surgery in childhood, and adenoidectomy commonly is considered definitive treatment for nasopharyngeal obstruction.(7)Although adenotonsillectomy is the most commonly performed procedure in children, its true impact upon the pediatric immune system is controversial(8).Encouraging results concerning chronic obstructive nasal symptoms due to adenoid in pediatric population were reported by use of intranasal steroid for short period. In order to see any alternative modality which can prevent or delay the requirement of adenoidectomy, evaluation of the utility of mometasone furoate aqueous nasal spray in children with adenoidal hypertrophyis needed. Reviewe of seven studies including a total of 493 patients and found six of these studies demonstrated significant efficacy of various nasal steroids (mometasone, beclomethasone, flunisolide) in improving nasal obstruction symptoms, and in reducing adenoid size, as measured with symptom scores and fiber-optic nasopharyngeal endoscopy, respectively.(9) The response appeared to be a group effect and may be maintained longer-term by continuing nasal steroids at a lower maintenance dose. The treatment is safe and well-tolerated with few minor adverse events. Berlucchi and

Valetti (10) evaluated the utility of mometasone furoate aqueous nasal spray in children with adenoidal hypertrophy in long-term maintenance therapy. Their study describes the long-term follow-up of children undergoing mometasone furoate aqueous nasal spray treatment for adenoidal hypertrophy. Voluntary suspension of maintenance therapy favors surgery of this disorder, whereas its regular administration may lead to successful results. In many study short term use of intranasal mometasone has shown to decrease the adenoid size and symptom improvement. Rezende(9)used the mometasone with saline irrigation and found the combination useful, but in the present study the intranasal mometasone alone was found to be sufficient for improvement. Intranasal mometasone has no effect on the tonsillar hypertrophy in the same study. Several mechanisms, such as direct lymphocytic action, inhibition of inflammation, and alteration of adenoid bacterial flora, have been suggested to explain how steroids decrease adenoid pad volume and improve symptoms of adenoidal hypertrophy, although none has yet achieved widespread acceptance. Akkeret(10)et al analyzed 123 adenotonsillectomy patients for 12 months and reported significant decreased in IgA levels, in 1996, Mira et al(7) followed 30 Brazilian patients aged between 3 and 15 years for 1 to 12 months. Minor reductions were reported on immunoglobulin levels. There is no data available on the affect of intranasal steroid on the immune system. The available evidence suggests that short term use of nasal steroids may significantly improve nasal obstruction symptoms in children with adenoid hypertrophy. This improvement appears to be associated with a reduction of adenoid size. Evidence of long-term efficacy is awaited. Further studies are required to support the use of nasal steroids as a first-line approach in these children

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**Dr. Abu Saleh Md. Moosa**
Editor in Chief

Original Article

# Clinical Outcome of Buccal Mucosal Graft Urethroplasty in Long Segment Anterior Urethral Stricture

M R Quddus[1], M Asaduzzaman[2], MS Islam[3], K Ahmed[4]

***ABSTRACT***

*Anterior urethral strictures are not uncommon in routine urological practice. Various types of grafts can be used in substitution urethroplasty. Buccal mucosal graft is being used as substitution and the results is promising. This study outcome of ventral with dorsal-combined buccal mucosal graft for anterior urethral strictures was assessed by prospective study from March 2009 to December 2014 attending in Department of Urology in National Institute of Kidney Diseases and Urology and private clinics of Satkhira district sadar, with the aim to observe the outcome of ventral with dorsal (combined) buccal mucosal graft urethroplasty. A total 60 patients of anterior urethral stricture were selected for buccal mucosal graft urethroplasty. In this study success rate of buccal mucosal graft urethroplasty was 93.5%. For anterior urethral stricture ventral with dorsal-combined buccal mucosal graft urethroplasty can be recommended as a choice for substitution urethroplasty.*

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## Introduction

Urethral stricture is one of the oldest problem. The overall incidence of stricture disease might be as high as 0.6% of certain populations(1). This narrowing restricts urine flow and causes dilatation of proximal urethra and prostatic ducts; prostatitis developed, bladder muscle become hypertrophied and ultimately bladder failure occurs, causing reflux of urine, hydroureteronephrosis and renal failure. Chronic urinary stasis makes infection likely; urethral fistulas and periurethral abscess commonly develop in association with chronic severe stricture(2). The gold standard treatment of urethral stricture is urethroplasty. It may be anastomotic or substitution type .This procedure carries the risk of urethral chordee, impaired sensation of glans and stricture recurrences(3). Urethral substitution has long been accomplished

by using genital skin flaps, grafts of genital or extragenital tissue(4). The efficacy of both grafts and flap is identical but with a much greater postoperative morbidity with penile skin flaps(5). Now a days buccal mucosa has been used for urethral reconstruction with promising early results. The use of oral mucosa was first described in 1941(6). Buccal mucosa is tough, resilent, easy to harvest, easy to handle, reistant to skin diseases e.g. BXO and also resistant to infection. Buccal mucosa is architecturally similar to stratified squamous epithelium of penile and glanular urethra making it exceptionally adaptable for urethral reconstruction(8). The conventional approach for the management of long segment anterior urethral stricture is two stage Johanson repair(9).

**Methodology:**

This was a prospective study from March 2009 to December 2014 attending in Department of Urology in National Institute of Kidney Diseases and Urology and private clinics of Satkhira sadar, Satkhira. Consecutive 60 patient were selected after fulfill the inclusion & exclusion criteria. Data were collected from history, findings of clinical examination and results of investigations before surgery and at the time of follow up. Data collection sheet containing the selected points were filled up. After meticulous checking and rechecking data compilation and statistical analysis were done.

**Results :**

Age distribution of study group Mean ±SD 42.13±7.65. Lengths of Stricture was 38.10±8.34 mm. Location of strictures was defined radiologically by urethrogram. Highest number of strictures 28 (46.66%) were located in the bulbar part. Penile urethral strictures were 20 (33.33%). In 12 (20.00%) patients the strictures involved both (bulbar and penile) part.

**Table I.** Evaluation of outcome 6 months after operation

| Outcome variables | | Number of Patients (n =60) |
|---|---|---|
| Peak urinary flow rate (Qmax) # | Good (>15 ml/sec) | 46(76.66) |
| | Average (10-15 ml/sec) | 10(16.66) |
| | Poor (<10 ml/sec) | 4(06.66) |
| Voided urine volume* | | 255.8±55.5 |
| Recurrence of stricture# | | 2(03.33) |
| UTI# | | 3(05.00) |

**Table- II.:** Status of RGU & MCU at follow-up

| Follow up/ RGU & MCU | | | Number of Patients (n=60) | |
|---|---|---|---|---|
| | | | No | (%) |
| *3rd month | Success | Good | 46 | 76.66 |
| | | Average | 10 | 16.66 |
| | Failure | poor | 4 | 06.66 |
| *6th month | Success | Good | 46 | 76.66 |
| | | Average | 10 | 16.66 |
| | Failure | Poor | 4 | 06.66 |

Status of urethrocystoscopy at follow up:

**Table- III :** Status of urethrocystoscopy at 6 month follow up:

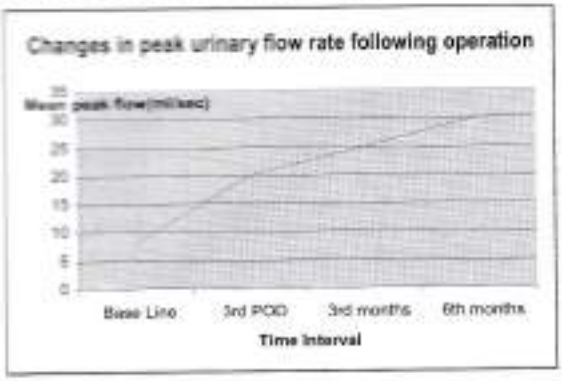
| Follow up Urethrocystoscopy | Number of Patients (n=60) | |
|---|---|---|
| | No | (%) |
| Success | 56 | 93.33 |
| Failure | 4 | 6.66 |

**COMPLICATIONS**

**Table IV** . complications:

| Compilations | Number of Patients (n = 60) |
|---|---|
| Fistula * | 2(3.33) |
| Recurrence of stricture* | 2(3.33) |
| Recurrent urethritis* | 1(1.66) |
| Wound infection# | 3(5.00) |
| Dribbling of urine* | 1(1.66) |

## CHANGES IN UROFLOWMETRY FOLLOWING OPERATION




## DISCUSSION

The incidence of urethral stricture is increasing due to more road traffic accidents, urethral instrumentation for diagnostic and therapeutic purposes and urethral inflammatory disease.(10) The conventional approach for the management of long segment anterior urethral stricture is two stage Johanson repair.(9) Currently substitution urethroplasty (BMG) has been suggested for long segment anterior urethral stricture with a promising result.(11) It may be in single stage or multiple stage, ventral or dorsal or combined. Buccal mucosa is architecturally similar to stratified squamous epithelium of penile and glanular urethra making it exceptionally adaptable for urethral reconstruction.(12) The present study was designed to evaluate the outcome of ventral with dorsal-combined buccal mucosal graft for long segment anterior urethral stricture. Sixty patients were included in this study. Result of different international study showed mean age were 46, 43, and 41 years(13,14,15) respectively nearly similar with our study. Location of the urethral stricture in this series was penile, bulbar and both bulbar and penile. Majority of the patients had bulbar urethral stricture - 28. In a study reported development of erectile chordee as a complication of BMG in penile urethral strictures(16). But another study showed that dorsal placement of graft in stricture of penile urethra is not associated with chordee.(14,15) In this present study 60 patients underwent BMG urethroplasty, out of them 33.33% were penile urethral stricture, but no patient complained of erectile chordee during follow up period. In the present series higher incidence of stricture urethra, 26% were iatrogenic followed by 23% were inflammatory. In the present study the overall success rate of buccal mucosal graft urethroplasty was 93.5%. The success rate of buccal mucosal graft patch urethroplasty was similar to other studies; success rate of dorsal BMG patch urethroplasty were 92% and 94% respectively(11,15). In these context, buccal mucosal graft urethroplasty can be considered as the treatment of choice for long segment stricture of anterior urethra.

## CONCLUSION

The results of this study showed that the outcome of ventral with dorsal-combined buccal mucosal graft urethroplasty is a type of urethroplasty with excellent outcome due to its better intrinsic property. Therefore, combined buccal mucosal graft urethroplasty should be prefered to any other urethroplasty in the treatment of long segment anterior urethral stricture.

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Original Article

# Results of Conservative Treatment of Displaced Supracondylar Fractures of Humerus in Children

**AHSM Kamruzzaman[1], Siddiqui Alam[2], M Z Islam[3], MR Quddus[4], KG Mostafa[5], P Das[6], F Alam[7], SA Islam[8], MB Uddin[9]**

***ABSTRACT***

***Context:*** *A supracondylar humerus fracture is a fracture of the distal humerus just above the epicondyles.It is relatively rare in adults but more common fractures to occur in children and is often associated with the development of serious complications.* ***Objective:*** *To assess the results of conservative treatment of displaced supracondylar fractures of humerus in children.* ***Material and Methods:*** *This prospective study was conducted at the Orthopaedics Department of Rangpur Medical College Hospital Bangladesh , from January 2010 to December2012. A total of 45 children having displaced supracondylar fracture of humerus were included in this study. All patient were treated with closed reduction and immobilization by plaster of Paris. Follow-up was done up to 12 months.* ***Results:*** *All the 45 children included in this study were in the age range of 1 year to 15 years. Among these 30 were males and 15 were females. There were 26 type II and 19 type III fractures according to Gartland classification. The outcome was graded according to Flynn criteria in to excellent, good, fair and poor. Out of 26 type-II fractures, 11(42.30%) cases showed excellent results, 6 (23.07%) had good, 5(19.23%) had fair and 4 (15.38%) had poor results .Out of 19 type III fractures, 7 (36.07%) cases had excellent outcome, 3(15.78%) had good, 3(15.78%) had fair and 6(31.57%) had poor results.* ***Conclusion:*** *The results of this study were satisfactory in Gartland type -II fractures. However the results were not good in type-III fractures*

***Keywords:*** *Supracondylar Fracture, Humerus, Closed reduction, Conservative Treatment.*

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## Introduction

Supracondylar fracture of the humerus is a very common fracture in children age group (1). Displaced supraconylar fracture may be associated with various complications like neurovascular compromise, compartment syndrome, skin problems, Volkmann's ischaemia and cubitus varus(2 ) .There are two types of supracondylar fractures, extension type which is more common and flexion type which is rare. The displaced supracondylar fractures (type-II & III) are simple and easily treated with splintage for three weeks. It has no inherent complications and heals uneventfully. It is the management of which is challenging and controversial. Various methods of treatment that are used for these fractures include side-arm traction, manipulation under anaesthesia, operative fixation using percutanous wire and open reduction and internal fixation (3). All of these methods have advantages and disadvantages.The choice of the treatment should be depended on the morphological characteristics of the fractures.

## Materials & Methods

This prospective study was conducted in the Orthopaedics Department of Rangpur Medical College Hospital from January 2010 to December 2012. A total of 45 cases of displaced supracondylar fractures were included in this study after fullfil the Inclusion & Exclusion Criteria

**A.Inclusion Criteria:-**

1. Children with supracondylar fractures in the age range of 01 year to 15 years.

2. Gartland type-II & III, extension type, supracondylar fracture of humerus

3. Fresh cases of supracondylar fractures of not more than 4 days duration.
4. Only closed fractures.

**B. Exclusion Criteria :-**

1. Open fractures
2. Fractures in which at the time of presentation there was neuro vascular compromise ,compartment syndrome or skin blisters.
3. Late cases of more than 4 days duration

On entry to the Orthopaedics Department, the patient was assessed by a consultant to exclude neurovascular injury or other associated injuries. The fracture was classified according to Gartland classification. Under intravenous sedation and analgesia, closed reduction was performed by a consultant and plaster of Paris back slab applied . Post-reduction anteroposterior and lateral radiographs were taken. The patient was kept under observation for few hours in the emergency ward for any neurovascular compromise after reduction. The patient was then sent home. For the first 4 weeks the patient was seen at weekly intervals and then at monthly intervals up to total period of 12 months. At each visit radiographs were taken. Plaster back slab was removed at three weeks after reduction and then exercises instituted to restore .

**Results:** All the 45 children included in this study were in the age range of 1 year to 15 years. Among these 30 were males and 15 were females. There were 26 type II and 19 type III fractures according to Gartland classification. The outcome was graded according to Flynn criteria in to excellent, good, fair and poor. Out of 26 type-II fractures, 11(42.30%) cases showed excellent results, 6(23.07%) had good, 5(19.23%) had fair and 4 (15.38%) had poor results .Out of 19 type III fractures, 7 (36.07%) cases had excellent outcome, 3(15.78%) had good, 3(15.78%) had fair and 6(31.57%) had poor results

Table - Age distribution of patient n=45

| Age group | No. of patient |
|---|---|
| 1-5 years | 8 |
| 5-10 years | 25 |
| 11-15 years | 12 |

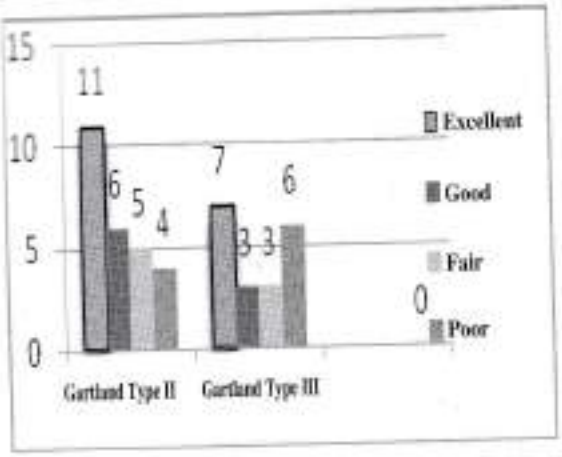


**Figure :** Outcome of treatment according to Flynn criteria n =45

**Discussion**

Supracondylar fracture of humerus is one of the most common fractures in first decade of life(4) . Before embarking on any treatment, it is useful to classify the fracture. The most commonly used classification is Gartland classification(5). Type-I fractures are treated with plaster of Paris back slab. Partially displaced fractures (Type II) are treated by closed reduction and plaster of Paris back slab. Many surgeons advocate closed reduction of type III fractures under image intensifier and percutaneous fixation with wires(6) . But in many hospitals in Bangladesh the facility of image intensifier is not available. Other methods employed for such fractures are side-arm traction and open reduction and internal fixation . Sidearm traction requires prolonged stay in hospital as well as keeping the child in lying down position in bed, which is a difficult task for parents and hospital personnel. Open reduction and internal fixation involves a major surgical procedure with attendant risks of anaesthesia, hospitalization, infection, high cost and stiff elbow(7). Because of non-availability of image intensifier in the Accident and Emergency Department .We have endeavored to achieve good results with closed reduction and splintage in plaster of Paris back slab in displaced supracondylar fractures of humerus in children. A study revealed the results of this type of management were excellent in 4 (16%), good in 11 (44%), fair in 3 (12%) and poor in 7 (28%) cases(8). It is similar to our current study. Another study also showed very closer results with our study. They used either closed methods or open reduction. In the overall series the results were excellent in 72 (52.70%), good in 31 (21.83%), fair in 13 (9.15%) and poor in 26(18.30%)(9). redisplace in plaster back slab even after accurate closed reduction.

The rate of complications like cubitus varus and stiff elbow are high when typeIII fractures are treated with closed reduction and splintage alone. However it is a universally accepted method of treatment for type-II fractures, which are stable after reduction. In our study, in Gartland type-II fractures, the rate of poor results was 13.04%, whereas in Gratland type-III fracture, it was 41.17% showing a significant difference. This implies that when managing supracondylar fracture of humerus in children, type-III fractures require more vigilant care and secure fixation techniques to decrease the number of poor results(10).

**Conclusion:**

Type-II supracondylar fractures of humerus in children can be effectively managed by closed reduction and plaster of Paris back slab. For type-III fractures this type of management is not effective.

The frequency of excellent and good results decreases in type-III fractures because of inherent instability and redisplacement in a simple splint. It is better to use additional stabilization techniques like percutaneous pin fixation or internal fixation with wires

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Original Article

# Lipid Profile and Pre-eclampsia: A Case Control Study

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*ABSTRACT*

***Context:*** *Pre-eclampsia/eclampsia is a pregnancy specific disorder, which complicates 7-10% of all gestations. Approximately 10-15% of maternal deaths in developing countries are associated with pre-eclampsia and eclampsia.* ***Objectives:*** *Comparison of lipid parameters between pre-eclampsia and normal pregnant woman*

***Materials & Method :*** *Pre-eclamptic and normal pregnant women were the case control study population taken from outpatient and inpatient of Dhaka Medical College Hospital.* ***Result:*** *Serum lipid profile was compared in two groups. Total cholesterol (P< .05) , LDL (P< .05) and TG (P< .05) was significantly more in Cases than controls, however the difference was not statistically significant in HDL (P>.05).* ***Conclusion:*** *Plasma Cholesterol, Low density lipoprotein and triglyceride levels were found to be higher in pre-eclamptic women than the women with normal pregnancy.*

***Key words :*** *Lipid Profile, Pre-eclampsia*

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## Introduction

Pre-eclampsia/eclampsia is a pregnancy specific disorder, which complicates 7-10% of all gestations.(1) Pre-eclampsia most commonly occurs during the last trimester of pregnancy when it arises in the early 2nd trimester 14-20 weeks (2) and is associated with substantial risks for the foetus, these include intrauterine growth restriction, death and prematurity with attendant complications where as the mother is at risk of seizures, renal failure, pulmonary oedema, stroke and death.(3) Pre-eclampsia is a syndrome, which affects virtually all maternal organ systems. Early pregnancy dyslipidemia has been said to be associated with an increased risk of pre-eclampsia (4). Despite considerable research, the cause or causes of pre-eclampsia remain unclear and there are no clinically useful screening tests to identify women in whom it will develop. It

is believed that pre-eclampsia is part of a spectrum of hypertensive disorders that complicate pregnancy. These include chronic hypertension, pre-eclampsia superimposed on chronic hypertension, gestational hypertension, pre-eclampsia, and eclampsia. Disorders of lipoprotein metabolism are reported to be a major cause o f hypertension and protenuria in Pre-eclampsia.(4)

The association of alteration of serum lipid profile in essential hypertension is well documented. Interestingly, variable serum lipids are found in preeclamptic mothers.(5) Some authors reported that high serum cholesterol, triglyceride, low-density lipoprotein (LDL) and low serum High-density lipoprotein (HDL) was associated with pre-eclampsia(5). But some authors reported that low serum cholesterol(6) or no difference in serum cholesterol,(6) triglyceride, LDL, HDL in pre-eclampsia compared to normal pregnancy.(5) The role and status of serum lipids in pregnant women are still being discussed. Present study attempts to measure serum levels of cholesterol, triglyceride, HDL and LDL in mild and severe pre-eclamptic pregnancy and to compare with normal pregnancy

Importantly, the risk of pre-eclampsia is positively correlated between close relatives; Study showed that 20-40% of daughters and 11-37% of sisters of preeclamptic women also develop pre-eclampsia.(7) Twin studies has also shown a high correlation, approaching 40%. Over a hundred maternal and paternal genes have been studied for their association with the syndrome, including those known to play a role in vascular diseases, blood pressure regulation, diabetes, and immunological functions. Because pre-eclampsia is genetically and phenotypically a complex disease, it is unlikely that any one gene will be shown to play a dominant role in its development.

In Bangladesh, the incidence of eclampsia is alarmingly high, about 16% of maternal deaths are associated with it.(7) Dyslipidemia might be an independent factor associated with eclampsia in Bangladeshi women as well. So far, no reported study has observed Lipid profile in eclampsia.

**Materials & Methods :**

It was a case control study and pre-eclamptic and normal pregnant women were the study population in the study. The Sample was taken from outpatient and inpatient from the departments of Obstetrics and Gynaecology of Dhaka Medical College Hospital during the period of January 2010 to December 2010. Lipid profile which include serum triglyceride, total cholesterol, HDL,LDL,willbe done under aseptic precaution. 5cc venous blood was taken with dysposable plastic syringe from the antecubetal vein and then blood was transferred to a trest tube for determination of lipid profile. Biochemical examinations were done at the dhe department of Biochemistry Dhaka Medical College. Multi system automatic analyzer was used as analyzer instrument. Collected data were sorted and screened for any discrepancy. The edited data were entered on to the template of SPSS 16.

**Result**

**Table 2:** Comparison of Systolic and diastolic BP

| BP characteristics | Mean (SD) | t | df | P Value |
|---|---|---|---|---|
| **Systolic BP mm Hg** | | | | |
| Control(n=50) | 114.7 (13.1) | -14.22 | 98 | .001 |
| case(n=50) | 160.9 (18.8) | | | |
| **Diastolic BP mm Hg** | | | | |
| Control(n=50) | 69.7 (9.8) | -18.88 | 98 | .001 |
| Case(n=50) | 109.5 (11.2) | | | |

**Table 3:** Comparison of Lipid profile through independent t test

| | Mean (SD) | t | df | P Value |
|---|---|---|---|---|
| **Total cholesterol** | | | | |
| Control(n=50) | 199.0(41.30) | -4.34 | 98 | .001 |
| case(n=50) | 251.0(72.73) | | | |
| **HDL** | | | | |
| Control(n=50) | 32.6 (13.81) | -1.51 | 98 | .130 |
| case(n=50) | 34.4(14.29) | | | |
| **LDL** | | | | |
| Control(n=50) | 127 (37.49) | -2.23 | 98 | .020 |
| case(n=50) | 149 (858.80) | | | |
| **TG** | | | | |
| Control(n=50) | 204(71.33 ) | -5.23 | 98 | .001 |
| case(n=50) | 348(180.54 ) | | | |

**Discussion :**

In current series the comparison of the anthropometric measure through independent t test. On average cases were taller (P<.05) and heavier (P<.05) than the controls.similar to many studies (10). The Comparison of Height and weight through independent t test. Both systolic and diastolic BP was significantly higher in cases than controls. (P< .001) Serum lipid profile was compared in two groups. Total cholesterol (P< .05) , LDL (P< .05) and TG (P< .05) was significantly more in Cases than controls,supports many literature (10,11). However the difference was not statistically significant in preeclamsia & HDL (P>.05). and also no statistically significant correlation was found between the two preeclampsia and TG. (P>.05) . No statistically significant correlation was found between the two attribute. (P>.05)

**Conclusion**

Current study finding have demonstrated that Bangladeshi women with pre-eclampsia are more likely to encounter dyslipidemia. Plasma Cholesterol, Low density lipoprotein and triglyceride levels were found to be higher in pre-eclamptic women than the women with normal pregnancy. High density lipoprotein level was found to be similar among the women with or without pre-eclampsia. Urinary protein was seen higher in pre-eclamptic women than women with normal pregnancy.

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Original Article

# Prevalence of Bacterial Vaginosis Among Pregnant Women Attending the Antenatal Clinic in Dhaka Medical College Hospital

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***ABSTRACT***

***Background:*** *Bacterial vaginosis (BV) is a common cause of vaginal discharge among women of child bearing age.* ***Objective :*** *To study the prevalence of bacterial vaginosis among pregnant women attending Dhaka Medical College outpatient department.* ***Methodology:*** *This was a Cross sectional type of observational study in Antenatal Clinic of Dhaka Medical College Hospital from January 2008 to December 2008 on Pregnant women between 16-28 weeks of gestation, presenting with per vaginal whitish discharge.* ***Results:*** *maximum age group of 20-24 yrs (46.8%), BV was positive in 31.8% of women between 20-24 years, Relation of BV positive cases with socio-economic condition (n=94), ), Bacterial vaginosis was found to be positive in 57.1%* ***Conclusion:*** *The prevalence of BV among the low socioeconomic group of Bangladesh justifies the broad based dissemination of information to women who are vulnerable & also implementation of a programme for screening and treatment of bacterial vaginosis during antenatal check-up.*

***Keywords :***

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## Introduction :

Bacterial vaginosis (BV) is a common cause of vaginal discharge among women of child bearing age. Recent studies have confirmed its association with pelvic inflammatory disease & adverse pregnancy outcomes.

Bacterial vaginosis is a polymicrobial syndrome, characterized by a shift in the vaginal flora from the dominant flora of Lactobacillus spp. to a mixed vaginal flora that includes Gardnerella vaginalis, Mycoplasma hominis, Bacteroides spp, Peptostreptococcus spp, Fusobacterium spp, Prevotella spp, Mobiluncus spp & other anaerobes(1). Symptoms include vaginal discharge, pruritus, or malodour; however, approximately half of the

women with Bacterial vaginosis are asymptomatic (2_4). The prevalence of bacterial vaginosis in USA was found to be 16 %(5). Results of a study among pregnant women in Indonesia showed that the prevalence of bacterial vaginosis was 12%6. In Bangladesh, the prevalence of bacterial vaginosis among urban & rural nonpregnant female attending primary health-care delivery units was found to be 30% & 20% respectively (7- 8).

**Material & methods**

This was Cross sectional type observational study in Antenatal Clinic of DMCH from January 2008 to December 2008 Consecutive 94 Pregnant women between 16-28wks presenting with whitish discharge per vagina fulfilling the inclusion criteria was taken as sample A detailed history is taken of each patient followed by thorough clinical examination. After completing general & per abdominal examination, maintaining all aseptic precautions, a speculum examination is done to obtain swabs of vaginal secretions from the posterior wall of the vaginal fornix. Immediately it is touched with litmus paper to see the change in colour for detection of pH of the discharge. The swab stick is then taken to the pathology section for wet film test.

In the wet film, the discharge is mixed with normal saline & a cover slip is put on it. It is then be studied under the microscope to identify the clue cells. Whiff test is done by immersing the swab stick into 10% KOH solution.Data was collected and processed manually

**Results:**

Most of the respondents belonged to the age group of 20-24 yrs (46.8%),BV was found positive in 16.7% of cases whereas among 19.1 % cases having monthly income of Tk 3000-5000, BV was positive in 55.6% cases. Relationship of BV positivity with occupation of the respondents(n=94), BV was positive in 26.2% of house wives. Relationship of BV positivity with level of education in the respondents (n=94), Bacterial vaginosis was found to be positive in 57.1% of cases who had up to secondary level of education,Most of the cases were multigravida; 68.1%.Relationship of gravidity with BV positivity (n=94), Among the 64 multigravid women, BV was positive in 25% cases, Most of the respondents belonged to the gestational age of 16-24 wks.Relationship of gestational age with BV positivity (n=94), Among the 38 cases belonging to the gestational age of 16-24 wks, 26.3% were BV positive.Most of the respondents belonged to the gestational age of 16-24 wks.Relationship of gestational age with BV positivity (n=94), Among the 38 cases belonging to the gestational age of 16-24 wks, 26.3% were BV positive, Leucorrhoea was complained by all the respondents, followed by lower abdominal pain, backache, itching vulva, fever etc.

**Table I :** Presenting complaints of Bacterial vaginosis

| Presenting complains | No. of cases | No. of positive cases | Percentage % |
|---|---|---|---|
| Leucorrhoea | 94 | 24 | 25.5 |
| | 42 | 20 | 47.6 |
| Lower abd. Pain | 58 | 10 | 17.2 |
| Dyspareunia | 12 | 4 | 33.3 |
| Dysuria | 26 | 6 | 23.0 |
| Fever | 34 | 8 | 23.5 |
| Backache | 44 | 10 | 22.7 |
| Rash in vulva | 6 | 4 | 66.6 |
| Soreness in vulva, vagina | 6 | 4 | 66.6 |

Among the 94 cases complaining of leucorrhoea, BV was positive in 25.5% cases & among 42 cases who complained of itching vulva, BV was positive in 47.6% cases.

Relationship of BV positivity to past complaint of leucorrhoea (n=52)

23.1% of cases giving past history of leucorrhoea were found to be BV positive in this pregnancy.

History of previous treatment of respondents with BV positive detected (n=22)

Among the 22 patients treated with drugs for previous disease, BV was positive in 27.3% cases.

Investigation findings in the respondents & relationship with BV positivity

## DISCUSSION

Bacterial vaginosis is a major public health problem among pregnant women due to its sequele & adverse effects on pregnancy & pregnancy outcomes. The impact of bacterial vaginosis in pregnancy for the causation of premature rupture of membranes, pre-term birth & low birth weight is well established (9-10).In some developing countries including Bangladesh, data on RTI including bacterial vaginosis is limited, resulting in underestimation of the burden of the disease. Bacterial vaginosis is often asymptomatic & its diagnosis is inexpensive but needs technical skill. In a similar study it was observed that asymptomatic infection ranged from 43-75% (11,12),whereas full blown uncomplicated bacterial vaginosis typically presents as an absence of leucocytes on microscopy & no prominent symptoms of burning pain or dyspareunia (13).

The lack of symptoms among women of bacterial vaginosis is a major constraint in its diagnosis & treatment.

The age range of BV positivity in the present study was 20-24 years. Another study revealed lower age level of 24 years 25.

Bacterial vaginosis is associated with race, previous pregnancy, sexual activity, socioeconomic condition & contraceptive use (5).In the present study,27% of pregnant women with bacterial vaginosis were poor with monthly income ranging from Tk 3000-5000 per month. A study revealed that approximately two-third of BV positive subjects had a monthly income of less than Tk-3000 per month, compaired to half of BV negative women(13).

In the present study level of education revealed that most of the women were below primary level of education (65.9%);68.1% women were multigravida, among which BV was detected in 25% cases. The incidence of BV varied from 12.3% (13) to 17.7% 26 to 34.4% (13) in different studies. Some authors have stated that the earlier in gestation at which BV is detected, the greater is the risk of an adverse outcome (12). A meta-analysis concluded that, BV that was diagnosed at <16 &<20 weeks of gestation was associated with odds ratio for pre-term birth of 7.55 & 4.20 respectively; the odds ratio for diagnosis at >20 weeks of gestation was 1.53 (12).But another study revealed that the odds ratio of preterm birth among Bacterial vaginosis positive versus Bacterial vaginosis negative women ranged from 1.1 to 1.6 & did not vary significantly according to the gestational age at which Bacterial vaginosis was screened

## CONCLUSION

The prevalence of bacterial vaginosis among pregnant women differ in different

countries. Sufficient data on the prevalence of bacterial vaginosis among pregnant women in developing countries are not available. The present study revealed that 25.5% women complaining of leucorrhoea were BV positive & 47.6% of women complaining of itching vulva were BV positive. Approximately 56% of women with bacterial vaginosis are very poor (monthly income below 5000 taka). Among the women belonging to the gestational age of 16^24 wks, 26.3% were BV positive. 23.1% of women giving past history of leucorrhoea were found to be BV positive in this pregnancy. Homogenous white discharge was found in 31.6% of BV positive cases .

The prevalence of BV among the low socioeconomic group of Bangladesh justifies the broad based dissemination of information to women who are vulnerable & also implementation of a programme for screening and treatment of bacterial vaginosis during antenatal check-up.

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Original Article

# Clinicopathological Study on Well differentiated Thyroid carcinoma and its metastasis at presentation

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**ABSTRACT**

**Background:** *Papillary thyroid carcinoma has a propensity for lymphatic invasion and lymph node metastasis; while follicular carcinoma has a propensity for vascular invasion and distant metastasis.*

**Objectives:** *To find out the patterns of metastasis of papillary and follicular type of differentiated thyroid carcinoma* **Materials and Methods:** *This was a cross-sectional study conducted in the Department of ENT oncology National Institute of Cancer Research & Hospital Mohakhali Dhaka July 2013 to December 2013. Consecutive 60 patients [45papillary carcinoma patients, 35.8 (SD ± 13.7) years; and 30 follicular carcinoma, with hispathologically proved papillary or follicular thyroid carcinoma with or without metastasis were selected.*

**Results:** *Patient presented with Thyroid swelling (91.6%) cervicllymphadenopathy (36.6%), only cervical node (8.3%),Cervical lymph node metastasis was found in 22(36.7%) patients and distant metastasis in 8 (13.3%) patients had distant metastasis. Cervical lymph node metastasis was significantly more common in papillary carcinoma [20 (44.4%) vs 2 (13.3%); OR=5.2; 95% of CI=1.677-16.126; p<0.01]; while distant metastasis was significantly more common in follicular carcinoma [6 (40.0%) vs 2 (4.4%); OR=14.333; 95% of CI=4.146-49.550; p<0.01)].*

**Conclusion:** *Well differentiated thyroid carcinoma predominantly present with Thyroid swelling and there is significant difference in nodal and distant metastasis in papillary and follicular carcinoma.*

**Key words:** *Papillary Carcinoma , well differentiated, metastasis*

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**Introduction :**

Thyroid cancer is a rare entity, which comprises approximately 1% of all malignancies(1). Papillary and follicular cancers, both of which are referred to as differentiated thyroid cancer (DTC), make up the majority of all thyroid cancers(2). Differentiated thyroid carcinoma is the most common variety and accounts for approximately 90% of all thyroid malignancies (3,4). Papillary thyroid carcinoma (PTC), the most common malignant thyroid neoplasm accounts for 80% of total thyroid malignancy characterized by a fine chromatin pattern associated with nuclear grooves, pseudonuclear inclusions or optically clear nuclei, and a propensity for lymphatic invasion and lymph node metastasis (5-9); follicular carcinoma (FC) less common than papillary carcinoma accounts for 10-20% of total thyroid malignancy characterized by a coarse chromatin pattern and a propensity for capsular and vascular invasion (VI) and distant metastasis.(10,11).Metastasis of differentiated thyroid carcinoma occurs in two different ways lymphatic and haematogenous. Nodal metastasis occurs in 40% of papillary carcinoma and 4% of follicular carcinoma(12). On the other hand blood borne metastases are twice as common in follicular carcinoma then papillary group.(13) Young patients with differentiated thyroid carcinoma typically present with regional lymph node involvement. Distant metastasis and extremes of age has poor prognosis. Distant metastasis is an aggressive with lethal consequence.Lungs and bone are the commonest sites of distant metastasis in follicular carcinoma.(14) At time of diagnosis of distant metastasis only lung 53%, bone 20% and multiple organ 16% were involved.(15)

**Materials and Methods**

This was a cross-sectional study. Place of studywas Department of Otolaryngology, National Institute of Cancer Research and Hospital Dhaka, Dhaka Medical College Hospital, Bangabandhu Sheikh Mujib Medical University Hospital, Mitford Hospital, Sahid Shurawardee Hospital From July 2013 to December 2013. Consecutive admitted patients in different Otolaryngology and Head Neck Surgery units of National Institute of Cancer Research and Hospital,Mohakhali, Dhaka,Dhaka Medical College Hospital, Bangabandhu Sheikh Mujib Medical University Hospital, Mitford Hospital, Sahid Shurawardee Hospital , who were diagnosed as a case of differentiated thyroid carcinoma during the study period and those fulfilling the inclusion criteria and exclusion criteria were the sample population in this study. Hispathologically proved differentiated thyroid carcinoma (papillary and follicular) with or without cervical lymph nodes or distant metastasis. Sixty patients with well differentiated thyroid carcinoma fulfilling the inclusion and exclusion criteria. Data were collected in a pre-designed case record form

**Results.**

In this study papillary carcinoma was diagnosed in 45 (75.0%) cases and follicular carcinoma was diagnosed in 15 (25.0%) cases. The age of the patients ranged from 12 to 69 years with the mean age of 38.4 (SD ± 13.5) years. 21 (35.0%) patients were male and 39 (65.0%) patients were female with female to male ratio of 1.9:1. Out of 45 patients with papillary carcinoma, 16 (35.6%) were male and 29 (64.4%) were female; while out of 15 patients with follicular carcinoma, 5 (33.3%) were male and 10 (66.7%) were female34 (75.6%) were

younger age group(? 45 years) and 11 (24.4%) were older age group (>45 years); while out of 15 patients with follicular carcinoma, 6 (40.0%) were younger age group (? 45 years) and 9 (60.0%) were older age group (>45 years) Thyroid swelling (91.6%) was the most common presentation, then cervical lymphadenopathy (36.6%), pain in the neck (8.3%), dysphagia (6.6%), only cervical node (8.3%) and bony swelling (3.3%). distribution of the patients by histopathological type of thyroid carcinoma. There were 39 (65%) pure papillary, 6 (10%), follicular variant of papillary carcinoma and 15 (25%) follicular carcinoma on histopathological examination of the resected specimen. cervical lymph node metastasis at the time of presentation was found in 22 (36.7%) patients. Cervical lymph node metastasis was found in 20 (44.4%) cases of papillary carcinoma; while cervical lymph node metastasis was found in 2 (13.3%) cases of follicular carcinoma. Distant metastasis was found in 6 (40.0%) cases of follicular carcinoma; while distant metastasis was found in 2 (4.4%) cases of papillary carcinoma. distant metastasis at the time of presentation was found in 8 (13.3%) patients of which 2 (3.3%) were from papillary carcinoma and 6 (9.9%) from follicular carcinoma. Distant metastasis of papillary carcinoma was lung in all 2 (3.3%) cases; whereas distant metastasis of follicular carcinoma was lung, bone and both lungs and bone each constituted 2 (3.3%) cases.

Distant metastasis is significantly common in follicular carcinoma, cervical lymthnodes metastasis is common in papillary carcinoma.

**Table-1:** Association of thyroid carcinoma and cervical lymph node metastasis

| Thyroid carcinoma | Cervical metastasis | | Odd ratio (95% CI) | p value |
|---|---|---|---|---|
| | Present | Absent | | |
| Papillary (n=45) | 20 (44.4) | 25 (55.6) | 5.2 (1.049) - 25.772 | p<0.05 |
| Follicular (n=15) | 2 (13.3) | 13 (86.7) | | |

**Table-2** : Association of thyroid carcinoma and distant metastasis

| Thyroid carcinoma | Distant metastasis | | Odd ratio (95% CI) | p value |
|---|---|---|---|---|
| | Present | Absent | | |
| Follicular (n=45) | 6 (40.0) | 9 (60.0) | 14.333 (2.480) - 82.828 | p<0.01 |
| Papillary (n=15) | 2 (4.4) | 43 (95.6) | | |

## 5. Discussion

Papillary and follicular thyroid cancers are considered to be differentiated thyroid cancers; together they make up 95% of thyroid cancer cases. Despite its well-differentiated characteristics, papillary carcinoma may be overtly or minimally invasive.(12).In this study clinico pathological condition and the patterns of metastasis of papillary and follicular type of differentiated thyroid carcinoma at presentation was evaluated. This study showed that the age of the patients ranged from 12 to 69 years with the mean age of 38.2 (SD ±13.4) years. The age of the patients with papillary carcinoma ranged from 12 to 67 years with the mean age of 35.8 (SD ± 13.7) years; while the age of the patients with follicular carcinoma ranged from 35 to 69 years with the mean age of 46.0 (SD ± 8.8) years. In the current study cervical lymph node metastasis at the time of presentation was found in 22 (36.7%) patients nearer to the study

revealed nodal metastasis in 47.5% of cases of their series(15).In this study distant metastasis at the time of presentation was found in 16 (13.3%) patients. It was in agreement with this result that distant metastasis in patients with differentiated thyroid cancer was 13%. In this regards a study found distant metastasis in 9.0% of cases of their series(.2,15) It was also found that 40.9% of patients with papillary carcinoma involved cervical lymph node among their series of papillary carcinoma. Cervical lymph node was involved in 54.9% of patients with papillary carcinoma(8). Distant metastasis was significantly more common in follicular carcinoma than that of papillary carcinoma (OR=14.333; 95% of CI=4.146-49.550; $p<0.01$). In this regard the incidence of distant metastasis in follicular and papillary carcinoma was 22% and 10%, respectively.(15) In the current study distant metastasis at the time of presentation was found in 08 (13.3%) patients of which 2 (4.4%) were from papillary carcinoma and 06 (40%) from follicular carcinoma.

**Conclusion**

To find out the pattern of metastasis within a short period of time ,60 well differentiated thyroid carcinoma were enrolled in the study it reveals there is a different patterns of metastasis where nodal metastasis dominate in papillary thyroid carcinoma 22 (44.4%) and distant metastasis dominate in follicular thyroid two malignant tumours. carcinoma 6 (40.0%). The cause of this different pattern may be the different patho-physiology of those. For appropriate treatment it is very important to know the pattern of metastasis. To achieve a more accurate result large scale study is required.

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Original Article

# Port Site Infections in Laparoscopic Surgery caused by Rapidly Growing Atypical Mycobacteria.

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***ABSTRACT***

***Background:*** *Laparoscopic surgery has brought about a paradigm shift in the approach to various surgical diseases. Port site infection, although infrequent, is a complication which can undermine the benefits of the surgery. Rapidly growing atypical Mycobacteria(RGM) are increasingly recognized, nowadays as an important pathogen that can cause wide range of clinical syndromes in humans* ***Methodology:*** *The study was carried out in few private hospitals in Satkhira, Bangladesh. The duration of study was from March 2013 to March 2014. This was an observational study carried out in consecutively 19 patients who underwent laparoscopic surgery presenting with port hole infections after laparoscopic surgery* ***Results:*** *Most of the patients treated with standard oral therapy for 28 days showed recovery. The patients with persistent nodules 4 weeks after completion of therapy were treated with injections of amikacin directly into the nodule which lead to resolution of symptoms.* ***Conclusion:*** *Our study highlights that a high level of clinical suspicion should be maintained for patients presenting with delayed port site lesions with a history of laparoscopic surgery as these infections not only cause physical but also emotional distress that affects both the patients and the surgeon. Prompt diagnosis and treatment may ultimately provide better care to patients.*

***Keywords:*** *Laparoscopy, Atypical mycobacteria, port site infection.*

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## INTRODUCTION:

Laparoscopic techniques have revolutionized the field of surgery. Benefits include decreased postoperative pain, quicker return to normal activity, and less postoperative complications. However, unique complications are associated with laparoscopic surgery. Atypical mycobacterial infections at the laparoscopic port site are a frequent problem encountered in patients undergoing laparoscopic surgery. Atypical mycobacteria have been known to colonize tap water, natural waters, and soil and thus can easily contaminate solutions and disinfectants used in hospital settings. These infections have thus been a source of significant morbidity for patients recovering from laparoscopic surgeries (1). proper sterilization of laparoscopic instruments is essential to prevent the occurrence of post laparoscopic wound infections with atypical mycobacteria (2). . Although they are not found as skin commensals, loss of skin integrity is historically linked to infection (3). Clinical manifestations include localized abscess formation and chronic ulcers. Diagnosis is often delayed, as Ziehl Neelsen and mycobacterial cultures are not routinely performed on skin biopsy specimens or surgical wound (4,5,6).

## MATERIALS AND METHODS :

The present study included 19 patients who had undergone surgeries like laproscopic cholecystectomy, laparoscopic appendicectomy, hernioplasty, diagnostic laproscopy. . Our inclusion criteria was postoperative wound infections with signs of inflammation of the skin and abscesses or drainage at the wound site in addition to not responding to incision and drainage and antibiotics used for pyogenic infections. Our exclusion criterion was all acute postoperative wound infections of less than seven days from the time of surgery.

## RESULTS:

Ninteen patients with soft tissue infections with RGM were identified. The majority of patients were females (13 females and 6 males) with a median age of 34.7 y (range 18-60 y). All patients had undergone surgery in different surgical settings. The patient had undergone laproscopic cholecystectomy 10, laparoscopic appendicectomy4, hernioplasty 3, diagnostic laproscopy . No major disease comorbidities or causes of immunosuppression (e.g., HIV infection) were identified among the patients. The median time from surgical procedure to onset of infection was 44 d (range: 20-65 d) and the mean interval between clinical presentation and diagnosis was 104.9 d (range: 10-280 d). Skin findings varied widely, including sinus tracts, non healing ulcers, subcutaneous abscesses, subcutaneous fluctuant or firm nodules of varying size, and erythema in association with ulcers or chronic drainage.In our study 17 patient showed good response to oral combination therapy with clarithromycin and ciprofloxacin (500 mg each, twice daily) for a period of 28 days. 2 patients with stubborn infection were continued on this therapy for 3 months after which symptoms resolved. A total of 7 patients with persistent local nodules were administered 500 mg amikacin injections directly into the nodules daily for a period of five days. This resulted in the bursting of the nodules with resolution of symptoms within 7 days, without sinus formation.

## DISCUSSION:

Rapidly-growing atypical mycobacteria

have emerged as significant human pathogens, causing various infections in healthy and immunocompromised hosts. Majority of times, these infections arise following intramuscular injections, surgery, superficial abrasions, penetrating trauma in conditions exposed to contamination of the wound with disinfectants, soil and water solution. These organisms have been increasingly reported in the past three decades in post surgical and post traumatic wound infections and lately increased incidence in localized and disseminated infections including outbreaks due to contaminated instruments have been observed (7).Postoperative wound infections caused by RGM generally appear some weeks to some months following the procedure (8). Similarly in our case series the incubation period ranged from 20 to 65 days with a median incubation period of 44 days. The median time between the onset of symptoms and the microbiological diagnosis was 105 days. Therefore, a high index of suspicion is imperative for the diagnosis to be made. A study by Joon Young Song et al., (9-12) stated that since the symptoms are relatively mild and indolent, the clinical diagnosis of mycobacteriosis is often delayed and took more than two months from initial manifestation to diagnosis. Also, in the revised literature, most publications conclude that clinical diagnosis of mycobacterial skin and soft tissue infections is not easy to perform and that the diagnosis is often delayed In light of the current evidence and guidelines on hospital infection control, it is recommended that several steps be utilized to ensure proper sterilization of laparoscopic instruments and other invasive surgical devices. Firstly, the instruments should be thoroughly mechanically cleansed after each use, with complete dismantling of parts to ensure removal of all organic soil (13). This is best achieved by using an ultrasonic technology which is available in some hospitals. , Secondly, it is necessary to limit glutaraldehyde disinfectants and replace it with ethylene oxide gas sterilization, as this has been shown to be highly effective in reducing atypical mycobacterial infections following laparoscopy (14). When liquid chemical sterilants are used, higher concentrations (3.4%) must be used and the exposure time should be increased to 8-12 hours to activate sporicidal activity. Furthermore, the water used to rinse the instruments should be autoclaved to prevent recontamination with spores post sterilization. Conventional autoclave can be used for sterilization of the metallic cannula of the ports. It is very important to make clinical diagnosis based on the signs, since culture of the pus collected from the port sites is negative for mycobacterial culture and AFB staining. The only method to obtain microbiological evidence is through tissue culture from the wall of the cavity, which is very difficult to obtain and takes 3 weeks to isolate from culture leading to delayed treatment, which makes clinical diagnosis the best option. Once clinical diagnosis of atypical mycobacterial infection of laparoscopic port sites is made, treatment with a combination of second line anti-tuberculosis drugs is started. It has been reported that conventional antituberculous drugs are ineffective. As per latest studies clarithromycin, cefoxitinand imipenem were useful for treatment against RGM (14).Almost all the patients in our study were cured with a combined approach of

drainage and clarithromycin based combinationtherapy.

**Conclusion:**

Clinicians should be aware and include RGM in their differential diagnosis of surgical site infections for early diagnosis and prompt treatment. Port hole infection is a problem faced by laparoscopic surgeons in developing countries which is preventable through proper sterilization of instruments and early clinical diagnosis and treatment.

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Original Article

# Diagnostic Yield of Induced Sputum in Suspected Pulmonary Tuberculosis.

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***Abstract***

*The most cost effective tool for screening pulmonary tuberculosis suspects is microscopic examination of the sputum by Ziehl-Neelsen's method. Failure to confirm bacteriologically, diagnosis of pulmonary tuberculosis is often difficult & delayed. Dry cough & low quality of self expectorated sputum are two of the causes of smear negativity in suspected pulmonary tuberculosis. There are various methods to collect adequate samples like bronchoscopy, bronchoscopy with washing, sputum induction, gastric lavage etc. This cross-sectional study was undertaken at Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbagh, Dhaka & National Institute of Diseases of Chest and Hospital (NIDCH), Mohakhali, Dhaka. Smear-negative pulmonary tuberculosis patients who were planned to treat & registered for anti-tubercular treatment were assigned to take part in the study. Sputum induction was done by using 3% saline nebulisation delivered through an ultrasonic nebuliser. Induced sputum samples were stained by both Zeihl- Neelsen & Auramine (LED) methods. Among one hundred and ten smear negative pulmonary tuberculosis patients, about 97% could produce adequate amount (2ml) of sputum. About 46% of induced sputum samples revealed smear positivity by ZN staining & about 58% of the same sputum samples revealed smear positivity when examined by auramine methods. Sputum induction improved the diagnostic yield in suspected pulmonary tuberculosis patient.*

**Key words:** *Sputum Induction, Smear Negative, Pulmonary Tuberculosis.*

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## Introduction

Identification of AFB in sputum smear is the most reliable and cost effective method for diagnosis, follow up and evaluation of treatment outcome of a pulmonary tuberculosis (PTB) patient. But fairly a good number of highly suspected PTB patients remain smear negative because of low quality and quantity of self expectorated sputum or due to having dry cough or no cough. Radiological features are variable and may mimic many conditions. Failure to confirm bacteriologically the diagnosis of smear negative PTB is often delayed, which make the disease complicated and other persons who are in close contact get infected(1-6) Culture of sputum sample is more sensitive than smear microscopy in detecting PTB. However it takes about six weeks of time and requires adequate quality assured laboratory. Therefore, culture is not suitable for routine procedure. Bronchoscopy has shown good result in diagnostic yield in smear-negative cases. But it is not widely available in local hospitals and is costly, invasive and requires expertise(7-9). We planned to evaluate the effectiveness of sputum induction to bacteriologically confirm the diagnosis of suspected PTB patients in a resource poor country like Bangladesh where prevalence of PTB is very high.

## Materials & methods:

We did a cross-sectional study between January, 2010 to September, 2011 at BSMMU & NIDCH, Dhaka. PTB patients who were planned to treat with anti-tubercular drugs (according to the National Guidelines and Operational Manual for Tuberculosis Control- 4th edition) & were sent to be registered to initiate treatment were asked to take part in the study. Among them who were smear-negative & ?12 years of age were enrolled in the study. Those with unstable cardiopulmonary status & those who were on anti-tubercular treatment were excluded from the study. One hundred and ten smear negative PTB patients were finally selected to take part in the study. After taking informed written consent the data were collected with a prepared data collection sheet. After description of the procedure sputum induction was performed in a well ventilated room outside the wards. All patients were asked to inhale a mist of hypertonic saline solution delivered by an ultrasonic nebulizer. Disposable face masks and nebulizer tubes were used for every subject. The nostrils of the subjects were closed and were asked to inhale through open mouth. Inhalation was interrupted every 5 minutes or when the subjects started coughing so that the patients could expectorate sputum. Nebulisation was continued until adequate sputum sample (minimum 2 ml) was obtained or for a maximum period of 30 minutes. The sputum samples were collected in a previously labeled sterile plastic container. A disposable surgical mask was given to each subject to wear it until cough stopped. All patients were observed for at least 30 minutes to note & manage immediate adverse effects following induction. Obtained sputum samples were sent immediately to National Tuberculosis Reference Laboratory (NTRL), Mohakhali, Dhaka, for staining by both Ziehl-Neelson and Auramine (LED) methods. Stained slides were examined by conventional light microscope and fluorescence microscope respectively at NTRL.

## Results:

Nearly half (48.2%) of the patients was of below 30 years & the mean age was 33.6 ±

13.3 years. About two-third of the patients had dry cough (Table-?).

**Table I.** Clinical features (n = 110)

| Clinical features | Frequency | Percentage |
|---|---|---|
| **Cough** | | |
| Productive | 35 | 31.8 |
| Dry | 73 | 66.4 |
| No | 02 | 1.8 |

Following induction, 107(97.3%) patients could produce adequate sputum sample(Table ??).

**Table II.** Effects of sputum induction (n = 110)

| Sputum Production | Frequency | Percentage |
|---|---|---|
| Adequate (2ml) | 107 | 97.3 |
| No or Inadequate | 03 | 2.7 |

Out of 110 patients 6 (5.5%) experienced several discomfort while induction. But sputum induction was terminated in one due to moderate breathlessness.

Auramine staining yielded a higher smear-positive result (Table III).

**Table III.** Smear results (n = 107)

| Staining Methods | Frequency | Percentage |
|---|---|---|
| **Zeihl-Neelsen staining (107)** | | |
| Positive | 49 | 45.8 |
| Negative | 58 | 54.2 |
| **Auramine staining (n = 107)** | | |
| Positive | 63 | 58.9 |
| Negative | 44 | 41.1 |

Among the positive results 48 were positive by both staining methods. There is a good agreement between Ziehl- Neelsen and Auramine methods (Table- IV).

**Table- IV:** Distribution of smear test results of induced sputum.

| Ziehl-Neelsen staining | Auramine staining | | Total | Statistical significance# |
|---|---|---|---|---|
| | Negative | Positive | | |
| Negative | 43 | 15 | 58 | K=0.705 |
| Positive | 1 | 48 | 49 | |
| Total | 44 | 63 | 107 | |

# Kappa test was done to see the agreement between Ziehl- Neelsen and Auramine methods

**Discussion:**

The study results demonstrates that sputum induction is simple and effective as most (97%,107/110) of the patients could produce adequate sputum sample by induction and about half (44.5% 49/110) of clinically and radiologically suspected pulmonary tuberculosis patients became smear-positive with induced sputum who were previously labeled as smear-negative. The present study results show a higher frequency of smear positivity (45.8%) of induced sputum samples than some other studies done in abroad.(6,8,10-15) But it was lower than in a comparative study done in our country by Ganguly et al.(16) The variations of the results are probably due to differences in demographic, clinical and radiological characteristics of the patients; methods of sputum collection; sputum staining procedures and use of MTB culture before sputum induction etc. Some studies were done in countries with low TB burden and having every facilities to confirm the diagnosis where sputum culture for MTB was used to confirm the diagnosis before any augmented sputum collection.(10,13,17,18) The present study was done in a high TB burden country of the world with huge load in out-patient departments and laboratory services of government hospitals, where higher false-negative results can be expected as the effort to diagnose smear positive cases

may be unsatisfactory. Probably highly suspected PTB patients were not properly instructed how to collect adequate quality and quantity of sputum samples or there may be errors in timing, staining and microscopic procedures. The results of the study support the above assumption by demonstrating that about 31% (11/35) of suspected PTB patients who had expectoration became smear positive after induction. Two separate studies demonstrated that supervised self expectorated sputum increased the smear positivity which also support our statement.(17,18)

**Conclusion:**

We concluded that sputum induction is an effective and simple method to approach patients with suspected pulmonary TB who are not able to produce sputum or have tested negative on a self expectorated sputum samples. Auramine staining also improves the frequency of smear positivity.

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Original Article

# Antimicrobial Susceptibility Pattern of Streptococcus Pyogenes in Healthy School Going Children of Rajshahi, Bangladesh

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***Abstract***

*Group A Streptococcus or Streptococcus pyogenes is estimated to be present in 5.0-15.0% of normal individual in the respiratory tract, vagina, skin and anus without any sign of disease. This cross sectional study was carried out to find out the rate of asymptomatic throat carriage of S. pyogenes and antibiotic susceptibility of these isolates in school going children of Rajshahi, Bangladesh. A total of 300 children selected from six different schools younger than 12 years were included in this study. Collected throat swabs were subjected to 5.0% Sheep blood agar. Group A Streptococcus was identified by ?-haemolytic colonies, catalase negativity and bacitracin sensitivity. Antibiotic susceptibility test was performed on Muller Hinton agar containing 5% sheep blood by modified Kirby-Bauer disc diffusion method. Out of total 300 throat swabs, Group A Streptococcus was isolated in 9.33% ( n=28). Among the isolates, 46.6% (n=13) were from male children where as 53.4% (n=15) from female children. There was no significant sex difference in colonization of Group A Streptococcus (p>0.05). Out of 28 isolates. 100.0% isolates were sensitive to antibiotic azithromycin and no resistance was found against penicillin and ampicillin where as 64.29% isolates resistance to cotrimoxazole and 10.71% isolates were resistance to both erythromycin and ciprofloxacin.*

**Key Words:** *Group A Streptococcus, modified kirby-bauer method.*

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## INTRODUCTION :

Streptococcus pyogenes are the most frequent cause of pharyngitis Streptococcal carriage bas been defined as the recovery of Group A Streptococcus (GAS) from the nasopharynx or oropharynx in the absence of any evidence of acute infection.(1) Disease spectrum of Group A Streptococcus ranges from mild infection as pharyngitis, tonsilitis and impetigo to life threatening infections like necrotizing fascititis and toxic-shock like syndrome. These are often followed by post infective sequelae of rheumatic fever, rheumatic heart disease and post streptococcal acute glomerulonephritis.(2) GAS infection is ordinarily spread by direct person-to-person contact, most likely via drops of saliva, nasal secretions, contaminated fingers, dust or fomites.(3) All Group A ?-hemolytic Streptococci (GABHS) are sensitive to penicillin G. Most are sensitive to azithromycin, erythromycin and ciprofloxacin. A high frequency of resistance to erythromycin in GAS has been reported, particularly in countries where antibiotics are overused. Little information is known about the prevalence of S. pyogenes from the throat swab of school children in Bangladesh. So, this study was performed. This study provides information on prevalence, distribution and antibiotic susceptibility pattern of S. pyogenes isolates.

## MATERIALS AND METHODS:

Six different schools situated at different locations (urban, rural and slum) in and around Rajshahi city of Bangladesh. Throat swabs from 300 students of age group 6-12 years were collected, and cultured to yield S. pyogenes following standard microbiological procedures. Antimicrobial susceptibility testing of the isolates were performed by Kirby Bauer disc diffusion method following NCLLS guidelines.

## RESULTS:

Among 300 school children, 142 (47.33%) were male and 158 (52.67%) were female. Out of 300 throat swabs studied, S. pyogenes was isolated from 28 samples (9.33%). Among the isolates, 13 (46.42%) were from male whereas 15 (53.58%) were from female. There was no significant sex and age sub-groups difference in colonization of S. pyogenes ($p>0.05$), although the rate was slightly higher among girls and age sub-group 6-8 years (12.22%) (Table-1). S. pyogenes isolates indicated a high rate of resistance towards cotrimoxazole (64.29%) followed by ciprofloxacin and erythromycin, both were (10.71%). Penicillin, ampicillin and azithromycin showed 100% sensitivity towards the isolates (Table-2).

**Table No. 1:** Antibiotic susceptibility pattern of S. pyogenes isolates from throat swabs

| Antibiotic | Sensitive | | Resistant | |
|---|---|---|---|---|
| | n | % | n | % |
| Ampicillin | 28 | 100 | 00 | 00 |
| Cotrimoxazole | 10 | 35.71 | 18 | 64.29 |
| Ciprofloxacin | 25 | 89.29 | 03 | 10.71 |
| Penicillin | 28 | 100 | 02 | 00 |
| Azithromycin | 28 | 100 | 00 | 00 |
| Erythromycin | 25 | 89.29 | 03 | 10.71 |

## DISCUSION:

Group A ?-hemolytic Streptococci (GABHS) is among the most prevalent bacterial childhood infection and constitutes 20.0%-40.0% of all cases of exudative pharyngitis. The condition is most prevalent in the age group of 5-15 years, the highest prevalence occurring in 7 years old children and rarely occurring in those under 3 years of age. Males are equally affected by GABHS as females.

GABHS frequently colonizes the pharynx of asymptomatic individuals, as 15.0%-20.0% of school-age children are asymptomatic carriers. In our study, 9.33% of school children were colonized by GAS in their throat. Similar study done by Tavakkoli et al found the prevalence of carriers among primary school children was 4.9%(5). Bogovac et al reported 6.0% prevalence in all age groups and 11.7% prevalence in 6-13 years old children from Croatia (6). Durmaz et al showed the prevalence of S. pyogenes nasopharyngeal carriage in 14.3% healthy school children and children in an orphanage in Turkey (7).

In our study, the frequency of GAS was similar in all age groups of school children, but it was slightly higher in children aged 6-8 years. The study done by Durmaz et al (7) in Turkey, showed that the rates of carriers for boys and girls were similar and the frequency was similar in all age groups of school children, but it was significantly higher in children aged 4-6 years living in the orphanage(7).

Dumre SP et al observed highest resistance to cotrimoxazole (71.0%) followed by ciprofloxacin (5.2%) and erythromycin (5.2%) (8). Kim et al recently reported a high frequency of resistance to erythromycin in GAS, particularly in countries where antibiotics are overused (4). Tamayo et al (9) reported the erythromycin resistance rate to be 21.7% in the study done in Spain in 2004 (9). Ciftci et al reported resistance to erythromycin and azithromycin as 3.8% and 4.2% respectively (10). Alberti et al reported increased resistance of S. pyogenes to ciprofloxacin in Spain at the highest rate ever published and it is 63.3% (11). Of all the isolates analyzed in our study, 64.29% were resistant to cotrimoxazole followed by both ciprofloxacin and erythromycin were 10.71% and all the isolates were sensitive to azithromycin, penicillin and ampicillin. In a large survey done in Iran by Jasir et al found no penicillin resistance strains of S. pyogenes and only a few erythromycin resistance strains (12) Another study done in France by Binjen et al found all isolates of S. pyogenes were susceptible to amoxicillin (13). Our findings demonstrate that antibiotic resistance of S. pyogenes is not clinically significant problem in our country.

However, the results of our preliminary study highlights the importance of regular surveillance programs to monitor the rate of GAS carriage and the antibiotic susceptibility of GAS isolates in the community. We, therefore, emphasize the need to carry out this type of study in large sample size with a wide range of geographical and seasonal variations throughout the country.

## CONCLUSION:

Antibiotic resistant GAS isolated from healthy school going Bangladeshi children is a public health concern. When screened and appropriately treated with antibiotics, carrier can be prevented from spreading of streptococcal infections in the school environment and the community and ultimately reduce the incidence of life threatening sequelae. It is recommended to conduct regular screening and GAS surveillance in schools and maintain rational use of antibiotics to minimize GAS carrier and drug resistance.

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Original Article

# Evaluation Of Adenosine Deaminase And Lactate Dehydroganase As Biochemical Markers For Diagnosis Of Pulmonary And Extra-Pulmonary Tuberculosis.

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*Abstract*

***Introduction:*** *The most common form of the disease is pulmonary tuberculosis (PTB). Extrapulmonary tuberculosis (EPTB) is referred to isolated TB at any site in the body outside the lungs. The diagnosis of PTB and EPTB is even harder when smears and cultures are negative. Extra pulmonary tuberculosis (EPTB) is a growing problem worldwide. Due to the nature of the disease, the diversity of clinical pictures as well as its minor epidemiological importance, the diagnosis is difficult and often late. Advances in rapid diagnostic techniques are urgently required both for the early management of the new cases of TB and for the individuals already infected with Mycobacterium tuberculosis who are at risk of developing disease.* ***Objectives:*** *To evaluate the diagnostic value and accuracy of serum ADA and serum LDH for the diagnosis of PTB and EPTB.* ***Materials and method:*** *In this hospital based cross sectional study, by convenient and purposive sampling technique, 20-90 years aged 131 patients (male 98, female 33) were enrolled. The study was carried out in the Pathology & Microbiology Department of NIDCH, Dhaka. S. ADA and S. LDH were done and the result was compared with the culture and histopathology results. Performance tests were done. Prevalence was measured at 95% CI. Statistical significance was set at $p<0.05$.* ***Results:*** *89 (67.9%) patients had pulmonary tuberculosis (PTB). The rest 42 (32.1%) patients had extrapulmonary tuberculosis (EPTB). Level of ADA and LDH in serum of all patients was significantly high. The sensitivity, specificity, positive predictive values, negative predictive values and accuracy of ADA and LDH was calculated in both PTB and EPTB. It was found for ADA (SEN 92.70%, SPE 90.03%, PPV 92.80%, NPV 90.06%) and for LDH (SEN 89.22%, SPE 85.66%, PPV 88.82%, NPV 86.11%) in PTB; and for ADA (SEN 94.39%, SPE 92.46%, PPV 89.80%, NPV 95.42%) and for LDH (SEN 89.27%, SPE 87.18%, PPV 84.35%, NPV 90.36%) in EPTB respectively. When calculated in combination, the sensitivity and specificity was 100% & 50% respectively in both PTB and EPTB, and positive and negative predictive values of ADA and LDH in combination were 94.00% & 91.58% in PTB and 90.43% & 96.71% in EPTB respectively.* ***Conclusion:*** *ADA and LDH can be used as good biochemical markers for diagnosis of both pulmonary and extrapulmonary tuberculosis. Though diagnostic accuracy of ADA and LDH may be low when single test is done, it is significantly high when they are used in combination.*

***Key words:*** *PTB, EPTB, ADA, LDH*

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**Introduction and rationale:**

Tuberculosis is a common disease throughout the world, especially in developing countries. Millions of people have died from tuberculosis (TB), a leading chronic infectious killer of all age groups and the second most common infectious disease worldwide. It is an infection with human strains of Mycobacterium tuberculosis(1-2). The most common form of the disease, which is essential for the spread of TB, is pulmonary (PTB). But tuberculosis can affect any organ in the body. Extrapulmonary tuberculosis (EPTB) is referred to isolated TB at any site in the body outside the lungs. Although TB can be fully cured with the use of appropriate drugs, the major hurdle to treatment for TB lies in the late diagnosis of the disease due to the lack of simple and cost-effective diagnostic procedures. Although the isolation of tuberculous bacilli from clinical specimens is the gold standard for diagnosis, Chest X ray, identification of bacilli, and the histopathological detection of granulomatous lesions in addition to clinical findings generally lead to true diagnosis. The diagnosis of PTB and EPTB is even harder when smears and cultures are negative. Extra pulmonary tuberculosis (EPTB) is a growing problem worldwide(1-3). Due to the nature of the disease, the diversity of clinical pictures as well as its minor epidemiological importance, the diagnosis is difficult and often late. Definitive diagnosis of tuberculosis includes a demonstration of the presence of M. tuberculosis by microbiological culture and histopathological methods. Classical methods of TB diagnostics have significant limitations for diagnosis of EPTB. Culture is a lengthy process, while in these patients often requires rapid diagnosis. Material for PCR diagnosis is often not possible to obtain (except cerebrospinal fluid and urine), and histopathological diagnosis requires surgical procedure, which is an invasive technique. The most reliable diagnostic criteria, is still to confirm the presence of bacilli in the patient's material by culture. In some forms of EPTB, material can be taken for culture from renal, meningeal, pleural, and pericardial fluid. Pleural effusion is a common reason for admission in hospitals and tuberculosis is found most common infectious cause. Pleural tissue histopathology and culture for Mycobacterium tuberculosis is considered the gold standard but the procedure is invasive, requires skilled clinicians and does not provide immediate results(2,4-9). Advances in rapid diagnostic techniques are urgently required both for the early management of the new cases of TB and for the individuals already infected with Mycobacterium tuberculosis who are at risk of developing disease. In addition to standard TB diagnostic techniques, use of new biochemical (surrogate markers like ADA and LDH etc.) are increased. Since there is no single test to diagnose M. tuberculosis infection, invasive procedures are needed in such cases, and diagnosis is usually delayed8,10-23. Therefore, to address these limitations, we evaluated adenosine deaminase (ADA) in serum and in other body fluids (pleural, pericardial, peritoneal, cerebrospinal & synovial fluid) and lactate dehydroganase (LDH) in serum and to find out the combined efficacy of these two biochemical markers for rapid diagnosis of PTB and EPTB.

**Objectives:** To evaluate the diagnostic accuracy of serum ADA and serum LDH

for the diagnosis of PTB and EPTB.

**Methods:** This hospital based cross sectional study was conducted in National Institute of Diseases of the Chest and Hospital (NIDCH), Mohakhali, Dhaka-1212 at Pathology & Microbiology Department during the period of January 2013 to June 2013. After getting the approval of the research proposal from the ethical committee of DGHS/BMRC, consent was received from each individual prior to inclusion. They were informed of their right to withdraw from the study at any stage. Assurance was given that the data would be collected anonymously and the confidentiality concerning their information was maintained strictly. The research was conducted in full accord with ethical principles. From selected patients, after aseptic preparation 5 ml of whole venous blood from antecubital vein was collected in clean and dry test tube and was kept standing for clotting. Then it was centrifuged at 3000 rpm to separate serum. 5 ml of pleural, pericardial, peritoneal and synovial fluid of each was collected aseptically from the patients who had it and was kept in a clean dry test tube. 3 samples of adequate amount of sputum were collected in a dry clean plastic cup from all the patients. The subjects were patients from OPD and indoor of Institute of Diseases of the Chest and Hospital (NIDCH), who were clinically suspected TB patients, hospitalized for investigation for fever of unknown origin. Serum adenosine deaminase and serum lactate dehydroganase levels were measured during diagnosis of fever of unknown origin. In addition to standard examinations, X- ray of the lungs, USG of abdomen, haematological and biochemical tests, abdomen, chest or pelvic CT scan, echocardiography was done depending on the presentation of illness. The histological processing of tissues of clinical interest (biopsy of the liver, LGL, peritoneum, small bowel and adnexa) were also conducted. Histological processing of tissue samples were performed at the Pathology department of this institute. The level of adenosine deaminase was determined by enzymatic method from blood samples collected. LDH in serum of all patients was done by using standard procedure and method. After collection, all the data was checked and edited. Then data was entered into computer with the help of software SPSS for windows programmed version 12. After frequency run, data was cleaned and frequencies were checked. An analysis plan was developed keeping in view with the objectives of the study (CI 95%, $p<0.05$). Due to the heterogeneity of data, although the observed parameters were continuous, we used nonparametric tests ($\chi^2$ test). Sensitivity and specificity of test results were calculated.

**RESULTS:** For this study 208 clinically suspected tuberculosis (pulmonary and extra-pulmonary) patients were enrolled. Among them 131 patients (male 98, female 33) were proved positive by any one or in combination of sputum smear (Z-N or Auramine stain), sputum or tissue culture and histopathological examination. Age of the study subjects was ranging minimum 20years to maximum 90 years (m±SD, 44.65±17.84). m±SD of male and female was 44.66±17.94 & 44.61±17.77 respectively and was statistically insignificant.

Male and female distribution is shown in Figure-1 and sex found statistically insignificant.

Demographic Profile of the study subjects

are shown in Table-1. High frequency was found in low income, low education, smokers and dwellers of kacha residence among both male and female.

Eighty nine (67.9%) of total and 66(67.3%) & 23(69.7%) of male & female patients respectively have pulmonary TB. Rests have extra-pulmonary TB. No significant difference about both types of diseases found between male and female (Figure-2).

The most available sample is pleural effusion (54.2%) followed by synovial, asceitic, cerebrospinal and pericardial fluid. 36.6% patients did not have any type of effusion.

**Fig: 3** Frequencies of SAMPLES

**Table:2** Results of Biochemical markers in Pulmonary TB & Extra-Pulmonary TB

| | Pulmonary TB(n=89) number ( % ) | Extra-Pulmonary TB(n=42) number(%) | Total(n=131) number ( % ) |
|---|---|---|---|
| **S. ADA** | | | |
| Positive | 70 ( 78.7 ) | 31 ( 73.8 ) | 101( 77.1 ) |
| Negative | 19 ( 21.3 ) | 11 ( 26.2 ) | 30 ( 22.9 ) |
| **S. LDH** | | | |
| Positive | 66 ( 74.2 ) | 30 ( 71.4 ) | 96 ( 73.3 ) |
| Negative | 23 ( 25.8 ) | 12 ( 28.6 ) | 35 ( 26.7 ) |
| **Both** | | | |
| Positive | 88(98.9) | 40(95.2) | 128(97.7) |
| Negative | 01(01.1) | 02(04.8) | 03(02.3) |

**Table-2** shows the results of individual serum adenosine deaminase (ADA), serum lactate dehydrogenase (LDH) and combined result of all the two biomarkers. When combined, the biomarkers show a high number of positive results, 128(97.7%) out of 131!

Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of serum QuantiFeronTB-Gold (QFT-G), serum adenosine deaminase (ADA), serum lactate dehydrogenase (LDH) and those of combined of all the three biomarkers have been shown in Table-3. Each biomarker individually and all in combination showed good sensitivity and specificity.

**DISCUSSION:** In our study, like other several previous studies, demographic profile of the diseased persons and the prevalence of the disease in male and female were consistent with those studies. The most reliable diagnostic criteria, is still confirm the presence of bacilli in the patient material by cultivation9,10,11. In some forms of EPTB material can be taken for culture but, unfortunately, successful culture is very variable. Because of these problems in exact diagnosis of tuberculosis numerous additional tests are in use with the intention to facilitate the diagnosis. In the recent use, biochemical markers for tuberculosis infection, such as levels of adenosine deaminase concentration (ADA) or level of serum LDH was proved as of great importance. Piras et al were first to report high ADA in tubercular pleural effusion12. Meta-analysis of studies conducted between 1966 and 1999 concluded that the test performance was reasonably good13 (sensitivity range 47.1 - 100%, and specificity 0 - 100%) in diagnosing tuberculosis etiology in pleural effusion. Other researchers have also observed the usefulness of ADA activity in the diagnosis of tuberculosis disease14,15. The article reviews of Gupta BK et al. ADA estimation as an effective diagnostic criterion for tuberculous and non-tuberculous disease in pleural, ascitic, synovial fluids and CSF.8 In extra-pulmonary disease, overall sensitivity and specificity in the study was found to be high. It is evident that determination of

this enzyme was reliable and useful test for the detection of tuberculosis infection in serous spaces (pleural, peritoneal, synovial space, cerebrospinal fluid)8,16,17. Srinivasa et al. found elevated serum adenosine deaminase levels in patients with pulmonary tuberculosis.18 In our sample the average value of its concentration was elevated. It was also supported by Stevanovic et al.19. Similar data were presented by Mishra and colleagues in children, where in addition to lung tuberculosis they had patients with miliary and extrapulmonary localization.20 Serum LDH still remains as one of the important parameters to assess the cell/tissue specific stress or pathology, caused by Mycobacterium tuberculosis. In our study, we also found higher concentration of LDH in the serum of both PTB and EPTB patients. Our finding is consistent with that of Sharma et al.21.

Performance test of each biomarker was done to see the SEN, SPE, PPV and NPV to evaluate the efficacy of the biomarkers.
Conclusions: The diagnostic accuracy of ADA and LDH may be low when single test is done. But, when they are used in combination, it is significantly high.

**Recommendations:** Biochemical tests mentioned above may be useful adjunct tests for diagnosing TB and EPTB for early and appropriate management to reduce morbidity and mortality. Larger studies are needed in our country to determine accurately the diagnostic value.

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Original Article

# A Study On Myocardial Preservation With Combined Antegrade & Retrograde Cardioplegia In Aortic Valve Replacement Surgery

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*Abstract*

*Background: Traditional cardioplegic techniques (AP) provide sufficient myocardial protection for most cardiac patients with preserved ventricular function. Its administration depends on competent aortic valve, it should not be used in patients with AR. In patients with aortic valve regurgitation, AP can be administered directly into the coronary ostia. A combination of both ante and retrograde cardioplegia administration useful for complex procedures requiring a prolong cross clamp time, as intermittent retrograde cardioplegia can be administered without interruption of the surgical procedure. So, there are both advantages and disadvantages in both the procedures when administered singly specially in a compromised heart.* **Methods:** *A total of 60 patients who underwent aortic valve replacement surgery and fulfilled the inclusion and exclusion criteria were randomely selected in the department of cardiac surgery, NICVD, Dhaka, Bangladesh for the study.* **Results :** *Intra operative factors like CPB time, cross clamp time, Post cross clamp bypass time and arrestle time did not show significant difference between two groups, but return of spontaneous rhythm after release of cross clamp were more common in combined antegrade and retrograde cold blood cardioplegia (group A 26 versus group B I.E. P<0.001) and eventually these patients needed less inotrope support compared to their counterparts. The evaluation of myocardial enzyme release like CK-MB & Troponin-I was significantly lower in group A than group B. Our study demonstrates a significant reduction of myocardial cell damage with use of combined antegrade and retrograde cold blood cardioplegia. Patients with combined antegrade and retrograde cold blood cardioplegia had a short awakening time and postoperative ventilation time with significant difference between the two groups. It was associated with shorter postoperative mechanical ventilation time , ICU stay & shorter hospital stay. Conclusions : The results of these prospective clinical trial indicate that combined antegrade and retrograde cold blood cardioplegia is clinically safe and appropriate method that provides better myocardial protection during aortic valve replacement surgery than only antegrade cold blood cardioplegia alone.The more sensitive index of myocardial enzyme release suggests that a more optimal myocardial protection with less cellular damage is obtained with combined antegrade and retrograde cold blood cardioplegia. However, it appears advantageous and at this moment, it may be concluded that according to findings of this study, it may be a recommended method of choice for myocardial protection for aortic valve surgery.*

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## INTRODUCTION

In the early stages of cardiac surgery, there was no use of any Cardioplegia. The aorta was simply cross-clamped and the surgery was performed often resulted in extensive myocardial damage (Brodie and Johnson,1994).Two techniques can be used separately or in combination on the basis of surgeon experience and preference. Routes of cardioplegia administration are the aortic root (Antegrade) and the coronary sinus (retrograde).

Material and Methods:This Prospective Observational Study was carried out in the Dept of Cardio-Vascular Surgery, NICVD , Dhaka, Bangladesh during the period of July, 2010 to June, 2012. The study was carried out on all the patients who underwent aortic valve replacement surgery and fulfilled the inclusion and exclusion criteria by purposive convenient sampling. The patients were divided into two groups.

Group - A (n=30): Patients receiving both antegrade & retrograde cardioplegia.

Group - B (n=30): Patients receiving only antegrade cardioplegia.

Associated other valve having significant lesion, Redo AVR, Patient with CAD, Combined valve and other congenital heart disease, Patient with impaired renal function, Patient with impaired hepatic function, Perioperative unstable hemodynamic state, Prolong CPB time (>120 min), Patient with LVIDd >70mm, Patient with LVIDs >50mm, Patient with reduced Ejection Fraction (EF%<40%)were excluded.

Surgical Technique: The decision for a patient to give both antegrade and retrograde or only antegrade cardioplegia was decided by the operating surgeon.

-Standard CPB technique was used.

-For cardioplegia we used cold blood mixed cardioplegia solution which was infused at standard NICVD protocol for every patient. In all patients of group A first dose of cardioplegia was given selectively into the coronary ostia and the subsequent doses were given every 20 minutes interval through retrograde route. For all patients in each group total amount of cardioplegic solution (20 ml/kg) and infusion rate was calculated at a rate of standard NICVD protocol.

-In group A, half of the initial dose was given antegrade way and the other half retrograde way; all subsequent doses were given retrogradely through the coronary sinus.

-In group B for antegrade cardioplegia we used two selective cardioplegia cannula for two coronary artery into left and right coronary ostia just after cross clamping and aortotomy .In all patients of group B the subsequent doses were given every 20 minutes interval.

-In all cases hemodynamic optimization was attempted by volume adjustment, inotropes administration and pacing etc as required.

## Results

**Table-I :** Per operative outcome variables

| Parameters | group A(Mean± SD)(n=30) | group B(Mean± SD) (n=30) | P value |
|---|---|---|---|
| CPB time (minutes) | 86.90±12.08 | 92.40±17.44 | 0.161 $^{NS}$ |
| Cross-clamp time | 59.26±9.16 | 62.60±13.90 | 0.278 $^{NS}$ |
| Post X-clamp bypass time (minutes) | 27.63±9.53 | 29.8±13.90 | 0.484 $^{NS}$ |
| Asystole time (seconds) | 49.67±12.38 | 50.83±13.66 | 0.149 $^{NS}$ |
| Spontaneous rhythm (%) | 26 (86.66 %) | 13 (43.34% ) | P<0.001 $^{S}$ |
| Required DC shock (%) | 4 (13.33%) | 17 (56.66%) | P<0.001 $^{S}$ |

**Table II**

Comparison of CK-MB levels in preoperative, 24 hours postoperative and 72 hours postoperative in group A versus group B cases.

| Parameters (CK-MB) | Group A(Mean± SD) (n=30) | Group B(Mean± SD) (n=30) | P value |
|---|---|---|---|
| Preoperative | 21.80±2.90 | 21.07±2.45 | 0.295[NS] |
| 24 hours postoperative | 48.73±4.77 | 67.87±8.06 | <0.001[S] |
| 72 hours postoperative | 24.07±3.59 | 29.73±7.33 | <0.05[S] |

**Table IV**

Comparison of Troponin-I levels in preoperative, 24 hours postoperative and 72 hours postoperative in group A versus group B cases.

| Parameters (Trop-I) | GrupA (Mean±SD) (n=30) | GrupB (Mean±SD) (n=30) | P value |
|---|---|---|---|
| Preoperative | 0.33±0.08 | 0.31±0.17 | 0.513[NS] |
| 24 hours postoperative | 3.90±1.38 | 6.78±0.80 | <0.001[S] |
| 72 hours postoperative | 2.17±0.59 | 3.00±0.75 | <0.05[S] |

**Table V**

Comparison of postoperative variables between the two study groups

| Parameters | Group A(Mean ±SD) (n=30) | Group B(Mean ±SD) (n=30) | P value |
|---|---|---|---|
| Awakening time (hours) | 2.90±0.46 | 3.78±0.63 | <0.001[S] |
| Postoperative ventilation time (hours) | 15.33±1.02 | 17.10±0.82 | <0.001[S] |
| ICU stay (hours) | 67.71±1.37 | 78.33±1.88 | <0.001[S] |
| postoperative hospital stay (days) | 7.73±0.73 | 10.20±1.67 | <0.001[S] |

## Discussion

There was no significant difference of the baseline variables between the studygroups.

Considering operative variables 26 cases regained spontaneous sinus rhythm in group A while it happened in only 13 cases in group B. The result on Chi-square test was seen (p<0.001). The result was highly significant. We studied cardiac enzymes CK-MB & Troponin-I. There results were very significant. When the CK-MB & Troponin-I values were compared between group A and group B, it was not statistically significant (p=0.295). At 24 hours and at 72 hours postoperative period, the values were statistically significant (p<0.001).Biochemical markers showed significant difference in favour of combined antegrade and retrograde cold blood cardioplegia. Kit.,et al(1997) reported a study of evaluation of 7000+ patients with two different routes of cardioplegia showed peak CK-MB level (U/L) was 54.28 in group A where as 77.49 in group B (P=0.038) which was similar to our study.

Assessment of postoperative outcomes showed that awakening time, mechanical ventilation time, duration of ICU stay and duration of hospital stay were significantly less in group A compared to those in group B .

Developing country like Bangladesh should cautiously use its ICU. Lesser stay in ICU makes open heart surgery less costly. Group A patients had a short awakening time & postoperative mechanical ventilation time and statistically both were significant. Similarly Group A patients had a short ICU stay & postoperative hospital stay and statistically both were significant (p<0.001).

**Conclusions**

The results of these prospective clinical trial indicate that combined antegrade and retrograde cold blood cardioplegia is clinically safe and appropriate method that provides better myocardial protection during aortic valve replacement surgery than only antegrade cold blood cardioplegia alone.

The more sensitive index of myocardial enzyme release suggests that a more optimal myocardial protection with less cellular damage is obtained with combined antegrade and retrograde cold blood cardioplegia. However, it appears advantageous and at this moment, it may be concluded that according to findings of this study, it may be a recommended method of choice for myocardial protection for aortic valve surgery .

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Original Article

# Intestinal Tuberculosis Presentation & Management - Our experience

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***Abstract***

*Objective-To study the various modes of presentation, different investigation and different surgical procedures of int. TB. Methodology: This was a prospective study in Habiganj Sadar Hospital, Shaid Shamsuddin Ahmad Hospital,Sylhet and different clinics of Habiganj and Sylhet, from January 2013 to February 2014. All patients of int. TB who had different modes of presentation were included. Diagnosis was based on history, physical examination and laboratory investigation. Patients who underwent surgery their preoperative findings and procedure performed was also recorded. Results- Mean age of 6 male and 14 females was 35 years, range (13-60) years. Different presentation of int. TB included pain abdomen (90%), fever (75%), weight loss (95%), mass in right iliac fossa (50%) , sub-acute int.TB obstruction 40%. Surgical intervention was done in 16 (80%) cases. Right hemicolectomy (62.50%), resection anstomosis (12.50%), stricturoplasty (6.25%), Closure of perforation with ileostomy (6.25%), appendicectomy (6.25%), Lap. biopsy (6.25%) were the procedures carried out. 1 patient expired in post operative period with a mortality rate of (5%).Conclusion: The diagnosis of int. TB is difficult due to lack of specific symptoms and signs. Surgical exploration was reserved for equivocal cases and for those who presented as emergency.*

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## INTRODUCTION

About One third of global population i.e. over 2 billion people is infected with Mycobacterium tuberculosis and thus at risk of developing the disease. Tuberculosis is a major public problem in Bangladesh since long. Bangladesh ranks sixth among the 22 high TB burden countries (1). According to WHO the annual estimated incidence for all cases is 225 per 1 lac per year. The prevalence is estimated 434 per 1 lac population. The estimated TB mortality is 45 per 1 lac per year (2). Pulmonary TB is the most

common form of TB and occurs about 80% of cases. Extra -Pulmonary TB is 20%. Intestinal TB is responsible for 1% of all cases of TB (1). The ileo-caecal region is the most common site involved followed by Jejunum and colon. The diagnosis of int. TB is challenging and often delayed resulting in morbidity. Due to less specific clinical presentation and less sensitive and non specific investigation of int. TB may have diagnostic dilemma. In some cases int. TB may be associated with pulmonary TB.In this study we have evaluated 20 cases of int. TB to find out various modes of presentation and different modalities of treatment.

## METHODOLOGY

This prospective case series study was carried out at Habiganj district hospital, Shahid Shamsuddin Ahmad Hospital Sylhet and different clinic in Habiganj and Sylhet from January 2015 to February 2016. Diagnosis of int. TB was based on history, physical Examination and investigation. Investigation included blood CBC, Mantoux test, x-ray chest and abdomen, Barium follow through, Double contrast Ba-enema and Colonoscopy and Biopsy in selected cases with histopathological examination. Patient who presented with intestinal obstruction or peritonitis were explored and at exploration we ovserved site of lesion extent of the disease presence or absence of ascites, lymph node involvement number of strictures and perforations . Surgical procedures included right hemicolectomy, resection anstomosis, stricturoplasty , primary repair of perforation with proximal ileostomy . In all cases histopathological examination of resected specimen or mesenteric lymphnodes was performed in patients who underwent surgery.

## RESULTS

In this study out of 20 patients 6 were male and 14 were female. Male female ratio was 3:7. The age ranges from (13-60) years. Mean age was 35 years. Common presenting features are reflected in table-1.

**Table -1** Clinical presentation of intestinal TB

| Presentation | Frequency | Percentage |
|---|---|---|
| Abdominal pain | 18 | 90% |
| Fever | 15 | 75% |
| Weight loss | 19 | 95% |
| Chronic Diarrhoea | 5 | 25% |
| Mass in right illiac fossa | 10 | 50% |
| Sub-Acute int. obstruction | 8 | 40% |
| Rec. Appendicitis | 2 | 10% |
| Peritonitis | 1 | 5% |

In this study investigation revealed anemia in 18 cases (90%) raised ESR in 19 cases (95%), Mantoux test was positive in 11 cases out of 17 (65%), Barium follow through was done in 8 cases 5 cases among them (62.5%) shows strictures, deformed caecum. Colonscopy and biopsy is currently the most valuable diagnostic tool to identify the lesion in terminal ileam and colon. Colonscopy was done in 14 cases among them 9 (64%) was histologically proved granulomatous lesion. Lap. Biopsy proved int. TB in 1 case. Two patients were associated with PT. 4 patients were managed conservatively with anti-TB chemotherapy while 16 patients needed surgical procedure followed by anti - TB chemotherapy. Histopathological examination of resected specimen and mesenteric lymphnodes was done in all 16 cases for confirmation of tuberculosis. 1 patient (5%) died out of 20 patients. 3

patients presented in emergency 1 with peritonitis and 2 with features of appendicitis.

**Table-2** Shows the various surgical procedures

| Operative treatment | Frequency | percentage |
|---|---|---|
| Right hemicolectomy | 10 | 62.50% |
| Resection Anastomosis | 2 | 12.50% |
| Stricturoplasty | 1 | 6.25% |
| Closure of perforation with ileostomy | 1 | 6.25% |
| Appendicectomy | 1 | 6.25% |
| Lap. Biopsy | 1 | 6.25% |

## DISCUSSION:

High index of suspicion is needed for diagnosis of int. TB. Abdomen is the common site for extra pulmonary TB. Present study shows intestinal TB is common in females as evident from present study and other studies (3). This can be explained by the fact that females are neglected and malnourished in our population. The incidence of associated PT. is variable. It is 10% in our study as compared to 21% in a 230 patient study by Tariq (4). In this study int.TB presented with abdominal pain (90%), weight loss 95%, Fever 75%, mass in right illiacfossa 50%, chr. Diarrhoea 25%. 4 (20%) patients was managed conservatively while surgical intervention was done in 16 (80%) cases Sircar (5) described that 79% patients managed conservatively and 21% patients needed surgical intervention . Ileocacele region was the most commonly involved site. Common surgical procedure was right hemicolectmy. Mortality was 5% in this study while Baluck had zero mortality (6). Lap. Biopsy was done in 1 case in this study.

## CONCLUSION

There is resurgence of int. TB due to MDR cases. Due to its variable presentation diagnosis remains a problem and invariably delayed because of its close similarities with other conditions like IBS, crohn's disease and int. neoplastic conditions.

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Original Article

# Evaluation of result in early management of open fracture of forearm bones Gustilo type II and III by local external fixator with compression-distraction device

**S Islam[1], A H S M Kamruzzaman[2], M A Momen[3], M Z Islam[4], M M Rahman[5], M A Rahman[6], P Das[7], MB Uddin[8]**

***Abstract***

*Trauma is the leading cause of mortality and disability during the first four decades of life and is the third most common cause of death overall. Among trauma victims, forearm bone fractures are common. Open fracture radius-ulna comprises a substantial group which requires careful attention to prevent disability. External fixation to stabilize the fracture is the treatment of choice due to some unavoidable circumstances instead of internal fixation . Between July 2001 to June 2003, 21 patients of open fracture of radius-ulna (Gustilo type-II,IIIA and IIIB) were treated by primary local external fixator with compression-distraction device at NITOR. The main goal of this study was to find out effective solution of soft tissue management, joint stiffness, fracture union and reduced hospital stay of a large number of patients.*

***Key word :*** *External fixator, open fracture*

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## Introduction:

With the advent of civilization , trauma is the leading cause of mortality and disability during the first four decades of life and is the third most common cause of death overall.(1) Among trauma victims, forearm bone fractures are common. Of forearm bone fractures open fracture radius-ulna comprises a substantial group which requires careful attention to prevent disability.(2) Aim of open fracture treatment is prevent of infection, healing of fracture and restoration of function of extremity. Operative management includes meticulous wound excision, stabilisation and early wound coverage.(3,4) In our country as most of the patients come to tertiary hospital at least 8 to 12 hrs after due to ignorance, poverty, or lack of transportation facilities. Internal fixation during that time carries disastrous consequences. So external fixation to stabilize the fracture is the treatment of choice. In this study it was tried to find out

the result of local external fixator with compression-distraction device in management of open fracture radius-ulna (G-11/IIIA/IIIB).

**Methodology:**

This study was carried out at NITOR during the period of July, 2001 to July, 2003. 21 cases of type II and III open fractures of radius-ulna of adults were managed early by external fixator. A complete history, thorough general and physical local examination along with radiological investigation both antero-posterior views were done. In the emergency operation theatre, under anesthesia, after taking the swab, wound was cleaned with soap, betricrab and normal saline. Then wound excision was done. Later on A local external fixator with compression-distraction device was applied at lateral side. After the procedure check X-ray were taken for confirmation of reduction and compression -distraction was performed according to x-ray reading. Only radius was fixed for rotational correction and proper function of forearm. Wound was covered by secondary closure, skin grafting and flap coverage. The fixator was carried out till union 13 to 20 weeks and after removal of external fixator, then the forearm was kept in elbow bag for another four weeks.

**RESULTS:**

In this study there 21 patients with age range 20-50 yrs. Mean age was 29±1.6 yrs. 19 cases (90.48%) were male and 02 cases (9.52%) were female. Males were more as because they are main working force in this country. Cause of injury in this series 17 cases (80.95%) were due to road traffic accident and 4 cases were due to machinery injury. Road traffic accident was the major cause of injury as poor traffic system. 11 cases (52.28%) were businessman,07 cases (33.33%) were labor.02 cases(09.53%) were student and 01 case(04.76%) was housewife. 15 cases (71.43%) were in lower incoming group, 05 (23.81%) cases were in middle incoming group and 01(04.76%) case was in higher incoming group. involvement of right radius -ulna includes 13 cases (61.90%) and left includes in 08 cases (38.10%) fracture type Gustilo III A 13 (63.90), Gustilo II 06 (28.57%), Gustilo IIIB 02 (09.53%). Delayed closure method 06(28.57%) Split thickness skin grafting 13 (61.90%), Flap coverage 02 (09.53%) Delayed closure method 06(28.57%) Split thickness skin grafting 13 (61.90%),Flap coverage 02 (09.53%) Union by primary procedure 08(38.10% ),by secondary procedure 09 (42.85%) Non union by secondary procedure 04 (19.05%).

**Discussion:**

This prospective study was carried out to find an easy appropriate and well accepted procedure for solving prolong suffering of the patients with Gustilo type-II,IIIA and IIIB open facture radius-ulna. In this procedure wound management, joint movement and compression-distraction according to x-ray are easier. This was a random study with age range 20-50yrs bearing the mean age 29+_ 1.6 yrs, male 19(90.48%), Businessmen (52.28%), Lower incoming group 15(71.43%), maximum in RTA 17(80.95%), Right 13(61.90%), Gustilo Type-II 06(28.57%),IIIA-13(61.90%),IIIB-02(09.53%);Maximum duration of hospital stay-35 days and minimum 12 days, with a mean 21.2 days; Delayed primary closure-06(28.57%), STSG 13(61.90%), Flap coverage 02(9.53%).Fracture healing took place in 17 cases from 13 to34 wks with an average 23.2-+1.9 wks.8 cases were united

by primary external fixator; Rest 13 cases were needed ORIF with BG; among them 09 cases were united and 04 cases developed non union. The result was taken as excellent when fractures were united by local external fixator with compression-distraction device, Good when fracture were united by secondary procedure (ORIF by small DCP with Bone grafting); Poor when the fractures were not united by secondary procedure. In this study excellent results were observed 8 cases (38.10%), good in 9 cases (42.85%), and poor in 4 cases (19.05%). This is similar to many study(5,6,7)

## CONCLUSION:

Forearm bone fractures are notoriously prone to displacement, rotational deformity which affects the range of motion, functional mobility of hands. So, special attention should be given from the very beginning. In open fractures, soft tissue management, prevention of infection and fracture union are the aim of treatment and for this reason, external fixation should be such type, which not only give access to soft tissue management but also provides fracture healing and functional mobility. So, local external fixator with compression and distraction device is an effective mean for the management of Gustilo II&III open fracture of radius-ulna.

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Case Report

# Hydatid Cyst in an Uncommon Location - A Case Report

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*Abstract*

*Hydatid cyst affecting muscle is very rare and usually presents as an asymptomatic, slowly growing mass mimicking a soft tissue tumour. Adequate preoperative planning and En bloc excision is recommended, as incomplete excision may lead to anaphylactic reactions and local recurrence. It should be considered in the differential diagnosis of soft tissue tumours especially in regions endemic for the parasite. We are reporting a case of hydatid cyst affecting the calf muscle which was managed by excision. Very few reports of primary calf muscle involvement by hydatid cyst were found in literature.*

**Key words:** *Hydatid cyst, muscle, resection.*

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## Introduction

Hydatid cyst is the larval stage of Echinococcosis, is a zoonosis and is a significant public health problem. It is prevalent in different areas of the worlds. Domestic dogs, foxes and wolves serve as definitive hosts, whereas sheep act as intermediate hosts(2'3). Hydatid cysts are usually found in the liver and lungs4, but can affect any part of the body(5-7). Bone involvement is usually seen in less than 1% of casess. Primary hydatid cyst in musculoskeletal system is rare and constitutes 1% to 4.5% of all cases(8). It should be included in the differential diagnosis for any cystic soft tissue mass found in patients from areas where the disease is endemic(10-12). Usually the Hydatid cyst in muscle present as a benign soft tissue tumor. The commonest clinical presentation is an asymptomatic slow growing mass. Though hydatid diseases is endemic in South-east Asia, we present this case due to the rarity of its siten.

## Case Report

A 50 years old Man presented with a large painless mass in the back of his left leg for eighteen months and difficulty in squatting for three months. There was no history of trauma, fever or weight loss. On examination, there was a fusiform shaped swelling measuring about 12 X 8 cm over

upper part of the back of left leg (Fig. 1). The swelling was non-tender, smooth surface, diffuse, soft in consistency. It was fluctuating, but non trans-illuminating. It was free from overlying skin. It was more mobile from side to side than above-downwards. ,The swelling was almost fixed when the calf muscle is taught. It was non pulsatile. There was no inguinal lymphadenopathy. Distal neurovascular status was normal. Left knee joint movement was normal. Squatting was near complete but with difficulty due to the swelling. Gait was normal. Lungs and Liver were normal on clinical and imaging study. There was no cystic mass anywhere else in the body.

Routine haematological examinations were normal. X ray left leg showed a soft tissue swelling over the calf muscle area. No bony lesion were seen. Ultrasonography showed multiloculated cystic lesion on the calf region. On fine needle aspiration, clear cystic fluid came out and cytology revealed benign cystic lesion. MRI revealed large well outlined multiloculated cystic mass lesion in calf muscle of left leg .

The patient was selected for exploration and excision biopsy of the cystic mass. After spinal anesthesia, on prone position, a serpentine incision was made over the protrusion on the back of left leg. After retracting the skin and superficial fascia, two heads of gastrocnemius muscle was identified and splitted keeping special attention to the sural nerve which was unharmed. Then the soleus muscle was identified and splitted in the middle. A well capsulated spindle shaped cystic mass was seen. After proper dissection and care for preventing spillage, it was excised out along with its capsule (Fig. 2). A drain was inserted and wound closed in layers. Post operative period was uneventful.

Gross examination of specimen showed 8cm X 10cm gray white oval cystic mass. On opening the cyst, multiple daughter cysts are noted. Cut section revealed cystic spaces containing whitish material resembling white of egg. Histopathology confirms the diagnosis of hydatid cyst by presence of lamellated hyaline membrane of hydatid cyst wall with identification of scolex of Echinococcus granulosus. Tab. Albendazol 400 mg 12 hourly was given for 3 months. Follow up upto 8 months postoperatively did not show evidence of hydatid cyst in any part of the body.

**Discussion**

Hydatid disease is caused by the larval tapeworm of the genus Echinococcus granulosus and E. multiloculares. E. granulosus is the most common cause of hydatid disease(14). It is endemic in different parts of the world, including South Asia, Middle East, Africa, South America, New Zealand, Australia, Turkey and Southern Europe(15,16,17). Infestation by hydatid disease in human is most commonly occurs in the liver (5570%) followed by the lung (18.35% of cases)18.19. Muscular hydatid cyst is usually associated with a primary in these sites but several cases of isolated muscular hydatid cysts have been reported(3). These sites includes adductor magnus, quadriceps femoris, paravertebral muscle, gracillis, psoas major, biceps and gluteus maximus (13). Isolated primary hydatid disease of the skeletal muscle is rare, as the parasite has to cross pulmonary and hepatic barriers to reach the muscles. The high lactic acid level in muscle tissue is considered unfavorable for parasite survivals. Moreover, muscular

contractions prevent fixation of larvae to the tissue (6'12).

Classically the patient presents with a long history of cystic lump with muscle fixation. Although eosinophilia is expected in patients with parasitic infestations, this may not always be seen26. Ultrasonography should be the first imaging tool used for detection of hydatid disease of soft tissuell. When the disease progresses, MRI is best for clear identification of involved structures and for surgical planning(11). It is also an effective means of making a differential diagnosis. The characteristic appearance in ultrasonography is unilocular or multilocular cysts and in MRI is multilocular cyst with multiple daughter cysts13, as was seen in our case.

Serologic tests are valuable when they are positive, but half of the primary intramuscular hydatidosis cases give a false negative(7). The indirect hemagglutination (IHA) sensitivity rate has been reported as 67%7. IgG ELISA was the most sensitive (up to 94%) test for the majority of cyst locations in the patient.36 Although serology tests like IHA can help make the diagnosis, complete reliance on them is not recommended(16).

FNAC for hydatid cyst diagnosis has still some controversy. One group says, it is safe, simple and an effective means to reach a working deagnosis(13). Other group avoid it because risk of spillage and anaphylaxis(6,12). En bloc resection alone is curative for isolated intramuscular hydatid disease(8,12). In our patient, adjunctive chemotherapy with albendazole was prescribed to eliminate any possible larvae disseminated during surgery. The patient remained free of symptoms at the 7-month follow-up and had no evidence of recurrence.

Primary hydatid disease involving the calf muscle has rarely been reported in literature. In endemic areas, any cystic enlargement of soft tissue should raise the suspicion of hydatid disease. Imaging with serologic tests should be performed before any invasive procedure.

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Review article

# An Approach to the Child with Acute Glomerulonephritis

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*Abstract*

*Acute glomerulonephritis (AGN) is a common condition in childhood. Many children with AGN can be managed in the primary care setting. The diagnosis is usually made on the basis of urinary findings, especially the presence of red blood cell casts. One of the most important initial investigations is determining the complement C3 level; hypocomplementemia is most characteristic of post streptococcal AGN, while normocomplementemia is most often seen with IgA nephropathy. Children whose AGN is accompanied by significant hypertension or renal insufficiency should be assessed by a specialist immediately. The presence of serious extrarenal signs or symptoms also merits urgent referral. Otherwise, serial followup in the primary care office is appropriate.*

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## Introduction

Many children with acute glomerulonephritis (AGN) are first seen in their primary physicians' offices. This initial contact may be crucial in determining the child's most appropriate disposition as well as identifying any immediate threats to life. This paper will review the office approach to AGN in children on the basis of upon a firm grounding in pathophysiology. It will begin with an overview of the pathology and pathophysiology of glomerulonephritis and then present a practical outline of the important aspects of the history and physical examination pertinent to a child with suspected AGN. It will then provide guidance in choosing and interpreting appropriate laboratory studies for the initial evaluation. Finally, some guidance will be provided on referral of children with AGN, including a discussion of some situations in which management by the primary caretaker may be appropriate.

## Overview of AGN

AGN is a complex of findings which is marked histologically by a generalized glomerular inflammation. Frequently, renal biopsy is not available, but AGN can

usually be recognized by the clinical picture of hematuria, fluid overload (edema and hypertension), and some evidence of renal insufficiency (elevation of BUN and creatinine). In most circumstances, glomerular inflammation begins with an antigen-antibody reaction, either direct antibody binding to an antigen expressed or trapped in the glomerulus, or the localization of a circulating complex in the kidney. This incites injury by activating one or more systems of inflammatory mediators: the complement cascade, coagulation factors, cytokines, growth factors, and others. The inflammation is marked by proliferation of resident glomerular cells and infiltration by lymphocytes or neutrophils.

In severe situations, it can be manifest by life-threatening hypertension and pulmonary edema. Indeed, hypertensive encephalopathy may be the presenting complaint in some children with AGN (1) In some situations, AGN is a primary process, and virtually, all of the clinical findings are a consequence of the renal lesion. Poststreptococcal AGN is the best example of this (2). In other cases, the AGN is but one manifestation of a systemic illness which has targeted multiple organs, each of which may be independently injured. In children, the AGN associated with Henoch Schoenlein purpura is the prototype for this (3)

**History and Physical Examination**

Most typically, the child with AGN will be seen because of the sudden development of change in urine color. On occasion, however, the presenting complaint may relate to a complication of the disease: hypertensive seizures, edema, and so forth.The history begins with obtaining more details about the change in urine. Hematuria in children with AGN is typically described as "coke," "tea," or "smoky" colored. True bright red blood in the urine is more likely a consequence of anatomic problems such as urolithiasis [4] than glomerulonephritis. Urine color in AGN is uniform throughout the stream. The gross hematuria of AGN is virtually always painless; dysuria accompanying gross hematuria points to acute hemorrhagic cystitis (5) rather than renal disease. A history of previous such episodes would point to an exacerbation of a chronic process such as IgA nephropathy [6]. Although a history of a recent documented streptococcal infection would be consistent with poststreptococcal AGN, such a history is frequently unavailable.

It is next important to ascertain any symptoms suggestive of complications of the AGN. These might include shortness of breath or exercise intolerance from fluid overload or headaches, visual disturbances, or alteration in mental status from hypertension. Since AGN may be the presenting complaint of a multisystem illness, a complete review of systems is vital. Particular attention should be paid to rash, joint discomfort, recent weight change, fatigue, appetite changes, respiratory complaints, and recent medication exposure. The family history should address the presence of any family members with autoimmune disorders, as children with both SLE and membranoproliferative glomerulonephritis (MPGN) may have such relatives. A family history of renal failure (specifically asking about dialysis and kidney transplantation) may be the first clue to a process such as Alport syndrome, which may initially present with an AGN picture.

The physical examination begins with a

careful assessment of vital signs, particularly blood pressure. Blood pressures 5 mm above the 99th percentile for the child's age, sex, and height, especially if accompanied by any alteration in mental status, demand prompt attention. Tachycardia and tachypnea point toward symptomatic fluid overload. Careful examination of the nose and throat may provide evidence of bleeding, suggesting the possibility of one of the ANCA-positive vasculitides such as Wegner's granulomatosis (7). Cervical lymphadenopathy may be the residua of a recent streptococcal pharyngitis. The cardiopulmonary examination will provide evidence of fluid overload or the pulmonary involvement characterizing the rare kidney-lung syndromes. The abdominal examination is particularly important. Ascites may be present if there is a nephrotic component to the AGN.

**Laboratory Assessment**

Obviously, a good urinalysis is the first order of business in assessing a child with suspected AGN. The presence of red blood cell casts, while not invariably seen, is diagnostic of glomerulonephritis if present (8). AGN is an inflammatory process, so it is not at all unusual to see white blood cells in nephritic urine. Unfortunately, this occasionally leads to an inappropriate diagnosis of urinary tract infection. Proteinuria is also nearly invariant in AGN although any cause of gross hematuria can lead to some urinary protein. If the urine is not grossly bloody, however, the combined presence of hematuria and proteinuria virtually always means glomerulonephritis. The initial blood work required in suspected AGN is actually limited; more sophisticated immunologic investigations, for example, are really "second tier" studies after the initial results are known. Obviously, assessing renal function and electrolytes is an important first step, as is obtaining a hemogram. A mild degree of anemia is frequently seen with AGN and likely is dilutional; more significant anemia would be evidence that the process may be more chronic. There are typically no important changes in the white blood cell count or platelet count in most causes of AGN. A normal platelet count in the presence of petechiae and purpura is the usual finding in HSP. Beyond these basic tests, only a few others are helpful in the initial evaluation. A serum albumin is usually included; a slight degree of hypoalbuminemia is typical of many inflammatory processes such as HSP, but values <2.0 gm/dL are quite unusual in straightforward AGN and point to a process with a nephrotic syndrome component. By far, the most important (and frequently forgotten) test to obtain initially is an assessment of the complement system. This generally means obtaining a serum C3 and C4; the total hemolytic complement ("CH50") is generally of only historical interest. Poststreptococcal AGN is characterized by a very low C3, sometimes with minimal decreases in C4 (9).

**Office Management**

Some children with AGN will require immediate referral to a pediatric nephrologist. The child with severe hypertension (more than 5?mm above the 99th percentile), especially if accompanied by any neurologic complaints, must be referred immediately. Similarly, children with significant renal insufficiency should be assessed by a specialist. When AGN is accompanied by a nephrotic syndrome, the additional diagnostic and therapeutic interventions are also beyond the typical primary care practice. Beyond these

situations, however, many such children can be reasonably managed in the primary care setting. The child with AGN in the setting of HSP, for example, who is normotensive, has normal renal function, and who is not nephrotic requires little more than careful serial observation. Although the urinary abnormalities may persist for some time after the rest of the disease has resolved, these children have little if any risk of permanent kidney injury. Many children with poststreptococcal AGN may also be followed in the primary care setting, but this will entail a commitment to serial examination. The major threat to such children is hypertension and its complications, and this may evolve over a few days. In otherwise typical poststreptococcal AGN with minimal hypertension (e.g., blood pressure between the 95th and 99th percentiles) and no renal failure, therapy with a loop diuretic is reasonable, with daily blood pressure rechecks. The urinary abnormalities in poststreptococcal AGN may persist for a long time, even a year. The best indicator of resolution of the disease is the return of the C3 level to normal. This generally occurs within 6 to 8 weeks. Persistent decrease in C3 by this time merits referral, as this could be an indicator that the "AGN" was actually the initial presentation of a more chronic process such as MPGN (10)

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