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ORIGINAL ARTICLES

Study of the Expiratory and Inspiratory Lateral Decubitus Chest Radiograph in The Diagnosis of Suspected Small Pleural Effusion

Md. Wahiduzzaman Bhuiyan[1], ASQ Md. Sadaque[2]. Syed Mizanur Rahman[3], Akhter Uddin Ahmed [4], Ahmed Hossain [5], MA Quddus [6], Mirza Mohammad Hiron[7]

Abstract

Pleural effusion is common in our country. It continues to pose problems of diagnosis and sometimes management. Correct interpretation of the chest radiograph is crucial, particularly in distinguishing small pleural fluid from pleural thickening. Special positioning with decubitus in expiratory phase may help to resolve these difficulties. Routine PA chest roentgenogram may not reveal the fluid in cases of small pleural effusion. For blunting of lateral costophrenic angle 100- 200 ml of fluid is required but still a confusing expression in PA view whether it is pleural effusion or pleural thickening. Lateral decubitus projection with horizontal beam in full expiration is not a common practice but effective method to detect small pleural effusion which has been proved in my study as well as a study in Slovenia.

[Chest & Heart Journal 2006; 30(2) : 79-82]

Introduction

Small amount of fluid (5-10) ml is often present in the pleural space of healthy individuals. The most dependent recesses of the pleura is the posterior costophrenic angles in erect posture. A small effusion will therefore, tend to collect posteriorly and in most patient 100-200 ml. of fluid is required to fill this recess before evident on the erect postero-anterior radiograph but it is possible to identify effusion of only a few milliliters using lateral decubitus projection[1]. Lateral decubitus projection with horizontal beam taken in full inspiration is a widely used and popular method for detection of shifting of free fluid in the pleural space. It is usually done when there is confusion in the evaluation of opacity on the erect postero-anterior projection of chest[2]. Kocijancic et al[3] recommended X-ray chest lateral decubitus projection in expiratory phase to detect small pleural effusion as in this projection opacity of free fluid is thicker than that of the inspiratiory lateral decubitus film and thus facilitates the diagnosis of very small amount of pleural effusion. In Bangladesh pleural effusion from various causes is common finding on chest radiographs. Conventional X-ray is popular imaging modality in this country. X-ray machine is available now a days in every corner of Bangladesh and one of the most accurate imaging modality to detect small pleural effusion. On the basis of facts it is proved that expiratory lateral decubitus chest radiograph is superior to inspiratory lateral decubitus projection for diagnosis of small pleural effusion.

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7. Professor of Respiratory Medicine, NIDCH.

Address of Correspondence : Dr. Md. Wahiduzzaman Bhuiyan, Associate Professor and Head, Radiology and Imaging, NIDCH.

Patients and method

This prospective study was carried out in 110 randomly selected patients from 20-70 years of ages whose X-ray chest PA projection showed blunting of one or both lateral costophrenic angles suggesting small pleural effusion or thickening. Then all the patients were evaluated by detail history and clinical examination. Lateral decubitus films of suspected side were taken both in inspiratory and expiratory phases. A total number of 110 patients were included in this study, male were 89 and female were 21 of patients with different occupations whose age ranges from 20 to 70 years. Patients with pediatric age group, very sick patients including acute myocardial infarction in whom proper positioning was difficult were excluded from the study. 110 patients whose X-ray chest PA view showed blunting of the lateral costophrenic angle / angles with a suspicion of presence of small pleural effusion with out come measures- X-ray findings of pleural effusion- in lateral decubitus view, both in inspiration and expiration dense homogenous opacity along the lateral chest with variable thickness were measured, minimum 3 mm. or less and upto 20mm. thickness of fluid were studied. 2 meter film focus distance for the erect view of the chest and 1.5 meter film-focus distance for the lateral decubitus views. For these the patient was put into lateral decubitus position with 10-degree hip elevation for five minutes prior to exposure. Exposures were then taken both in inspiration and immediately after expiration, with the central beam aimed at the lateral chest wall. In the lateral decubitus chest radiographs fluid thickness in inspiratory phase and in expiratory phase were measured and recorded. All the findings were analyzed by appropriate standard statistical method. All values were expressed as mean + SE (standard error). Paired 't' test was done to find out the difference of results within the same group.

Observation and Results

Table-I

Age distribution of patients (N-110).

Age Groups in years)	No of patients	Percentage
20-30	29	26.36%
31-40	19	17.27%
41-50	36	32.73%
51-60	16	14.55%
61-70	10	9.09%

Table-II

Sex distribution of patients.

Sex	No of patients (n-110)	Percentage
Male	89	80.91%
Female	21	19.09%

Table-III

Occupation of the patients.

Occupation	No of patients (n-110)	Percent
Service holder	27	24.55%
Businessman	23	2091%
Farmer	23	2001%
Housewife	16	115%
School Teacher		7.27%
Unemployed	8	7.27%
Student	4	3.63%
Day labourer	1	190%

Table-IV

Causes of small pleural effusion in 110 patients.

Disease	No of patients	Percentage
Pulmonary		
Inflammatory		
Tuberculosis	44	40%
Non specific	26	23.64%
Neoplastic		
Bronchial carcinoma	8	7.27%
Lymphoma	1	0.91%
Renal		
Renal Failure	14	12.73%
Cardiac		
Cardiac Failure	7	6.36%
Hepatic disease		
CLD and others	10	9.09%

Table-V

Thickness of fluid in inspiratiory and expiratory film.

Thicknessof fluid mm	Inspiration			Expiration		
	Mean thickness+ SE	No ofpatients	Percentage	Mean thickness+ SE	No. of patients	Percentage
0-4		37	33.64%		3	7.72%
5-8		51	46.36%		36	3233%
9-12	5.9+	21	19.09%	10.8+.54	25	22.73%
13-16		01	0.911%		44	40%
17-20		0			2	

Discussion

Pleural effusion is common in our country. Radiographic examination is the commonly used method of detecting pleural effusion. However a routine postero-anterior chest roentgenogram may not reveal the fluid in cases of small pleural effusion.

To detect small pleural effusion, lateral decubitus in inspiratory phase is a commonly used radiographic technique. No effective technique or meticulous adherence to any special positioning is not practiced in our country to detect small pleural effusion.

Rigler was the first personnel to use lateral decubitus chest radiograph for detection of small pleural effusion, but he did not mention any effective technique. The Technical improvement was introduced by Hasen. The patient is positioned for 5-10 minutes in the lateral decubitus position with affected side dependent, horizontal beam aimed at point of suspected chest level and 10° hip elevation during decubitus chest radiography. Later on Kocijancic et al.[3] mentioned the diagnostic value of expiratory and inspiratory lateral decubitus chest radiograph in the evaluation of small pleural effusion. Among 110 patients with mean age 43 with different causes of small pleural effusion, pulmonary tuberculosis is the highest among non specific pulmonary inflammatory lesion, Renal failure, CLD, Cardiac Failure, Bronchial Carcinoma and lymphoma. Mean thickness of fluid in inspiration was 5.9 + 0.26 mm(SE) and in expiration was 10.08 + 0.54 mm(SE). All the findings were analyzed by appropriate standard statistical method.

Paired 't' test was done for analysis of differences between fluid layers in expiratory and inspiratory film. The result was significant and proved the superiority of expiratory lateral decubitus view over inspiratory lateral decubitus view to detect small pleural effusion.

Gryminski et al[4] reported the diagnostic value of pleural effusion by radiologic technique. The patients were underwent posteroanterior and lateral decubitus view without any emphasis to the effective technique. Out of 116 patients pleural effusions were detected only in 80 patients.

Kocijancic et al[3] showed the diagnostic value of inspiratory and expiratory lateral decubitus view in detection of small pleural effusion. To evaluate the usefulness of expiratory lateral decubitus view in the diagnosis of small pleural effusion 36 patients were underwent lateral decubitus views both in inspiration and in expiration with meticulous adherence to technique, as patient would be positioned for 5-10 minutes in lateral decubitus with affected side dependent, horizontal beam aimed at affected chest level and 10^0 hip elevation. Male patients were 27 and female were 9. Age ranges from 28-80 yrs. Mean age was 54 yrs. Small pleural effusion caused by diseases as lung cancer in 14, metastasis to the lung in 6, Pulmonary tuberculsis in 5, Mean thickness of visible fluid was 4.3+ 2.4 mm(SD) in inspiration and 7.9 +_ 3.3 mm(SD) in expiration. Fluid was not visible in 6 patients in inspiration in whom fluid was visible in expiration.

Among the different causes of small pleural effusion in the present study tuberculosis was found as highest incidence but in the reported study lung cancer was the highest. Tuberculosis is common in our country due to poor socioeconomic condition, lack of screening and inadequate management.

Comparison between fluid thickness in expiratory and inspiratory film and increased fluid thickness in expiratory film than inspiratory, significant difference of fluid layers between expiratory and inspiratory film in our study and reported study of Kocijancic et al (1999)[3] both are of good evidence of superiority of expiratory lateral decubitus view over inspiratory lateral decubitus view in the diagnosis of small pleural effusion.

Conclusion

Though newer diagnostic modalities such as ultrasonography and Computed tomography are good modalities for detection of small pleural effusion, when properly performed conventional radiographic sign can provide valuable information. Diagnostic results depend largely upon method and meticulous adherence to technique by which plain radiography is performed.

In this study it was statistically proved that expiratory lateral decbitus projection of chest radiograph is superior to inspiratory lateral decubitus view in the diagnosis of small pleural effusion.

Though ultrasonography and Computed Tomography are good modalities for detection of small pleural effusion, these modalities are not cost effective for our general population and can only be performed in limited number of centers. Conventional radiographic examination is cheaper and available in almost every corners of our country. So, expiratory lateral decubitus chest radiograph may be practiced routinely for diagnosis of small pleural effusion.

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Clinical Presentation of Tubercular Pericardial Effusion

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Abstract:

A prospective study was undertaken to evaluate the clinical presentation of tubercular pericardial effusion. 50 patients of pericardial effusion admitted in National Institute of diseases of the chest and Hospital (NIDCH) & National Institute of Cardiovascular Disease (NICVD), Dhaka, Bangladesh, during the period of January 2006 to June 2006. Out of these, 45 (90%) patients had tubercular pericardial effusion. Majority patients (68.89%) were in 2nd to 4th decade. 30 were male and 15 were female. Weight loss (93.33%), chest pain (91.11%), chronic malaise (88.89%) and low-grade fever (86.67%) were predominant clinical presentation. Increased pericardia! dullness in 100% cases. Raised temperature (93.33%), tachycardia (91.11%), low blood pressure (84.44%), raised JVP (66.67%) were frequent sign of tubercular pericardial effusion Less frequent signs were ascites (13.33%) and pleural effusion (6.67%).

[Chest & Heart Journal 2006; 30(2) : 83-85]

Introduction:

Tuberculous pericarditis may complicate pulmonary tuberculosis but may also be the first manifestation of the infection. In Africa, tuberculous pericardial effusion is a common feature of AIDS. The condition typically presents with chronic malaise, weight loss and a low-grade fever. An effusion usually develops and the pericardium may become thick and unyielding, leading to pericardial constriction or tamponade. An associated pleural effusion is often present. The diagnosis may be confirmed by aspiration of the fluid and direct examination or culture for tubercle bacilli[1].

Disease occurs in two main forms pericardial effusion and constrictive pericarditis. Fever and night sweats are rarely prominent and the presentation is usually insidious with breathlessness and abdominal swelling. Pulsus paradoxus, a raised JVP, hepatomegaly, prominent ascites and the absence of peripheral oedema are common to both types of disease. Pericardia! effusion is associated with increased pericardial, dullness and a globular enlarged heart on chest X-ray. The pericardial effusion is blood-stained in 85% of cases. Coexistent pulmonary disease is very rare, with the exception of pleural effusion. Open pericardial biopsy can be performed in patients with effusion where there is doubt about diagnosis[2].

Materials and Methods:

This prospective study was undertaken to evaluate the clinical presentation of tubercular pericardial effusion. 50 patients of pericardial effusion admitted in National Institute of Diseases of the Chest & Hospital, Dhaka, Bangladesh (NIDCH) &cardiology department, National Institute of Cardiovascular Disease (NICVD), Dhaka, Bangladesh, during the period of January 2006 to

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June 2006. Out of these, 45 (90%) patients having tubercular pericardial effusion. The diagnosis of tubercular pericardial effusion was done on the basis of clinical symptoms, echocardiographic findings, pericardial fluid study and pericardial biopsy.

Results:

Total 45 cases of tubercular pericardial effusion were evaluated in this study. Table-I shows maximum age incidence was in the 2nd decade to 4th decade with relatively infrequent in other age groups.

Table-I
Age distribution

Age in years	No. of patients	Percent
10-20	3	6.67
21-30	16	35.56
31-40	15	33.33
41-50	9	20
51-60	2	4.44
Total	45	100%

Table-II shows male suffered more than female. The ratio between male and female is 2:1. 30 (66.67%) cases were male and 15 (33.33%) were female.

Table-II
Sex distribution

Sex	No. of patients	Percent
Male	30	66.67
Female	15	33.33
Total	45	100%

Table-III shows presenting symptoms of study patients. Onset was insidious in majority cases. Weight loss (93.33%), chest pain (91.11 %), chronic malaise (88.89%) and low-grade fever (86.67%) were frequent presenting feature. Night sweats, breathlessness, anorexia and nausea were noted in a good number of cases. History suggestive of pulmonary disease was less frequent presenting feature.

Table-III
Presenting symptoms

Symptoms	No. of patients	Percent
Chronic malaise	40	88.89
Weight loss	42	93.33
Low-grade fever	39	86.67
Night sweats	35	77.78
Insidious onset	44	97.78
Breathlessness	30	66.67
Abdominal swelling	10	22.22
History suggestive of pulmonary disease	3	6.67
Chest pain	41	91.11
Anorexia and nausea	34	75.56

Table-IV shows increased pericardial dullness in 100% cases. Raised temperature (93.33%), tachycardia (91.11%), low blood pressure (84.44%), raised JVP (66.67%) were frequent sign of tubercular pericardial effusion.

Table-IV
Signs of tubercular pericardial effusion

Signs	No. of patients	Percent
Raised temperature	42	93.33
Raised JVP	30	66.67
Low volume pulse	20	44.44
Tachycardia	41	91.11
Low blood pressure	38	84.44
In creased pericardial Dullness	45	100
Pulsus paradoxus	8	20.00
Hepatomegaly	10	17.78
Ascites	6	13.33
Pleural effusion	3	6.67

Discussion:

The diagnosis of tubercular pericardial effusion was done on the basis of clinical symptoms, echocardiographic findings, pericardial fluid study and pericardial biopsy. 50 patients of pericardial effusion admitted in National Institute of Diseases of the Chest & Hospital (NIDCH) Dhaka,

Bangladesh. & cardiology department, National Institute of Cardiovascular Disease (NICVD), Dhaka, Bangladesh, during the period of January 2006 to June 2006. Out of these 45 (90%) patients having tubercular pericardial effusion. Majority patients (58.8%) were in 2nd to 4th decade. Males dominated over the females. The ratio between male and female is 2:1. 30 (66.67%) cases were male and 15 (33.33%) were female.

Onset was insidious in majority cases. Weight loss (93.33%), chest pain (91.11%), chronic malaise (88.89%) and low-grade fever (86.67%) were frequent presenting feature. Night sweats, breathlessness, anorexia and nausea were noted in a good number of cases. History suggestive of pulmonary disease was less frequent presenting feature. Increased pericardial dullness in 100% cases. Raised temperature (93.3 3%), tachycardia (9 1.11%), low blood pressure(84.44%), raised JVP(66.67%) were frequent sign of tubercular pericardial effusion . An associated pleural effusion is often present[1]. In this study only three cases had pleural effusion . Some times may present with bilateral pleural effusion and pericardial effusion[3].

Tuberculous pericarditis is a rare but potentially lethal form of tuberculosis[4]. Pericardial effusion is usually associated with left sided pleural effusion[5]. Rooney et al[6] found the following common features in tuberculous pericarditis-cough (85%), fever (92%), weight loss (85%), dyspnoea (74%) tachycardia (94%), cardiomegaly (85%), pleural effusion (71 %), ST depression (84%) and low voltage ECG (34%). They also found positive tuberculin test in all the cases and pericardial biopsy was positive in all explored cases (31%).

Alvarez and William [7] did not find pleural effusion or pulmonary infiltrate in any of their four patients of pericardial effusion. Pleural effusion when present offers a convenient source for diagnostic material.

Conclusion:

Tuberculous pericarditis is a rare but potentially lethal form of tuberculosis. It is commonly affect young adult male. Onset was insidious in majority cases. Weight loss, chest pain , chronic malaise and low-grade fever were frequent presenting feature. Night sweats, breathlessness, anorexia and nausea were noted in a good number of cases. History suggestive of pulmonary disease was less frequent presenting feature. Raised temperature, tachycardia, low blood pressure, raised JVP were frequent sign of tubercular pericardial effusion. Pleural effusion and ascites were less common feature.

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A Study on Febrile Reactions among the Blood Recipients

Sufia Begum[1], Doulatun Naher[2], Hosneara Begum[3] , Saifur Rahman[4]

Abstract:
This study was carried out among one hundred and fifty blood receipients in BSMMU and Bangladesh Thalassaemia society, Dhaka, Bangladesh. The aim of study was to find the factors contributing to febrile transfusion reaction. To asses the percentage of febrile reaction, especially as complication of non-haemolytic transfusion reaction among blood recipient. To detect the various means by which minimize the febrile reaction among blood recipients.

[Chest & Heart Journal 2006; 30(2) : 86-88]

Introduction:

Blood Transfusion is live saving procedure. Scientists are unanimous that artificial. blood cannot be manufactured by man in the future. A transfusion should never be given without a definite indication. Not only is this in the patient interest since an element of risk is associated with every transfusion[1,2]. About 2-5% of all transfusion recipients may experience a reaction. Barton quoted that 7% of all blood recipients develop non-haemolytic transfusion reaction (NHTR)[3]. Unfortunately, blood & blood components are occasionally unsafe which result in spectrum of adverse reaction following transfusion. These adverse reactions may be immunologically or nonimmunilogically mediated & may vary in severity from mild to moderate. The immunological effect could immediate and delayed. Immediate effect could be due to cell & plasma related. Delayed effects are due to primary or due to revival of immunological memory or secondary amnestic response".

Normally body temperature rises between 98 -99 F, mostly due to NHTR but it may due to haemolytic transfusion reaction, bacterial pyrogen, platelet by alloantibody, human leucocyte antigen, lecocyte antibody, tissue macrophages monocyte etc[5-9]

Schned & Silve[10] described microaggreate filtration method prevent febrile transfusion reaction[10]. The Canadian Red Cross Mood Transfusion Service Group studied the NHTR & to identify a technique of different causes of febrile reaction". Administration of washed red blood cell to all patients requiring transfusion reduce significantly the incidence of adverse reaction. This is likely the result of removal of leucocytes & plasma achieved by washing process. While it might be expected that routine administration of the more purified blood products to all patients requiring RBC transfusion could decrease the total incidence of transfusion reaction.

Materials & Methods:

One hundred & fifty (150) blood recipients were studied. The study was designed as observative intervention study. After conducting baseline survey in the study.

post-intervention survey was conducted using structured pre-tested face to face interview administrated questionnaire. Each patient's clinical condition & all findings were recorded before & after transfusion. Blood sample from patients were tested fir culture sensitivity, particularly those suffering from febrile transfusion reaction. Data analysis done by computer processed using SPSS Package.

Year & place of the study:

This study was conducted during 3 September-2 December 2005 in the Bangabandhu Sheikh Mujib Medical University (BSMMU) & Bangladesh Thalassaemia society, Dhaka, Bangladesh.

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Results:

Maximum no. 44 (29.34%) of febrile reaction was found in the age group 0-10 years & second group 31 (20.66%) was in the age group of 11-20 years. It was observed that febrile reaction occurs more in male about 56.67%. Majority 76 (56.66%) reaction occur due to multiple transfusion needed for Thalassemic patient 55 (36.6%) above 10 units. Most 144 (96%) cases Non Haemolytic transfusion reaction (NHTR) occurs relatively mild & temperature below 99. This study showed that whole blood transfusion 95 (63,33%) causes more febrile reaction than packed red cell 55 (36.67%). This study observed overall incidence of transfusion reaction vary widely due to factors involved, such as care taken in monitoring the patients during & after blood transfusion and criteria adopted for diagnosis. A total number of 150 blood recipients attended the department of blood transfusion, BSMMU &Bangladesh Thalassaemia society. The results of different categories of blood recipient were showed on the following tables.

Tables-I

Distribution of respondents by age (n=150)

Age in years	No.	%
0-10	44	29.34
11-20	31	20.66
21.30	23	15.33
31.40	19	12.67
41-50	18	12.00
51-60	15	10.00

Table-I shows that 44(29.34%) were in the age group of 0-10 years subsequently 31(20.66%) were in the age group.

Table-II

Distribution of respondents by sex (n=150).

Sex	No.	%
Male	85	56.67
Female	65	43.33

Table-III

Distribution of respondents by transfusion of units of blood (n=150).

Transfusions	No. of respondents	% (Unit of blood)
1-3	24	16.00
4-10	50	33.33
>10	76	56.66

Table shows highest no. 76 (56.66%) respondents was above 10 unit blood transfused.

Table-IV

Distribution of respondents by rise of temperature (n=150).

Temp.	No.	%
99-100	144	96.00
100.1-100.5	5	3.33
100.5-101	1	0.67

Above Table shows that temperature in 144(96%) cases was 99-100F

Table-V

Distribution of respondents by diseases (n=150).

Temp.	No.	%
Thalassemia	55	36.67
Surgical	19	12.67
Leukaemia	16	10.67
Anaemia	12	8.00
Gynaecological	10	6.67
ENT	9	6.00
Liver disease	5	3.33
Medical 4	4	2.66
Malignancy	20	13.33

Above table showed that 55 (36.67%) were thalassemia, 20 (13.33%) malignant 19 (12.67) surgical 8.15 (10.67%)

Table-VI

Distribution of respondents by blood component (n=150). Variable

Whole blood	95	63.33
Packed cell	55	36.67

Table 6 revealed that among 150 recipients, 95 (63.33%) received whole blood & 55(36.67%) received packed cell.

Discussion:

Maximum no. 44 (29.34%) of febrile reaction was found in the age group 0-10 years & second group 31 (20.66%) was in the age group of 11-20 years. These two groups constituated 50%.Possibly it was due to multiple transfusion needed for Thalassernic patient 55(36.6%) in this age group. It was observed that febrile reaction occurs more in male about *56.67%* This finding is similar to that of Morduchowicz G et a1[12].

In this study, majority 76 (56.66% reaction occur due to multiple transfusion above 10 units & 144 (96%) cases[6.8]. This Non-Haemolytic transfusion reaction (NHTR) occurs relatively mild & temperature between 99-100F[2,3] . This study showed that whole blood transfusion 95 (63.33%) causes more febrile reaction than packed red cell 55 (36.67%).

Conclusions:

In this observation all the six febrile cases were multiple transfusion and non-hemolytic transfusion reaction. Majority of them were suffering from Thalassemia. One of them was suffering from acute lymphoblastic lukaemia.& one had chronic liver disease. This reaction may be due to leucoagglutinin. Most of the reactions are relatively mild but they can be severe and even fatal. So transfusion should never be given without definite indication since an element of risk is associated with every transfusion. The sample size was not adequate in relation to the variable of the study, which may not represent all the blood recipients. Further study is needed in a large scale to evaluate the situation.

Refereces

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Pattern of Respiratory Diseases in Private Medical College Hospital

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Abstract:

This was a retrospective study designed to find out the different types of respiratory diseases in International Medical College & Hospital situated in a sub-urb area at Gushulia, Tongi, Gazipur. The majority patients were coming from Shataish union on an average distance of 7.0km from hospital. The study was conducted from January 2005 to December 2005. 205 Patient with age ranges 12 to 80 years were selected randomly from OPD and Indoor patients. Among them 110 patients were male and 95 patients were female. The majority of cases were from low socioeconomic group. The peak incidence of disease was marked in the month of January, February and October to December.

[Chest & Heart Journal 2006; 30(2) : 89-91]

Introduction:

The respiratory diseases involving the airways and lung parenchyma having limited manifestations such as cough, sputum, breathlessness, haemoptysis, chest pain but the same symptoms may occur in case of cardiac diseases also. So to establish the pulmonary diseases we had to exclude the cardiac diseases. Among the etiological factors viral respiratory tract infections were identified as the exacerbating factor for the diseases like COPD and bronchial Asthma and the causative agent for pneumonia[1].

This study was designed to the find out the pattern of respiratory diseases presented to a Private Medical College Hospital situated in an sub-urb area, 30 kms away from center of the Dhaka city.

Materials & Method:

This was a retrospective study on Bangladeshi population with common respiratory symptoms carried out in OPD and Indoor patients of International Medical College Hospital situated in a village, Gushulia under Tongi, Gazipur.

The study was conducted from 1st January 2005 to 31st December 2005. For this study total 205 cases were randomly selected & 110 cases were male and 95 cases were female with age ranges 12-80 years. A predesigned proforma was used to record the detailed clinical data including age, sex, occupation, any relevant past history, positive family history and personal history especially smoking history. Associated other medical diseases such as diabetes mellitus, hypertension, ischemic heart diseases were also noted.

Investigation data including haematological, sputum analysis, imaging tests were documented.

Result:

Total number of patients were	=205
According to age:	
Below age 40 yers	=132
Above age 40 years	=73
According to sex:	
Male	=110
Female	=95
According to diseases:	
Bronchial asthma	=89 (Male =54, Female =55)
COPD	=27 (Male =21, Female =0)
Viral respiratory infection	=40 (Male =14, Female =19)
Tuberculosis	=21 (Male =08, Female =05)
Consolidation (Pneumonia)	=12 (Male =03, Female =01)
Corpulmonale	=02 (Male =01)
Pleural effusion	=08 (Male =03, Female =02)
Empyema thoracics	=02 (Male =01)
Fibrosis of lung	=04 (Male =01)

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Clinical presentation:

All patients in this series presented with cough with or without sputum. Associated most of the patients presented with breathlessness in some cases episodic in nature and in some cases progressive in nature. In all COPD patients there was h/o smoking. A few patients presented with haemoptysis, loss of appetite, weight loss. There was also pleuritic chest pain in some cases. Fever was the predominant presentation of viral respiratory tract infection and in pneumonia.

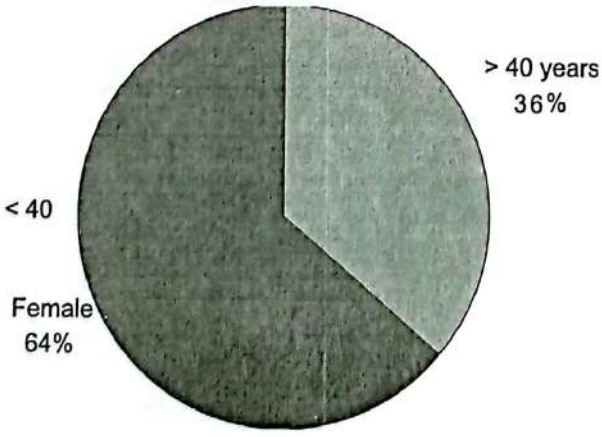
Diagnosis was based mainly on the history & physical findings. But chest X-ray was done to have a clear picture of the disease. Baseline spirometry with reversability test were done in few cases to differentiate bronchial asthma from COPD.

In cough variant asthma Bronchoprovocation challenge test was done to establish the diagnosis. Two cases were referred to NIDCH, one was empyema thoracis and another was haemorrhagic pleural effusion due to malignancy.

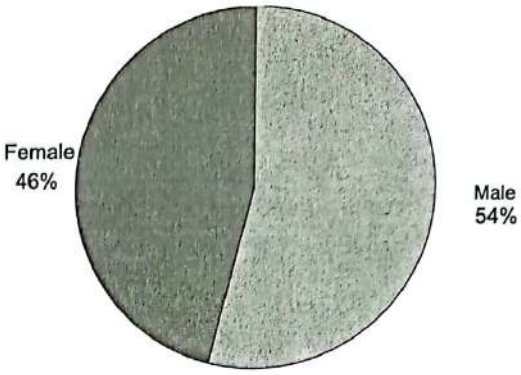
Demographic Data:

Parameters		Total Patients	Survivors	Non survivors
Age	<40 years,	132	128	0
	>40 years	73	0	0
Sex	Male	110	107	0
	Female	95	94	0
Associated Diseases	Present	86		
	Absent	120		

No of patients according to age



No of patients according to sex



Leading Symptoms:

Symptoms	No. of patients	Percentage
Cough	194	32
Sputum	113	19
Breathlessness	142	24
Heamoptysis	21	4
Chest pain	33	6
Fever	90	15

Discussion:

Respiratory diseases are the common problem in medical practice in both OPD and hospitalized patients.

All the patients having respiratory diseases present themselves with one or more of the symptoms such as cough, sputum, breathlessness, haemoptysis, chest pain, wheezing. But among them cough is the predominant symptoms of all. Cough may be productive or unproductive. With the proper history taking we can suspect what is the cause of cough might be. As for example, when a patient present himself with cough which occur more at night or in the early morning suspicion goes towards bronchial asthma with or without breathlessness[2]. But if the patients has risk factor of cardiac disease & has orthopnea then diagnosis goes more in favour of cardiac asthma. We establish the diagnosis with physical examination & investigations (ECG & CXR). When a patient of aged >40 years present with morning cough with sputum which occurs more in the winter season initially then becomes all the year round with h/o cigarette smoking leads to chronic bronchitis (COPD) and when the sputum appears yellowish it is due to bacterial infection. The respiratory tract infection may be due to viral or bacterial present with short history of fever, cough with sputum. Physical exam can reveal whether it is pneumonia or not. Unexplained fever for more then 3 weeks

with cough, sputum, haemoptysis goes in favours of pulmonary tuberculosis. Again cough, sputum, haemoptysis in young adult occurs in the morning, more on change of posture goes in favour of bronchiectasis. In an elderly patient with cough, sputum, scanty haemoptysis, h/o cigarette smoking suspicion goes towards malignancy (Bronchogenic carcinoma)[3].

Sudden chest pain may be due to spontaneous pneumothorax or pulmonary infarction or due to cardiac origin[4].

Physical examination can bring the possibilities in a narrow range. As for example vesicular breath sound with prolonged expiration with widespread rhonchi brings possibilities of bronchial asthma or COPD. Bronchial breath sound signifies consolidation; basal crepitations bring possibilities of LVF, Bronchiectasis, resolution phase of pneumonia, interstitial lung disease.

Conclusion:

In this study, total patients were 190 patients & among them they are distributed as followes:

Name of the Diseases	No of patients	No of patients in %
Bronchial asthma	89	43
COPD	27	13
Viral respiratory infection	40	20
Tuberculosis	21	10
Consolidation	12	6
Corpulmonale (pneumonia)	02	1
Pleural effusion	08	4
Empyema thoracis	02	1
Pulmonary fibrosis	04	2

Respiratory diseases are common medical problem are to be encountered in medical practice.

In this series, bronchial asthma was found more prevalent in the area of Tongi attended in this International Medical College Hospital.

Among the infection viral respiratory tract infection was the second commonest.

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Analysis of 72 cases of Tetralogy of Fallot who had Undergone Cardiac Catheterization in Catheterization Laboratory of Combined Military Hospital, Dhaka

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Abstract :

Aim: Aim of this study was to analyze the 72 cases of Tetralogy of Fallot (TOF) who had undergone Cardiac Catheterization in the Catheterization Laboratory of Combined Military Hospital (CMH) Dhaka.

Methods : It is a retrospective study. Study period extends from January 1999 to December 2002. Datas were collected from the register maintained in the Cardiac Catheterization Laboratory, Echo Laboratory and Cardiac out patient department.

Variables : Age and sex distribution of patients, Associated cardiac anomalies, type of surgery offered, place of surgery, outcome of surgery, residual problems or complications after surgery.

Result : Out of 72 cases 45 (62.5) were male and 27 (37.5%) were female. Ages of 35 (48.61 %) cases were less than 3 years. Twenty-seven (37.50%) were in > 3-10 years group and 10 (13.89%) cases were in > 10 years age group.

Associated anomalies like atrial septal defect was present in 8(11.11%) cases, additional ventricular septal defect in 3(4.1 6%) cases, pulmonary atresia in 5(6.94%) cases, Atrioventricular septal defect in 3 (4.16%) cases. Abnormalities of pulmonary artery was present in few cases. Absent left pulmonary artery (LPA) was found in 3 (4.16%) cases, absent right pulmonary artery (RPA) in 1(1.39%) case and disconnected RPA was found in 1(1.39%) cases. Peripheral pulmonary stenosis was noticed in 5 (6.94%) cases. Abnormalities of coronary artery was noticed in some cases as well. Major coronary crossing the right ventricular outflow tract (RVOT) was detected in 3 (4.16) cases, single left coronary artery (LCA) in two cases (2.78%) and single right coronary artery (RCA) was detected in 1(l .39%) case. Sixty nine cases were accepted by surgeons for surgery, 11(15.94%) had Blalock - Taussig (BT) shunt and rest had total intracardiac repair. Five (7.24%) cases expired after surgery. Eleven cases were lost from follow up after surgery, 53 cases were still under follow up. Few cases had residual problems like (a) Residual large VSD in one (1.89%) case (b) Residual mild pulmonary stenosis in 7 (13.20%) cases (c) Moderate residual pulmonary stenosis in 2 (3.77%) cases. (d) RPA, LPA origin stenosis in 2 (3.77%) cases (e) Small residual VSD in 6 (11.32%) cases Severe TR in 2 (3.77%) cases (g) Severe PR in 5 (9.43%) cases. Right bundle branch block was detected in 50 (94.33%) cases. Surgery of 11 patient were performed by surgeons of Bangladesh but rest by the cardiac surgeons of other countries.

Conclusion: Surgery should be offered to TOF cases in earliest possible chance to avoid complications. At present policy of our center is to offer surgery around the age of one year. By that we would be able to avoid Complications related to TOF and TOF surgery in future.

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Introduction:

Tetralogy of Fallot (TOF) classically consists of the combination of obstruction to right Ventricular outflow tract or pulmonary stenosis, ventricular septal defect, aortic override and right ventricular hypertrophy. [1,2] Nine percent of infants seen with critical congenital heart disease in first year of life have the tetralogy of Fallot (.196-0.258/1000 live births). [3,4] It is the commonest cyanotic congerital heart lesion in Bangladesh also. 5,6 -File optimal management of tetralogy of Fallot is still under debate, particularly with respect to surgical approach and the age of operation. Patient with uncorrected tetralogy of Fallot usually die in childhood or adolescence. Prognosis of surgery is good if it is offered at correct time. This study analyzed 72 cases of tetralogy of Fallot who had cardiac catheterization from the catheterization laboratory of Combined Military Hospital (CMH) Dhaka. After catheterization these patients were referred to Cardiac Surgeons and various kind of surgery's were offered to them after considering advantages and disadvantages.

As pediatric cardiology subspeciality is a new specialty in this country, proper management plan was not designed for our patient in the past. So this study finding was heterogenous and most of the parameters does not correlate with other international study. But this study will set up a baseline for future studies in our country.

Materials and methods

This is a retrospective study carried out in the cardiac catheterization laboratory of Combined Military Hospital(CMH) Dhaka. Study period extends from January 1999 to December 2002.

Datas were collected from the register maintained in the catheterization laboratory. Some additional datas were collected from paediatric cardiology out patient department (OPD) register and Echocardiography register. Any patient with diagnosis of tetralogy of Fallot who had catheterization were included in the study. Cases of TOF who were not catheterized were not included in the study.

Total 72 cases had undergone catheterization in four years period. Particulars of these cases like age, sex, weight etc were recorded. Their cardiac catheterization reports and CD films were analyzed properly. Management plans were designed for each patient after discussion with surgeons.

During reviewing CD film coronary anatomy, overriding of Aorta, pulmonary artery anatomy , infundibular stenosis, position of aortic arch, size of right ventricular cavity were carefully observed. Associated other lesions were noted . Two cases were not accepted by surgeon after reviewing CD film. Follow up data after surgery were recorded from the out patient department register and echo register. Post operative investigations like chest X-ray, ECG, Echocardiography of each patient was performed at 06 weeks, 03 months, 06 months, one year after surgery and yearly thereafter. All these records and clinical examination notes were documented. Result of surgery was analyzed. Presence of Complications like residual ventricular septal defect (VSD) Pulmonary stenosis (PS) or others were noted.

Need for redo surgery was also assessed. Tabulation of data was done with the help of computer.

Results:

Out of 72 cases 45 (62. 5%) were male and 27 (37.%) were female (Table-I). Thirty five (48.61%) cases were less than 3 years old, 27 (37.50%) were in 3-10 years group and 10 (13.89%) were in more than 10 years age group (Table-II). Associations of other cardiac lesions along with TOF were

Table -I

Sex to the patient (N-72)

Sex	No.	Percentage
Male	45	62.5%
Female	27	37.5%

Analysis of 72 cases of Tetralogy of Fallot who had undergone cardiac catheterization in catheterization laboratory of Combined Military Hospital, Dhaka.

Table -II

Age of the patient (N-72)

Age in years	No.	Percentage
< 3	35	48.61%
3-10	27	37.50%
>10	10	13.89%

Analysis of 72 cases of Tetralogy of Fallot who had undergone cardiac catheterization in catheterization laboratory of Combined Military Hospital, Dhaka.

tabulated in table-III. Fourteen (19.44%) Patients had right aortic arch. Atrial Septal Defect (ASD II) was noticed in 8(11.11.%) cases, pulmonary atresia in 5 (6.94%) cases, additional muscular ventricular septal defect (VSD) in 3 (4.16 %) cases, Atrio -ventricular septal defect (A-v canal) in 3 (4.16%) cases. Absent left pulmonary artery (LPA) in 3 (4.16 %) cases, absent right pulmonary artery (RPA) in one (1.39) Case, disconnected RPA in one(1.39%), origin or peripheral stenosis in RPA and LPA in 5 (6.94) cases, major coronary crossing Right vertricular outflow tract (RVOT) in 3 (4,16%) cases, major aortopulmonary collateral (MAPCA) in 5 (6.91%) cases. Single left coronary artery (LCA) was noticed in 2 (2.78%) cases and single right coronary artery (RCA) in 1(1.39%) case. Table IV showed the type of surgery offered to the patient. Most of the patient had (50.72%) total repair with transannular and RVOT patch. Table-V showed place of surgery. Majority of patients (84.04%) had surgery from abroad. Table-VI showed follow up analysis of patients who had undergone surgery. It may be mentioned here that eleven cases were lost from follow up after 3-6 months of surgery.

Table -III

Association with TOF (N-72)

Anomaly	No.	Percentage
Right Aortic Arch	14	19.44%
ASD 11^0	8	11.11%
Additional Muscular VSD	2	4.16%
Pulmonary atresia	5	6.94%
AV canal defect	3	4.16%
Absent LPA	3	4.16%
Absent RPA	1	1.39%
Disconnected RPA	1	1.39%
Peripheral / Origin Stenosis of RPA, LPA	5	6.94%
Major Coronary Crossing RVOT	3	4.16%
Single LCA	2	2.78%
Single RCA	1	1.39
MAPCA/PDA		6.94%

Table -IV

Type of surgery offered & Mortality (N-69)

Type of Surgeries	No (%)	Mortality
BT Shunt	11(15.94%)	1
Total repair with transannular patch and RVOT Patch	45(65.21%)	4
Total repair Through Transatrial approach	7(10.14%)	Nil
Total repair with conduit	6(8.69%)	Nil
Others Rt & Lt Pulmonary Arterioplasty Peripheral angioplasty Reconstruction of PA'sand embolization	11 (15.94%)	Nil

Table -V

Place of surgery & Mortality (N-69)

Place	No (%)	Mortality
Bangladesh	11 (15.95%)	3
Abroad	58(84.05%)	2

Table -VI

Follow up analysis of patients (N-53)

Type of Problem detected	N (%)	Management given
1. Residual large VSD	1(1.89%)	Operated again after 6 months
2. Residual Small VSD	6(11.32%)	No treatment required
3. Residual Moderate pulmonary Stenosis	2(3.77%)	One had redo surgery after 1 year.
4. Mild residual Pulmonary stenosis	7(13.20%)	No treatment required
5. Mod VSD, Mid PS & PHT	1(1.89)	Refereed to surgeon.
6. LPA and RPA origin stenosis	2(3.77%)	Under follow up
7. Severe tricuspid regurgitation	2(3.77%)	Returned back to Surgeon after 3 years of repair.
8. Dilated RVOT with pulmonary regurgitation	5(9.43%)	Under follow up
9. Right bundle branch block	50(94.33%)	No treatment required

Discussion:

The child with tetralogy of Fallot is discovered to have a murmur at birth.[3] Cyanosis at birth is not common unless there is pulmonary atresia, and even with pulmonary atresia, cyanosis may not be visible if there is extensive collateral circulation .

Age of diagnosis in our study was late as trained doctor for doing work-up for such cases were not available earlier. Some of the infant of TOF may present with acute respiratory distress syndrome due to cyanotic spell[2]. During the study period of 4 years, 129 cases of Tetralogy of Fallot's (TOF) were admitted to paediatric cardiology unit of CMH Dhaka. Thirty of them were newborn and 27 were young infant. Fifteen cases were referred to surgeon for urgent Blalock-Taussig(BT) shunt without cardiac catheterization . Some cases were under medical management and awaiting cardiac catheterization or surgery in proper time. Only 72 cases had catheterization and they were in more then one year age group.

The exact nomenclature for tetralogy of Fallot is reviewed for the purpose of establishing a unified reporting system [y] All efforts were made to include all relevant nomenclature categories. The general categories of TOF are : classic TOF with varying degree of PS, TOF with common A-V canal defect, TOF with absent pulmonary valve.[9] In our study majority of (69 cases) patients were classic TOF and only 3 had TOF with AN canal defect. We have not seen any cases of TOF with absent pulmonary value syndrome. Right aortic arch was found in 19.44% cases. It correlates with other study which showed 20% right aortic arch[2]. Absence of one pulmonary artery usually left may be associated with TOF, Some time they remain disconnected with the pulmonary trunk [101] ~. This kind of association was found in our study.

ASD secundum was found in 11.11% cases of TOF. In one study conducted in children's Hospital of Pittsburgh, showed 58% incidence of interatrial communication[1,2]. In our study patients were older and ASD may closed by the time catheterization had done. In a study conducted in Mayo clinic AN canal defect was found with TOF in 8% cases. [13] In our study association of AN canal was noticed in 4.16% cases. In our study whenever the cases reported to us we had finished the work-up including catheterization of cases and send

them to surgeon for repair, because most of the cases had late presentation. Eleven (15.94%) cases had BT shut as pulmonary artery size was small, 45(65.21%) cases had repair with transannular and RVOT patch. Seven (10.14%) cases had repair through trans-atrial approach, 6 (8.69%) cases had repair with conduit.

One study was conducted in Royal Liverpool Children's Hospital to determine the timing and age of surgery .[7] Median age for surgery was 15.5 months. Operation's were trans-atrial in 10.6% cases, trans-atrial and trans-pulmonary in 31.8% cases, trans-atrial and trans-ventricular in 31.8%

cases and homograft conduit was used in 5. 3% cases. Another study conducted in Hannover Medical School Germany showed that early one-stage repair of TOF in infancy was associated with low rate of re-intervention. [14] Growth of pulmonary artery was also found excellent. Another study showed complete repair of acyanotic TOF can be performed in early infancy with low risk and low requirement for transannular patching. 15 Surgical approach greatly depends on coronary anatomy[16]. From the surgical standpoint, in two-third cases with TOF, PS and a major coronary crossing the RVOT, conduit placement was avoided with excellent haemodynamic results[16]. Echocardiography can give enough clue about coronary anatomy. In our series all such cases where major coronary crossing RVOT had conduit placement.

Surgical risk for total correction is now under 3%[2] in our study mortality was 7.25%. Reason for high mortality is probably late timing, wrong selection of case and lack of experience of surgeons in some cases. Residual problems following surgery in this study was within reasonable limits.

Conclusion:

Surgery for tetralogy of Fallot is usually delayed until symptom develop. Early correction is avoided because of a perceived increased requirement for trans-annular patching but may allow normal RVOT development, especially in acyanotic children. In our series surgery was late as paediatric cardiology and cardiac surgery service was very limited at that time. So mortality and complications were high compared to study in other advance center.

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Transthoracic Fine Needle Aspiration Cytology in the Diagnosis of Lung Cancer - A Comparison Between Samples Obtained Under Guidance of Fluoroscopy Versus Computerized Tomography

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Abstract

This prospective study was conducted in the National Institute of Diseases of the Chest & Hospital (NIDCH), for a period of two years starting from January '2004 to December 2005. The main objective of the study was to determine & establish the accuracy & usefulness of F-FNAC in the diagnosis of lung cancer. Total number of enrolled patient was ninety (90) but finally fifty- seven (57) patients completed the study. F-FNAC was performed in 57 cases. Among them 46 (80.7%) were true positive & 7 (13%) were false negative for malignancy in respect to CT-FNAC. Thus the sensitivity K specificity of F-FNAC in the detection of lung cancer were 86.8% & 100%, respectively. The diagnostic accuracy of F-FNAC was 80.7%, which does not differ significantly to that of CT-FNAC (p>0.05). Complication rates were minimum, there was no death & no serious complication in both the procedure. In this study it was observed that F-FNAC is an easier, reliable & cost effective method in detecting lung cancer in comparison to CT-FNAC procedure. In our country CT is not available at many centres including NIDCH. So F-FNAC can be employed as a suitable alternative in our country as it is less costly relatively easy & also available even in district set-up.

[Chest & Heart Journal 2006; 30(2) : 98-105]

Introduction

During the twentieth century lung cancer has emerged as the most common form of malignant disease in the developed countries but the incidence is increasing rapidly in developing countries because of changing cigarette-smoking habits. The lifetime risk is in men & 1/20 in women. Lung cancer remains rare in those under forty (40) years of age & in lifetime non-smokers[1].

It is the pathologist who most frequently makes the initial diagnosis of lung cancer, often 6N - cytological techniques alone. The frontier for obtaining adequate material is fine needle aspiration cytology (FNAC). If lung cytology is to be used for diagnosis and prognostication its sensitivity and specificity needs to be high. Of all cytological procedures FNAC has the highest sensitivity. Over all it has been proved to be the most accurate tool in the diagnosis of lung carcinoma, compared to conventional respiratory cytology, i.e., sputum and bronchial material. The incidence of complications is low. The intrinsic advantages of FNAC are safety, minimal trauma to the patients and rapidity. Unnecessary surgery

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is avoided in the patients with lung malignancy, validating the cost and time effectiveness of this diagnostic manoeuvre[2].

The modern era of percutaneous lung biopsy begin in 1965[1] with the work of Dahlgren and Nordenstrom[3], who showed that fluoroscopically guided 'fine- needle' biopsy had a high diagnostic yield with a low complication rate.

In our country limited CT facilities are available in government centers. It is only available only some non-government centres and the procedure is costly one. We have tried to develop a procedure by which most of the patients with suspicious lung cancer can he diagnosed. Moreover the procedure will be cheaper, less hazardous for the patients& can be performed even in the district hospitals where a chest physician or a trained patholooist, can perform it with minimum resuscitation facilities & available fluoroscopic help. But the efficacy & safety of F-FNAC procedure is not established yet in our cowntry. It' this can be established then it can be performed anywhere in the country with minimum facilities. Sufferings of the patients will be less. Lung cancer can be diagnosed earlier & a better patient management is possible.

Methods & Materials

Place of study

The study was carried out in the department of respiratory medicine, National Institute of Diseases of the Chest & Hospital (NIDCH), Mohakhali, Dhaka.

Period of Study

The study was conducted from January 2004 to December 2005[1]

Type of Study

It was a prospective study.

Study Population

Suspected cases of lung cancer that fulfilling the inclusion and exclusion criteria were included in this study.

Sample Size

Initially 90 consecutive patients were included in the study. But during the study period ?(two) patients died before procedure, I (one) patient absconded, 12(twelve) patients were discharged on request and 18(eighteen) patients refused to perform the CT-FNAC procedure. These 33 (thirty three) cases were excluded from the study and finally the total number of 'patients who completed the study was 57(fifty seven).

Sampling technique

It was a consecutive study

Critirea for Selection of Patients

Criteria of inclusion

- Persistent/gradually increasing radiological shadow measuring at least 3cm or more in diameter, inspite of 2 weeks broad- spectrum antibiotic or one month anti-TB drugs with or without following symptoms and signs:

  I. Cough

  II. Chest pain

  III. Haemoptysis

  IV. Weight loss

  V. Digital clubbing

  VI. Lymphadenopathy

  - Age> 40 years

Criteria of exclusion

- Significantly disabled patients due to poor general condition
- Associated systemic or pulmonary diseases; Recent MI, Bullous changes,Vascular lesions.
- Haemorrhagic diathesis, anticoagulant therapy.
- Sputum specimens positive for AFB.

Study Procedures

- Preparation of questionnaire proforma
- Consent taking of the patient
- Recording of patient's information ,
- Identification of patients clinically suitable or inclusion as cases
- Laboratory investigation,

  X-ray chest P/A & Lateral view
  Blood for 'TC DC ESR Hb%s
  Sputum for malignant cell & AFB
  BT, CT & platelet count
  ECG
  RBS

Study proper

FNAC was done as per standard procedure in the Radiology & Imaging department of NIDCH. The slides were immediately sent to Pathology department. The patient remained in observation room for an hour to see any immediate complication in necessary cases immediate x-ray chest was done & managed accordingly. In remainder patients CXR had done in the next morning for detection of pneumothorax. After three days all patients sent for CT-FNAC in a Private Medical Services.

Data collection & processing

The results were collected from laboratory. Slides of F- NAC were examined by, Professor & Head, Department of Pathology & Microbiology, NIDCH and Professor & Head, Department of Pathology, DMCH and slides of CT-FNAC were examined by Professor of' Cytopathology, NICR&H. All data were recorded and processed in a predetermined proforma.

Data analysis and thesis making

All the collected data were compiled and tabulated in a master sheet and analyzed statistically using the statistical package for social science (SPSS) program, version 12 in computer. Chi square test, unpaired student's t test, Fisher's exact test were used to find out the difference of different variables. A two- tailed p value less than 0.05 was considered as significant.

Observations and Results

Table-I

Age and sex distribution of the study patients

Age in years	Sex				Total		P value
	Male		Female				
	No.	%	No.	%	No.	%	
<50	6	12.2	1	12.5	7	12.3	
50-59	6	12.2	2	25.0	8	14.0	
60-69	26	53.1	4	50.0	30	52.6	
≥ 70	11	22.4	1	12.5	12	21.1	
Total	49	86.0	8	14.0	57	100.0	
Mean + SD (yrs)	62.1 ± 11.8		56.9±9		61.4±11.6		0.243

p value reached from unpaired student's t test (p>0.05)

Table-II

Distribution of lesions of the study patients & sex

Side of the lesion	Sex				Total		P value
	Male		Female				
	No.	%	No.	%	No.	%	
Right sided lesion	26	53.1	5	62.5	31	54.4	0.715
Left sided lesion	23	46.9	3	37.5	26	45.6	
Total	49	100.0	8	100.0	57	100.0	

p value reached from Fisher's exact test (p>0.05)

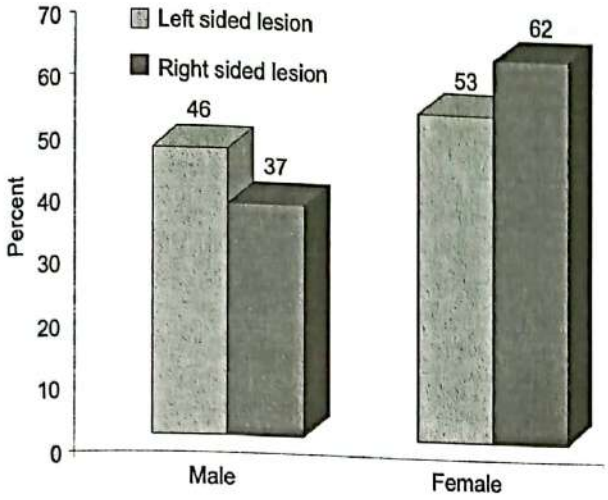

Fig.-1. *Distribution of the study patients by radiological diagnosis and sex*

Table III

Topographical Distribution of lesion among the study patients

Topographical	Number of patients	%
Peripheral	40	70.2
Central	17	29.8
Total	57	100.0

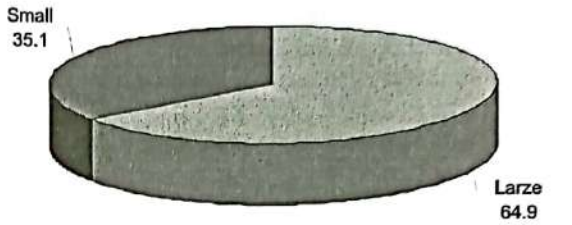

Fig.-2. *Representation of the patients by size of the lesions*

Table IV

Interpretation of F-FNAC non malignant results

True negative cases	CT FNAC Finding
Case 1	Lung abscess
Case-2	Inflammatory lesion
Case 3	Inflammatory lesion
Case 4	Aspergilloma
False negative cases	
Case 1	Adenocarcinoma
Case 2	Adenocarcinoma
Case 3	Squamous cell carcinoma
Case 4	Squamous Fell carcinoma
Case 5	Squamous cell carcinoma
Case 6	Non small cell carcinoma
Case 7	Squamous cell carcinoma

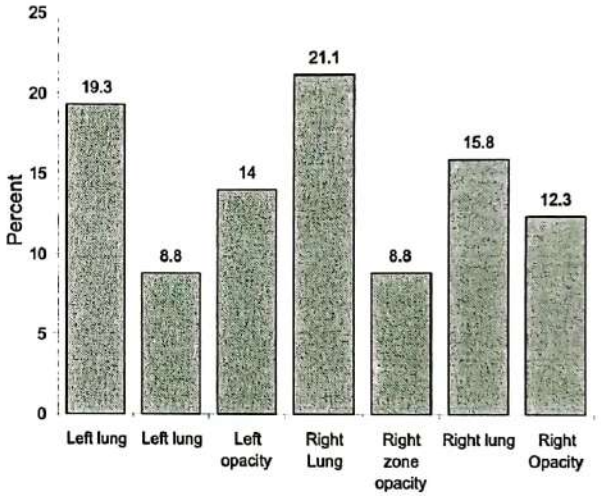

Fig.-3: *Graphical representation of radiological findings.*

Table V

Sensitivity and specificity analysis of F-FNAC and CT-FNAC

FNAC	Diagnosis by CT-FNAC				Total	
	Positive		Negative			
	No.	%	No.	%	No.	%
Positive	46	86.8	0	0.0	46	80.7
Negative	7	13.2	4	100.0	11	19.3
Total	53	100.0	4	100.0	57	100.0

Sensitivity 86.8%
Specificity =100.0%
Positive predictive value= 100.0%
Negative predictive value=36.7%
Predictive accuracy=87.7%

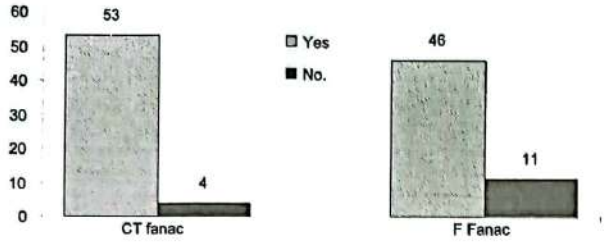

Fig.-4: *Comparison of diagnostic accuracy between CT FNAC and F FNAC procedure*

Table VI

Procedural complications between F-FNAC & CT-FNAC

Complications	Diagnostic procedure				p value
	F-FNAC (n=57)		CT-FNAC (n=57)		
	No.	%	No.	%	
Chest pain	20	35.1	21	26.8	0.956
Haemoptysis (minor)	12	21.1	10	17.5	
Haemoptysis (major)	0'	0.0	0	0.0	
Pneumothorax (small)	4	7.0	5	8.8	
Pneumothorax (large)	6	0.0	0	0.0	
No complications	36	63.2	36	63.2	

*Multiple responses

p value reached from chi square test

Table VII

Comparison cost between F-FNAC and CT-FNAC

Procedure	Cost in Taka	
	F-FNAC No. %	CT-FNAC No. %
CT scan	0.0	3000.0
	700.0	0.0
FNAC charge with cytology	2000.0	2000.0
Total	2700.0	5000.0

Discussion

During the twentieth century lung cancer has emerged as the most common form of malignant disease in the developed countries but the incidence is increasing rapidly in developing countries because of changing cigarette-smoking habits. The lifetime risk is in men & 1/20 in women. Lung cancer remains rare in those under forty (40) years of age & in lifetime non-smoker.

This prospective study was carried out in the department' of respiratory medicine of National Institute of Diseases of the Chest & Hospital (NIDCH) from January'2004 to December'2005. Initially ninety (90) consecutive patients were included in the study but during the study period thirty-three (33) cases were excluded from the study & finally the total number of patients who completed the study were fifty- seven (57).

Pulmonary mass can be safely & accurately diagnosed by means of Fine Needle Aspiration Cytology (FNAC) using image amplifier fluoroscopy for guidance of the needle. This is true whether the lesion is large or small, central or peripheral & benign or malignant. It is usually performed on an outpatient basis in the Radiology & Imaging department with tine needle (23G) & local anesthesia being used so that little or no pain will be experienced by the patient. [4]

Since the aspiration can executed on an outpatient basis & may provide a definitive answer within 24 hours, it offers' a means of easing an anxiety-filled situation raised when a patient is told that there is a mass in the lung. In this way we may serve definitive news, difficult problems can be overcome, reduction of & avoidance of hospitalization & reduction in the health care costs.

Sociodemographic data of the study subjects were evaluated. Patients ≥ 40 years of age were enrolled in this study. This particular age range was considered from the fact that incidence of lung cancer is unusual below this age group. The mean age of the study subjects were 60.74±13.02 years, male 61.7±12.8 & female 55.0±13.9 (Table I). This finding is similar Chesnutt & Prendergast (2005)[5] where the mean age at diagnosis of lung cancer was 60.

Analysis of the patients in respect to sex shows male predominance with a male: female ratio of 6:1. This finding correlates with the findings of Majumder (1998)[6] where male: female ratio was 10:1. The male predominance may be explained by greater prevalence rate of lung cancer in male globally.

Among the studied patients, 73.3% were smokers and 26.3% were non-smokers. This finding was

almost similar to the findings of David (1994) where 80% were smokers. The mean duration of smoking among the studied patients were 22.1±1.8 pack years ranging from 10 to 30 pack years.

Farmers were predominating in our series. This is due to fact that more than 70% of our population belongs to lower socioeconomic group and usages non-filter cigarette that contribute them to have increase risk of developing lung cancer.

Regarding predominant symptoms 35(61.4%) patients presented with cough. It was present in 66% malignant cases. Strauss7 reported cough in 60% of their patients with bronchogenic carcinoma (45% - 75%). This finding was similar with ours.

17(29.8%) patients presented with chest pain of them 32% ere malignant.14 (24.6%) patients presented with haemoptysis and 11(19.3%) patients presented with dyspnoea. On examination 30(52.6%) had weight loss followed by clubbing 15(26.3%) and palpable lymph node 12(21.1%). These findings were similar with Chesnutt & Prendergast (2005) where chest pain, haemoptysis & weight loss were 24-40%, 6-31% & 55-88% respectively.

The mean haemoglobin level for the patients was 11.6 ± 0.9 gm%. The mean ESR was 78.2 ± 18.2 ranging from 45 to 120 mm in 1" hours. The high value of ESR is significant in relation to diagnosis of lung cancer.

Sputum examination for malignant cells was done in all study subjects. It was evident that 46 (78.0%) of the patients showed negative for malignant cells and 11 (22.0%) showed positive for malignant cells. Among the malignant cases most of them (10 cases) were squamous cell carcinoma. This may be due to fact that the peripheral lesions rarely invade the bronchus and moreover the squamous cell carcinoma is usually present as a Central lesion.

X-ray. chest was done in all patients. Right-sided lesion was dominating 3l(54.4%) and left sided lesion was 26(45.6%) but this was not statistically significant; (p>0.05).

20 patients (35.1%) had lesions 3-5 cm in diameter & 37(64.9%) had lesions more than 5 cm in diameter. 40(70.2%) patients had peripheral lesion & 17(29.8%) had central lesions.

Though CT-FNAC of suspicious lung cancer is a widely accepted and simple diagnostic method but it is of relatively high cost and not available at many centers in Bangladesh including NIDCH. So in the present study we observed the efficacy as well as cost effectiveness and complications of F-FNAC as a tool for diagnosis of lung cancer in comparison with that of CT-FNAC.

Although the needle aspiration of the chest lesion has gained fairly wide acceptance, the ease and safety of the procedure & the consideration that negative results do not necessarily rule out malignancy. The sensitivity and specificity of diagnosis of lung cancer under C l guided FNAC procedures are ranging from 71%-97% & 97%-100% respectively[8].

In Out- series (n=57) CT guided' FNAC procedure revealed 53(93%) malignant cases & 4(7%) non-malignant cases, F-FNAC showed 46(80.7%) malignant cases & l l(19.3%) non-malignant cases. The findings of atypical cells suggestive of malignancy was considered a positive diagnosis, because malignancy was subsequently confirmed in these patients. Among the malignant cases (n=53) revealed by CT-FNAC procedure, 46(86.8%) cases were also diagnosed by F-FNAC. So the sensitivity of F-FNAC is 86.8%. The non-malignant cases (n=4) as revealed by CT- FNAC procedure were also negative for malignancy in F-FNAC procedure. So there were no false positive cases and specificity of F-FNAC is 100%. Thus the accuracy of F-FNAC procedure in diagnosis of lung cancer is 80.7% & 93% I in CT-FNAC but the difference was not statistically significant p>0.05.

Niden et al.[9] conducted a study in USA among 106 suspected case of lung cancer their observation revealed sensitivity and specificity of F-FNAC procedure in respect to CT-FNAC was 97% & 100% respectively.

In another series Conces, Schwenk & Doering, et al.[10] found in a series of 222 patients that the sensitivity, specificity, positive predictive value & negative predictive value of F-FNAC were 98.6%. 96.7%, 98.6% and 96.7% respectively. Our present study correlates w ith these findings.

In F-FNAC among the 11 negative cases 7 were false negative & 4 were true negative. The possible reason for failure to diagnosed malignancy lies

inadequacy of the specimen. Four of the aspirates were mainly blood, two comprised minimal material and one consisted solely of necrotic debris. Strauss (1998)[11] explains that the common reasons for false negative in FNAC were due to inadequate sampling or the sampling of necrotic tissue.

Among the malignant cases iagnosis by F-FNAC squamous cell carcinoma was predominating and it was about 33.3% followed by adenocarcinoma. Our finding corresponds to Ahmad (1998) findings where 45% was squamous cell carcinoma and 13% was adenocarcinoma. Among the other malignancy small cell carcinoma (10.5%), non-small cell carcinoma (8.8%) and other minor are large cell carcinoma and undifferentiated malignant cell.

In our study we also observe the relationship between the size and topographical distribution of the lesion with possible diagnosis of lung cancer. Among the large size lesion 75.7% diagnosis possible whereas among the small size it was 90%.

It as also evident that 94.1% diagnosis possible in central lesion whereas it was 75% in peripheral lesion. Though the diagnostic accuracy was higher in central and small lesions than peripheral and large lesions but the difference was not statistically significant ($p>0.05$). Though it was easier to obtain adequate material from peripheral lesion but the higher diagnostic accuracy in central and small lesion might be explained by the fact that most central lesions are less frequently accompanied by secondary inflammatory process there may be central necrosis than are primary bronchial tumour. The diagnostic yield was essentially as good in the small lesions as it was in the large lesions. However, it was somewhat easier to establish a definitive diagnosis by cytology in the smaller lesions. Again secondary inflammation Or lack of it might be the part of explanation. Our finding correlate well with the results of Landman, Burgener & Lim[1,2] where diagnostic yield related to size of lesion were 96% in small lesions & 78% in large lesion. In the same study it was also showed that diagnostic accuracy was 86% & 90% in central and peripheral lesions respectively.

The complications are summarized in. Complications were Minimum. The incidence of chest pain was high among the study subjects but it was transient and mild and Subsequently subsided after giving simple analgesic. There were no major complications in this series despite the fact that aorta, superior vena cava and hilar vessels were punctured on numerous occasions. Patients with haemoptysis did not require blood transfusion. Treatment of post-aspiration pneumothorax didn't require insertion of chest drainage tube. These pneumothorax were small and found absorbed spontaneously on subsequent chest radiograph one week later.

The incidence of haemoptysis and chest pain were approximately same as they were previosly-reported series of aspiration of lung Westcott[13] but the incidence of pneumothorax %%ere high (21%-33%) in the previously reported series, some *of* which required chest tube drainage. This is due to fact that they used a relatively large bore needle (20G), but our needle was fine one (23G).

We know - that there is a risk of tumour cell seedling around the needle tract after FNAC *procedure* of lung cancer. Virtually all reports *of* tumour spread by needle tract seedling are in patients aspirated by needles that were either not fine or had irregular surfaces capable of dragging cells around their periphery as they were withdrawn. But in our study we used fine needle *of* 23G where the chance this complication seems to be minimum. In our study we analyzed the cost effectiveness of F-FNAC in comparison to CT-FNAC. Our observation indicated that on an average TK 2700% required for F-FNAC and TK 5000/= required for CT-FNAC. This cost difference of two procedures is only due to the high charge of CT scan.

So F-FNAC has evolved as a useful procedure with a high diagnostic efficacy & low complication rate. It is cost effective procedure. Because smaller amounts of tissue are required for a reliable diagnosis, fine needles may be used. The ability of the pulmonologist to treat pneumothorax expeditiously not only enhances safety, but also promotes the acceptance of the procedure.

Conclusions

The study concludes that

F-FNAC is one of the effective diagnostic tool in the detection of lung cancer

F-FNAC procedure is equal to CT-FNAC regarding sensitivity, specificity & accuracy.

Complications are similar in F-FNAC and CT-FNAC

F-FNAC is less costly and less time consuming than CT-FNAC

F-FNAC is an easier and reliable method in detecting lung cancer.

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Extensive Myocardial Damage can be Predicted by Grade-3 Ischemia on the Basis of Changes In QRS Complex and ST-Segment on Admission Electrocardiogram of AMI Patient

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Abstract:

This study was carried out in the department of cardiology in NICVD, Dhaka during the period of January 2005 to June 2005. This study was undertaken to see the relation of grade-3 ischemia with indicator of myocardial damage in patients with acute myocardial infarction. A total of 200 patients with acute ST-segment elevated anterior myocardial, infarction were included in this study by some inclusion and exclusion criteria. These patients were categorized into grade-2 and grade-3 ischemia on the basis of changes in QRS complex and ST-segment on admission electrocardiogram. Patients were followed up clinically, electrocardiographically and echocardiographically. There were no significant difference found between the two groups in respect to age, sex and risk factors (p>0.05). Indicator of myocardial damage such as CK-MB, extensive anterior myocardial infarction, number of leads with ST elevation, sum of ST elevation, Selvester score, and left ventricular systolic dysfunction are significantly more in grade-3 patients than grade-2 patients. So grade-3 ischemia in AMI is predictor of more myocardial damage.

[Chest & Heart Journal 2006; 30(2) : 106-111]

Introduction:

Prognoses of acute myocardial infarction patients depend on extend of myocardial damage[1-2]. The electrocardiogram is the available test for the detection of myocardial damage. The utility of the ECG has been overshadowed by the ability of the echocardiography and nuclear cardiology to evaluate possible myocardial damage and cardiac dysfunction. Resting left ventricular function is one of the most important factors for risk stratification after acute myocardial infarction. The left ventricular function after acute myocardial infarction depends on ischemic area, size of infarction or extends of myocardial damage and functional status of the residual myocardium[2,3]. A number of studies investigate to predict infarct size and assess prognosis by the admission electrocardiogram. Most of the studies concentrated on either the number of leads with ST elevation (or deviation) or the absolute value of ST elevation (or deviation) and have yielded conflicting results[2,4,5,6]. All these studies were based on the assumption that each lead represents the same amount of myocardium and that a similar size of ischemic area in different segments of the left ventricle will result in similar magnitude of ST deviation in the same number of leads. However, the 12-lead electrocardiogram equally represents not all myocardial regions. Furthermore, involvement of opposite regions may cancel or augment ST deviation[7]. To overcome the unequal representation of the myocardium by the different

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leads, another technique has been suggested[8,9]. In this technique, the maximal points of the Selvester QRS score[10,11] are given for every lead with ST elevation. The sum of these points time three is considered to represent the actual size of the ischemic myocardium at risk as a percentage of the left ventricle. It is time consuming and difficult to practice.

Birnbaum et al described an alternative method for predicting both prognosis and final infarct size from the initial pattern of the admission electrocardiogram[12,13,14]. In this method, patients with ST elevation and positive T waves in the leads with ST elevation are divided into two groups, based on the assessment of the relation between the terminal portion of the QRS complex and level of the J-point of the ST-segment in those leads. Irrespective of the number of leads with ST elevation or the absolute sum of ST elevation, patients with the most extreme abnormality of the QRS/ST-J relation (termed grade-3 ischemia) have increased mortality rates and larger infarct size[15,16], higher incidence of reinfarction[17], higher rates of no reflow with primary angioplasty 18 and less limitation of the infarct size by thrombolytic therapy [14]. Shortly after occlusion of a coronary artery, serial electrocardiographic changes are detected in leads facing the ischemic zone. First, the T waves become tall, symmetrical and peaked (grade-1 ischemia); second, there is ST-segment elevation (grade-2 ischemia) without distortion of the terminal portion of the QRS; and third, changes in the terminal portion of the QRS complex appear (grade-3 ischemia).

Grade-3 ischemia was defined as (1) absence of an S wave below the TP-PR isoelectric baseline in leads that usually have an Rs configuration (leads V_1 through V_3) or (2) emergence of the J-point at >_50% of the R-wave amplitude measured from the TP-PR baseline in all other leads. Grade-3 criteria in at least 2 adjacent leads were required[19].

Materials and Methods:

This prospective study was carried out in the department of cardiology in National Institute of Cardiovascular Diseases, Dhaka during the period of January 2006 to June 2006. This study was undertaken to see the relation of grade-3 ischemia with extend of myocardial damage in patients with acute myocardial infarction. A total of 200 patients with acute ST-segment elevated anterior myocardial infarction were included in this study by some inclusion and exclusion criteria. These patients were categorized into grade-2 and grade-3 ischemia on the basis of changes in QRS complex and ST-segment on admission electrocardiogram. Patients were followed up clinically, electrocardiographically and echocardiographically. Indicator of myocardial damage such as CK-MB, extensive anterior myocardial infarction, number of leads with ST elevation, sum of ST elevation, Selvester score, LV EF, heart failure and death evaluated in both groups. All data were analyzed by using computer based SPSS program.

Observations and results:

A total of 200 patients with acute ST-segment elevated anterior myocardial infarction were evaluated by standard 12-leads electrocardiography. The patients were categorized into two groups such as, grade-2 ischemia, 140(70%) and grade-3 ischemia 60(30%). The mean(±SD) age of the patients was 49.2 ± 11.3 years ranging from 28 to 67 years.

No statistically mean age difference was found between two group ($p>0.05$). It was evident that out of 200 patients, 174(87.0%) were male and 26(13.0%) were female. Table -1 shows the difference of the site of MI was statistically significant ($P<0.05$) indicating anterior (apical) MI was higher among grade-2 patients whereas extensive anterior MI was higher among grade-3 patients.

Table –I

ECG presentation of the patients- site of MI

Site of MI	Study subjects			
	Grade-2	Grade-3	Total	P value
Extensive anterior	16(11.4)	38(63.3)	54(27.0)	0.001[s]
Anteroseptal	54(38.6)	18(30.0)	72(36.0)	
Anterior(Apical)	58(41.1)	4(6.7)	62(31.0)	
Anterolateral	12(8.6)	0(0.0)	12(6.0)	
Total	140(70.0)	60(30.0)	200(100.0)	

Figures in parenthesis indicate percentage.
P value reached from chi-square analysis.
S= Significant ($P<0.05$).

Table-II shows, a significant difference was found between two grades of patients in terms of number of leads with ST elevation, sum of ST elevation and Selvester score (P<0.05), but no statistically significant mean difference was found in terms of heart rate per minute and QRS duration in ms (P>0.05).

Table-III shows a statistically significant mean difference of CKMB was found at 6 hours (P<0.05) indicating the mean CK-MB level increased at 6 hours (81.07±30.8 U/L) among the patients of grade-3 patients than grade-2 patients (69.69±17.2 U/L).

Table-IV shows echocardiographic mean percent of ejection fraction was 53.7±8.2 in grade-2 patients and 39.3±6.0 in grade-3 patients. It was found that the mean percent of ejection fraction was significantly lower in grade-3 than grade-2 patients.

Chest pain (persistent/recurrent) developed in 30 patients, 12(8.6%) in grade-2 and 18(30.0%) in grade-3. Killip's class III to IV heart failure developed in 6 patients, all of them among grade-3 patients indicating severity of heart failure was significantly higher among grade-3 patients. In grade-3 patients, most frequent arrhythmia PVC 20(33.3%) followed by VT 6(10.0%), VF 6(10.0%) and SVT 2(3.3%) were significantly higher among the grade-3 patients. 4 patients died, all from grade-3 patients group.

Table-II

Other ECG findings of the study patients

Characteristics	Study subjects		Total	P value
	Grade-2	Grade-3		
Heart, rate/min	85.51±15.2	87.90±17.6	86.23±15.9	0.496^{ns}
No. of leads with ST elevation	3.77±1.1	6.23±1.5	4.51±1.6	0.001^{s}
Sum of ST elevation(mm)	10.46±5.1	25.90±9.9	15.09±9.9	0.001^{s}
QRS duration (ms)	80.26±24.5	65.16±54.5	75.73±36.5	0.058^{ns}
Selvester score (final)	5.84±2.9	10.90±3.3	7.36±3.8	0.001^{s}

P value reached from chi-square analysis.

S= Significant (P<0.05).

NS= Not significant (P>0.05).

Table-III

Cardiac enzyme of the study patients

Characteristics	Study subjects		Total	P
	Grade-2 (n=140)	Grade-3 (n=60)	(N=200)	value
CKMB at admission (U/L)	55.63 ±19.2	65.10 ±31.9	58.47 ± 24.0	0.070^{Ns}
CKMB at 6 hours (U/L)	69.69 ±17.2	81.07±30.8	73.10 ± 22.6	0.021'

P value reached from unpaired student's t test.

S= Significant (P<0.05).

NS= Not significant (P>0.05).

Table -IV

Echocardiographic left ventricular ejection fraction of the study patients

Left ventricular ejection fraction (%)	Study subjects		Total (N=200)	P value
	Grade-2 (n=140)	Grade-3 (n=60)		
>_55	70(50.0)	2(3.3)	72(36.0)	0.001[s]
45-54	52(37.1)	6(10.0)	58(29.0)	
35-44	18(12.9)	40(66.7)	58(29.0)	
> 35	0(0.0)	12(20.0)	12(6.0)	
Mean±SD	53.7±8.2	39.3±6.0	49.4±10.1	*0.001[s]

Figures in parenthesis indicate percentage.
P value reached from chi-square analysis.
*P value reached from unpaired student's t test.
S= Significant (P<0.05).

Discussion:

The value of the electrocardiogram in diagnosis and detection of location of myocardial infarction is well established, however, its use for predicting extends of myocardial damage has not been well defined. There fore, this study was undertaken to evaluate the relationship of grade 3 ischemia on admission electrocardiogram with extend of myocardial damage by some indicator like CKMB, location of MI , LVEF in acute anterior myocardial infarction. On the basis of ischemic grading, the study subjects were categorized into grade-2: ST segment elevation without distortion of the terminal portion of the QRS complex and grade-3: ST segment elevation with changes in the terminal portion of the QRS complex.

There were no differences in age, sex distribution, risk factors profile, presenting symptoms , history of previous angina, time of onset of symptoms to admission and thrombolytic profiles, mean time in days from admission to echocardiography , pulse rate and baseline killip class between the grade-2 and grade-3 patients in this study.

It was evident that the CK-MB was significantly rises among the grade-3 patients after 6 hours of admission (p<0.05), indicative of severity of myocardial damage.

Lower mean ± SD mmHg systolic blood pressure in grade-3 patient indicates more myocardial damage. In most cases with transmural infarction systolic pressure decrease approximately 10 to 15 mmHg from the pre-infarction state.[20]

The grade-3 patients had a greater sum of ST elevation, more leads with ST elevation and greater Selvester score than the grade-2 patients, indicate more myocardial damage. Area of myocardial tissue involvement in anterior surface is larger in grade-3 patients.

Left ventricular ejection fraction was determined on every patients by 2D echo by modified Simpson's method at 3.88 ± 1.95 days. There were more patients with LV systolic dysfunction (96.7% vs. 50%) in grade-3 ischemia than grade-2 ischemia. Mean ±SD percent of LV ejection fraction in grade-3 patients was 39.3±6.0 and grade-2 patients was 53.7 ± 8.2, significantly lower in grade-3 patients that indicate large area of myocardial infarction and more myocardial damage. In hospital complication predominant in grade-3 ischemia patients also indicate more myocardial damage.

Birnbautn Y et al.[21], showed the grade-2 patients had better LVEF and a trend toward fewer chords with wall motion abnormalities and severity of regional dysfunction was significantly greater in the grade-3 than in the grade-2 patients. Hasdai D et al[22] have studied 81 patients with first anterior acute myocardial infarction and evident that left ventricular ejection fraction of <40% was significantly more prevalent in patients who presented with terminal QRS distortion.

Conclusion:

Higher CK-MB, less LV EF, more extensive anterior MI, greater sum of ST elevation, more leads with ST elevation and greater Selvester score

in grade-3 ischemia group indicates more myocardial damage. So, grade-3 ischemia on admission electrocardiogram of acute anterior myocardial infarction is the predictor of extensive myocardial involvement. So, 12 leads ECG served as a bedside clue to the presence of more left ventricular myocardial damage will detect high risk patient and will also help in proper and prompt management of such patients.

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Surgical Management of Eventration of Diaphragm:, Experiences of 14 cases

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Abstract

14 cases of Eventration of diaphragm treated during the period of July '95 to April' 2005. Age incidence mostly during 2nd & 3rd decade of life (mean age ±sd 21.769 ±7.025). Male was predominant (Male: Female 11:3). Eventration mostly found in the left side (n=12). Clinically both pulmonary and gastric symptoms were present, 2 cases were asymptomatic. X-Ray chest, CT Scan, Fluroscopic observation of the diaphragmatic movement during respiration and Barium contrast X-Ray of stomach with Trendelenberg position was the main diagnostic tool. Preoperative diagnosis was done in 12 cases and per operative in 2 cases. Thoracotomy and plication done in all cases. Postoperative period was uneventful. Regular follow-up shown excellent symptomatic and radiological improvement.

[Chest & Heart Journal 2006; 30(2) : 112-115]

Introduction:

The term eventration derived from Latin e, out+ venter, belly, first introduced by Beclard in 1829. Eventration literally mean a condition in which all or a portion of hemidiaphragm is permanently elevated, yet retain its continuity and normal attachment to the costal margin; and differ from hernia in which diaphragm not maintain its continuity. Though it classified as congenital and acquired but in true sence eventration is a congenital condition; due to failure of muscularisation of diaphragm, where muscles of diaphragm is partially or completely undeveloped and replaced by membranous tissue. Where as in acquired condition high position of hemidiaphragm, mostly due to pathological involvement of phrenic nerve, there is atrophic muscle fiber, replaced fibrous tissue holding the same radiologic features. Patho-physiologic effect of eventration related to respiratory and some time to digestive system. The respiratory effect characterized by reduction in lung volume of affected site. Total lung capacity, vital capacity, expiratory reserve volume reduces the percent predicted value and aggravate in supine position. In new born baby there may be paradoxical respiration more in complete eventration. According to the area of involvement it may be partial, large and total.

Incidence of this clinical condition vary in different part of the world. In our country there is no study showing incidence of diaphragmatic eventration, but the condition is not rare. In this study during the period of July'95 to April'2005 total 14 cases were treated surgically. symptoms was mainly respiratory problem and post-operative result was excellent.

Material and Methods:

This prospective study was conducted in the National Institute of Diseases of the Chest and Hospital, Dhaka, Bangladesh during the period of July '95 to April '2005. Alt cases of were selected consecutively with symptoms of respiratory problem like productive or nonproductive cough, dyspnoea, recurrent respiratory tract infection , chest pain and chest discomfort specially after meal. Associated gastro-intestinal complaints of epigastric fullness and discomfort following meal and more in supine position. After excluding other causes of high up position of diaphragm, radioiogic findings of high up diaphragm was the main clue of diaphragmatic eventration. Fluroscopic

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observation of diaphragmatic movements during respiratory events and contrast radiography of upper gastrointestinal tract done . CT Scan done in 6 patients. Patients of all ages were included. 2 cases were included that diagnosed per operatively where symptoms were suspicious but radiologic and other investigations did not support the diagnosis.

Patients general conditions were evaluated properly Haematological, biochemical parameters and presence of any systemic diseases carefully assessed and treated accordingly. Operative treatment offered to all patients. Operation protocol were anterolateral thoracotomy along with upper border of the 8th rib incase of left sided eventration and posterolateral thoracomy along with upper border of the 6''' rib for right sided eventration. Intrathoracic structures examined properly, any other developmental anomaly assessed, diaphragm checked for extension of membranous part and muscular development Phrenic nerve examined for anatomical integrity and response to stimulation. On the right sided thoracotomy liver palpated over diaphragm and on left sided thoracotomy stomach palpated over diaphragm. Condition of the lung and response to inflation was assessed. Then eventrated part of diaphragm plicated . Chest closed with keeping chest tube connected with water seal system. Chest X-Ray done on 1$^{6'}$ postoperative day, chest physiotherapy and breathing exercise advised for the following days, when conditions fulfilled chest tubes removed and stitches were removed on 10th postoperative day. Follow-up done on consecutive three months and then half yearly regarding radiological and respiratory improvement.

Investigations done to diagnose Eventration

X-Ray Chest P/A & Lateral view-14

CT Scan- 6

Ba-meal with T-position-8

Per-operative diagnosis-2

Per-operative findings

Among 12 patients where pre-operative diagnosis of left sided eventration was made. After thoracotomy partial eventration were found in 2 cases and total eventration in 3 cases and large eventration in 7 cases. Per-operative diagnosis of 2 patients made where one had (age 35 years) prominent gastric discomfort specially after meal associated shortness of breath. Patient was treated for repeated respiratory tract infection X-Ray and CT Scan suggested lobar consolidation and thickened pleura of the right side. After thoracotomy it revealed right sided partial eventration of diaphragm. Plication of diaphragm done. Per-operative diagnosed other patient (age 2 years) had recurrent pulmonary infection. X-ray revealed elevated liver shadow but CT Scan shown opacity of different density resemble of germ cell tumour and CT guided FNAC revealed benign cystic teratoma. After thoracotomy it revealed partial eventration with basal collection of pleural fluid. Fluid sucked out and plication of diaphragm done.

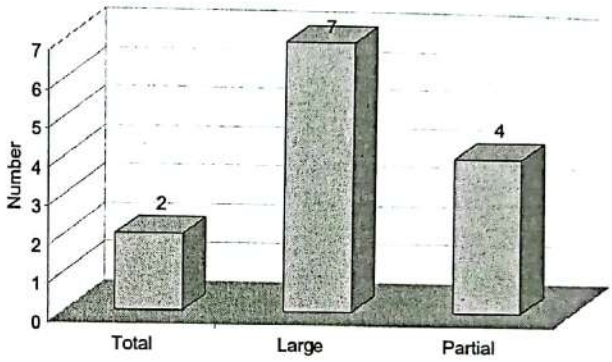

Fig.-1 : *Showing type of eventration. Large eventration occurred mostly.*

Results

Age and sex of the patients:

Age of the patients ranged from 2-35 years. Most of the patients were in 3rd decade. One patient was at 2 and one patient was above 31 years. 9 cases were in between 20-30 years. Total 11 patients were male and 3 female.

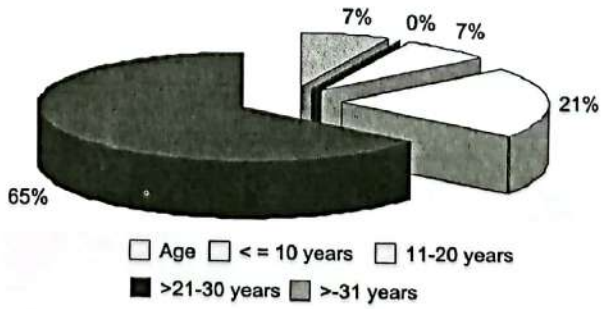

Fig-2: *Showing age distribution of patients. Most of the patients within 21-30 years*

Site of the eventration of diaphragm:, 12 patients had left sided and 2 patients had right sided eventration of diaphragm

Presentation: Pulmonary complaints
Cough with respiratory distress-7
Repeated respiratory tract infection-4
Chest pain and chest discomfort-2

Gastric complaints
Upper abdominal pain-6
Post meal discomfort-7

No complaints-2

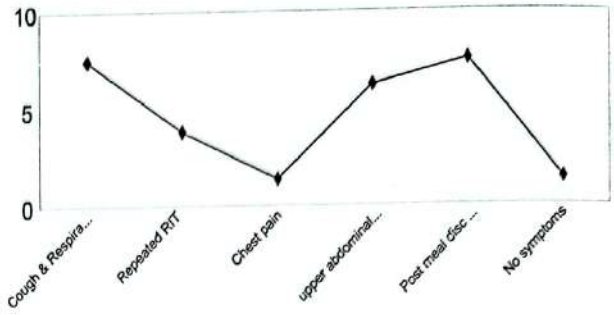

Fig-3 : *Showing clinical presentation of Eventration of diaphram*

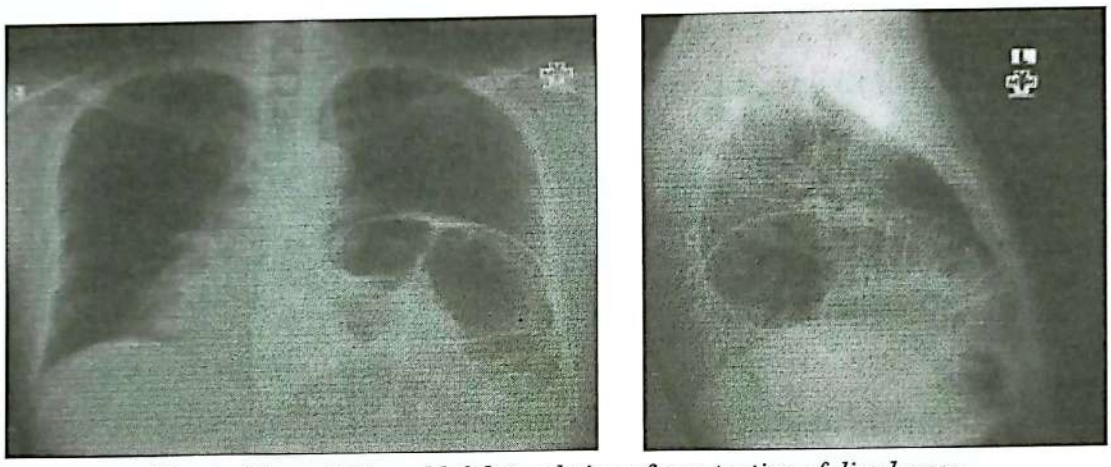

Fig-4 : *Shows P/A and left lateral view of eventration of diaphragm*

Post operative follow-up:
Immediate postoperative complain related to thoracotomy- Pain Respiratory and gastric complains- Improved

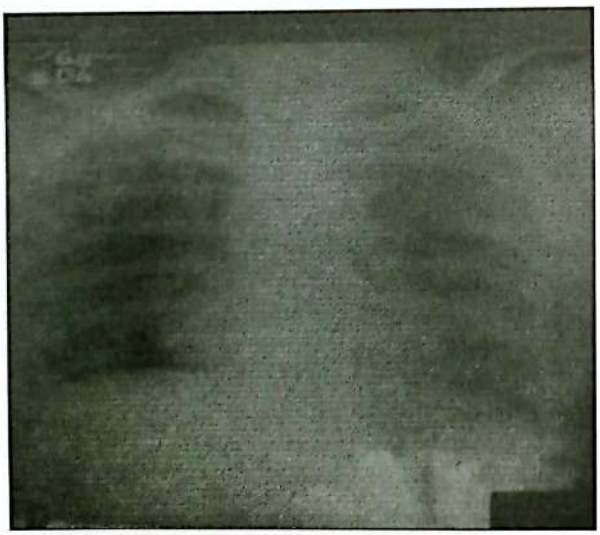

Fig.-5: *Showing postoperative chest expansion after plication of diaphragmatic eventration*

Successive follow-up — Excellent improvement of respiratory symptoms, respiratory functions and excellent radiological improvement. (Figure-5)

Discussion:

Eventration of diaphragm though it is not common problem in our country but it is not rare in surgical practice specially in the field of thoracic surgery. In this series we have experiences of 14 cases during the period of 1995 to 2005. There is no study regarding actual incidence of eventration of diaphragm in general population of our country.

Presentation depends upon extent of eventration of diaphragm. Large eventration usually present in early age and mainly with respiratory problem followed by gastrointestinal problem. In this series with large eventration there were respiratory symptoms from early childhood but delay in diagnosis causes gradual deterioration. Unexplained respiratory insufficiency should raise the suspicion of eventration in newborn[1]. Recurrent respiratory inflammation and persistent cough was

the symptom in the study conducted by Roas M and Batinica[2]. Adult patients may present with respiratory and gastrointestinal symptoms, including dysphagia, epigastric pain and eructations[3]. Regarding presentation our study also consistent with above studies.

Diagnosis of diaphragmatic eventration usually made by radiology. Diagnosis was performed with the help of a number of radiological studies such as fluoroscopic investigation, contrast study of the upper gastrointestinal system, direct X-ray graphies of the thorax, CT scan and ultrasonography, as necessary[4]. CT scan of chest can mimic a diaphragmatic eventration with tumourous lesion seen in a study[2]. In our study 2 cases was diagnosed peroperatively where one resemble germ cell tumour and resemble lobar consolidation. Operative indication include presence of symptoms, large asymptomatic eventration which may interfere with lung development and develop symptoms later on[5]. Choice of treatment diaphragmatic plication with fixing of the diaphragmatic plica to the ribs was performed through a thoracic approach in the series with no mortality or post operative complaints[6].

Video assisted thoracic surgical approach and plication of diaphragm done in series of cases with acceptable results[7,8]. In this series, plication of the redundant part of diaphragm was done with excellent result. Postoperatively , there is significant improvement of respiratory function, gastric complaints reduces and marked radiological improvement in successive follow-up.

Conclusion:

Surgical treatment of eventration of diaphragm by plication through thoracic route is easier, safe, effective and involves no morbidity or mortality. Video assisted plication may have quicker recovery than open thoracotomy. VATS still in primary stage in our country. In future with the development of this technique plication can be done with VATS and create a new hope for the patients.

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REVIEW ARTICLES

Contrast-Induced Nephropathy Interest of Cardiologist

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Abstract:

Contrast-induced nephropathy is defined as appearance or exacerbation of impairment in renal function occurring within three days following intravascular administration of contrast media and in the absence of alternative etiology. There are several risk factors that predispose to contrast-induced nephropathy-pre-existing renal dysfunction, diabetes mellitus, congestive heart failure, multiple myeloma dehydration, nephritic syndrome, vascular disease, high dose of contrast media, intra-arterial injection of contrast media, high osmolar contrast media, repeated doses of contrast media at short dose intervals, concurrent use of nephrotoxic drugs (e.g. NSAIDS, aminoglycosides), and elderly patients. Pre-existing renal dysfunction, especially when secondary to diabetic nephropathy, is the most important risk factor. Extra cellular volume expansion and use of low osmolar contrast media are the two most effective measures to prevent contrast-induced nephropathy. Overall data on N-acetyl cysteine are also favorable. Iso-osmolar contrast media are less nephrotoxic than low osmolar contrast media and may become the media of choice for patients undergoing percutaneous coronary interventions in high-risk patients. Long-term outcome after percutaneous coronary interventions is significantly worse in patients who develop contrast-induced nephropathy. Some prophylactic approaches to be effective against contrast-induced nephropathy in patients who had risk factors for developing contrast-induced nephropathy. Some of these important aspects of contrast-induced nephropathy are discussed in this article.

[Chest & Heart Journal 2006; 30(2) : 116-122]

Introduction:

Contrast-induced nephropathy (CIN) is the common cause of in-hospital acute renal failure due to a marked increase in the number of diagnostic and interventional radiological imaging procedures. Nephrotoxicity induced by contrast media varies in severity from a mild, non-oliguric, transient increase in serum creatinine to severe oliguric renal failure requiring renal replacement therapy (dialysis). The incidence of CIN in patients with normal renal function is <1% with intravenous and 2-7% with intra-arterial administration of contrast media.[1-4] The incidence is higher (16%) in nonazotemic diabetic patients.[4] The incidence may be as high as 33% in patients with preexistent azotemia.[3] Incidence of 3-16% has been reported in patients undergoing percutaneous coronary intervention[5-7] Patients undergoing percutaneous coronary interventions (PCI) often have associated risk factors for developing contrast-induced nephropathy, such as diabetes mellitus, congestive heart failure and pre-existing renal impairment. The most important risk factor is presence of renal dysfunction before angiography. Important pharmacologic and other interventions that have been studied for prevention of CIN include volume

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expansion, mannitol, loop diuretics, dopamine, dopamine-1 receptor agonist (fenoldopam), calcium antagonists, theophylline, N-acetyl cysteine, atrial natriuretic peptide, endothelin receptor antagonist, hemodialysis after contrast administration, and periprocedural hemofiltration. Both in-hospital and long term mortality are increased in patient who undergone percutaneous coronary interventions develop CIN. Mortality is higher in patients who require dialysis.

Definition of Contrast-Induced Nephropathy:

Contrast-induced nephropathy is defined as appearance or exacerbation of impairment in renal function occurring within three days following intravascular administration of contrast media and in the absence of alternative etiology. Most studies have taken an increase in serum creatinine of more than 25% of baseline or an absolute increase of 0.5 mg/dl above baseline as the required criteria.[8]

Pharmacology of Contrast Media:

All modern contrast agents are based on iodine, which by virtue of its high atomic number and chemical versatility has proved to be an excellent agent for intravascular opacification.[9] More than 99% of injected contrast media is excreted through kidneys. Elimination half-life following intravascular administration in patients with normal renal function is about 2 hours. About 98% of contrast media is excreted within 24 hours.[8]

There are three types of contrast media available:

First-generation contrast media or high osmolar contrast media:

These include agents such as diatrizoate that are ionic and have high osmolarity (> 1500 mOsm/kg). This property is responsible not only for increased incidence of pain and heat sensation on administration but also for high incidence of CIN.

Second-generation contrast media or low osmolar contrast media:

These include agents like iohexol and iopromide that are non-ionic and low osmolar (600-1000 mOsm/kg) with high viscosity. Administration of these contrast media is associated with less injection-associated pain and lesser acute toxicity. Low osmolar contrast media are currently the most commonly used.

Third generation contrast media or iso-osmolar contrast media:

These include agents that are iso-osmolar (290 mOsm/kg) and have high viscosity. Their administration is associated with less osmotic diuresis, hence less natriuresis, and less effect on medullary hypoxia, reduced volume depletion and reduced activation of vasoactive mediators. They have less adverse hemodynamic effects and reduced injection-related pain and heat sensation. Examples of these media are iodixanol and iotrolan. Studies indicate that these agents may have lowest incidence of CIN.

Pathogenesis of Contrast-Induced Nephropathy:

Temporary or permanent renal dysfunction is a serious potential complication of cardiac angiography or PCI. Pathogenesis of contrast-induced nephropathy is complex and several factors have been implicated. The precise mechanism of contrast induced renal dysfunction has not been established. Vasomotor instability, increased glomerular permeability to protein, direct tubular injury or tubular obstruction may be the involved mechanism. [9]

The contrast media induced osmotic diuresis and active transport increases renal metabolic activity and oxygen consumption leading to adverse renal hemodynamic effects. Contrast media also stimulates a rapid influx of extracellular calcium leading to prolonged constriction of renal vasculature. It alters regional blood flow within the kidney; there is preferential reduction of outer medullary flow. In addition, contrast media generate reactive oxygen species which may also reduce the regional blood flow. It can also have direct renal tubular effects. Contrast media is not reabsorbed by renal tubules. These agents produce an osmotic diuresis since contrast media is concentrated 100 times in urine. Increase in intratubular pressure leads to decrease in glomerular filtration rate. The main mechanism of contrast media is perhaps its high osmolarity which results in reduction of renal blood flow.

Nephrotoxicity induced by contrast media varies in severity from a mild, non-oliguric, transient increase in serum creatinine to severe oliguric renal failure requiring renal replacement therapy (dialysis). Typically the serum creatinine starts

rising 24-48 hours after contrast exposure and peaks at 4-7 days. Serum creatinine level estimated at 72 hours will detect 90% of those affected. The values tend to return towards normal within 7-14 days. Spontaneous recovery occurs in the majority and <10% require dialysis. Attempts to reverse CIN are usually unsuccessful and supportive care is the mainstay of therapy. A minority of patients become dialysis-dependent.[8]

Risk Factors for Contrast-Induced Nephropathy:
There are several risk factors that predispose to contrast-induced nephropathy-pre-existing renal dysfunction, diabetes mellitus, congestive heart failure, multiple myeloma dehydration, nephritic syndrome, vascular disease, high dose of contrast media, intra-arterial injection of contrast media, high osmolar contrast media, repeated doses of contrast media at short dose intervals, concurrent use of nephrotoxic drugs (e.g. NSAIDS, aminoglycosides), and elderly patients. The most important risk factor is presence of renal dysfunction before angiography. Rudnick et al.[10] found that patients with renal insufficiency have 21 times greater risk of developing CIN compared with patients without renal insufficiency. Diabetes without renal impairment also mildly increases the risk of CIN. Patients with both diabetes mellitus and renal impairment are at maximal risk." The incidence of CIN is 2% in non-diabetic patients with serum creatinine of < 1.6 mg/dl, while it is 3 8% in diabetic patients with renal impairment.[4] Davidson et al.[12] showed that the risk of CIN rises exponentially as baseline serum creatinine increases, if the baseline level is 106 mpmol/L or higher. Berns et al.[13] found the incidence of CIN to be 3.6% in diabetic patients with serum creatinine of <2.0 mg/dl, while it was 27% and 81 % when serum creatinine levels were 2.0-4.0 mg/dl and >4.0 mg/dl, respectively.

Congestive heart failure is another important risk factor. It is commonly associated with baseline renal dysfunction and hydration protocols are difficult to carry out in these patients.

A number of randomized controlled trials as well as meta-analyses have found that low osmolar non-ionic contrast media are associated with lesser incidence of CIN as compared with high osmolar ionic contrast media. Rudnick et a1.[10] correlated the benefit conferred by low osmolar contrast media to the presence of baseline renal impairment or diabetes mellitus. They found that there is no benefit of using low osmolar contrast media in patients who have no renal impairment or diabetes mellitus at baseline. Use of low osmolar contrast media, however, reduced the occurrence of CIN by 30-55% in patients with one or both of these risk factors. The incidence of CIN is very low if the amount of contrast media injected is < 100 ml. Repeated contrast media examinations within short intervals (<48 hrs) is also a risk factor. Meta-analysis of 31 controlled randomized trials by Barrett and Carlisle[14] involving 5146 patients showed that low osmolar contrast media is less nephrotoxic than high osmolar contrast media, particularly in patients with pre-existing renal impairment.

Iso-osmolar contrast media have recently become commercially available and are expected to reduce the incidence of CIN. The currently available data, however, are conflicting.

Gadolinium chelates, intended as intravenous contrast media for magnetic resonance imaging, was regarded as nonnephrotoxic and it was thought that it could replace iodinated contrast media for radiographic examinations. However, studies in mice have shown them to be more nephrotoxic than iodinated contrast media at equivalent X-ray attenuating doses.

Pharmacologic and other Interventions for Prevention of Contrast-Induced Nephropathy:

Important pharmacologic and other interventions that have been studied for prevention of CIN include volume expansion (using: intravenous normal saline (NaCI 0.90%), intravenous half strength saline (NaCI 0.45%), and, oral hydration therapy), mannitol, loop diuretics, dopamine, dopamine-1 receptor agonist(fenoldopam), calcium antagonists, theophylline, N-acetyl cysteine, atrial natriuretic peptide, endothelin receptor antagonist, hemodialysis after contrast administration, and periprocedural hemofiltration.

Volume expansion:
This is the single most important measure that has been documented to be beneficial in preventing CIN[15,16]. Intravenous hydration with isotonic saline, intravenous hydration with half-isotonic saline and oral hydration with clear fluids have all

been shown to be beneficial. Three subgroups specially benefit from isotonic saline hydration: women, diabetics and patients in whom contrast dose exceeds 250 ml. The current data appears to be strongest with intravenous hydration using isotonic saline.

Hydration with forced diuresis:

Most studies have found that hydration alone is better than hydration combined with a diuretic. Study by Solomon et al. [17] showing that forced diuresis is of no benefit in preventing CIN.

Dopamine:

Dopamine Infusion in low dose (2-5 ng/kg/ min) results in increased renal blood flow that leads to increased glomerular filtration rate. Therefore it was thought to be of benefit in preventing CIN. However, studies of low dose dopamine have produced conflicting results, with no clear benefit for prevention of CIN.

Dopamine receptor agonists:

Fenoldopam, a selective dopamin-1 receptor agonist, increases renal blood flow in both cortex and medulla. It was shown to be beneficial in preventing CIN in early studies in humans. [18] However; a recently reported large randomized controlled trial (CONTRAST trial, Stone et al.[19]) did not find significant benefit with fenoldopam.

N-Acetyl Cysteine:

Reactive oxygen species have been implicated in pathogenesis of CIN. N-acetyl cysteine is a free radical scavenger and precursor of endogenous antioxidant glutathione. It is also a vasodilator. With these properties it was expected to protect against CIN. A number of studies were undertaken which showed conflicting results

2o-2s Birck et al.[22] recently reported a meta-analysis of randomized controlled trials comparing N-acetyl cysteine and hydration with hydration alone to prevent CIN in patients with CRF showed administration of N-acetyl cysteine and hydration significantly reduced the relative risk of CIN by 5 6% (p=0.02) in patients with CRF. N-acetyl cysteine is usually recommended, as it is inexpensive, has low risk and is likely to be of benefit in preventing CIN in high risk patients. However, as the need for dialysis rates was not reduced by N-acetyl cysteine, a hard clinical benefit needs to be demonstrated, before it can be universally recommended for preventing CIN.

Calcium channel blockers:

Despite substantial evidence that calcium channel blockers reduce vasoconstriction and maintain GRF following contrast exposure, no clinical benefit was shown in one prospective trial [27] using single dose nitrendipine.

Theophylline:

Adenosine is a vasodilator of most vascular beds. Al receptor stimulation causes cortical vasoconstriction while A2 receptor stimulation results in medullary vasodilation. Human studies, however, have shown conflicting results .[28, 29] Though Kapoor et al.[30] found benefit with use of theophylline. The use of adenosine antagonists may be beneficial in patients where sufficient hydration may be impossible or in patients with a concomitant decrease in renal blood flow (e.g. congestive heart failure).

Atrial natriuretic peptide:

Initial reports suggested that atrial natriuretic peptide (ANP) prevents fall in creatinine clearance after contrast exposure. However, a randomized, double blind, placebo-controlled trial showed that intravenous anaritide did not reduce the incidence of CIN in patients with preexisting chronic renal failure, with or without diabetes mellitus.[30]

Endothelin receptor antagonists:

Animal studies have suggested role of endothelin, a potent vasoconstrictor, in CIN. Moreover, endothelin receptor antagonists have been shown to prevent fall in renal blood flow. This prompted a randomized trial [31] in humans to study the role of mixed endothelin A and B receptor antagonist. However, the incidence of CIN was found to be higher in endothelin receptor antagonists group, this negative effect was apparent in both diabetic and nondiabetic patients.

Angiotensin-converting enzyme inhibitors:

Renin angiotensin system mediated medullary ischemia play role in genesis of CIN. Animal studies showed that angiotensin II antagonists decrease renal vasoconstriction and CIN. Small human studies have also found favorable results.[32]

Hemodialysis:

Hemodialysis and peritoneal dialysis safely remove contrast media. Several hemodialysis sessions or three weeks of continuous ambulatory peritoneal dialysis is needed to remove the contrast media. Currently available data do not support use of

prophylactic hemodialysis for prevention of CIN. Further trials are needed to clarify the strategy of performing hemodialysis immediately after the administration of contrast media in all patients with CRF.

Hemofiltration:

Study by Marenzi et al.[33] recently reported significant prevention of CIN in patients with CRF undergoing PCI by hemofiltration. The degree of benefit conferred by hemofiltration compared to normal saline alone was remarkable: reduction in the incidence of CIN (5% v. 50%), reduction in requirement of dialysis (3% v. 25%),. reduction in in-hospital mortality (2% v. 14%), and reduction in one-year mortality (10% v. 30%). The mechanisms of this benefit are not clear.

Summary of prevention of Contrast-Induced Nephropathy:

Based on above observations, following general and specific measures should be taken for prevention of contrast-induced nephropathy.

General measures: These include (i) screening for risk factors (ii) use of alternative imaging techniques that do not require iodinated contrast media in high-risk patients (iii) precautions to prevent volume depletion, hypotension and hypoxia(iv) avoiding use of nephrotoxic drugs for at least 24 hours(v)to use minimum possible volume of contrast media, keeping maximal dose to 100-300 ml (depending on serum creatinine), and (vi)allowing adequate time gap (at least 48 hrs) between procedures requiring contrast media.

Specific measures: These include (i) adequate hydration: the single most effective

method (ii) use of low or iso-osmolar contrast media, and (iii) use of N-acetyl cysteine.or hemofiltration in patients with impaired renal function.

Conclusions

Contrast-induced nephropathy is an important concern for cardiologists especially in relation to coronary angiogram and percutaneous coronary interventions. Pre-existing renal dysfunction, especially when secondary to diabetic nephropathy, is the most important risk factor. Extra cellular volume expansion and use of low osmolar contrast media are the two most effective measures to prevent contrast-induced nephropathy. Overall data on N-acetyl cysteine are also favorable. For high-risk patients, undergoing percutaneous coronary interventions iso-osmolar contrast media may become the media of choice. A recent study has shown periprocedural hemofiltration to result in remarkable reduction in occurrence of contrast-induced nephropathy as well as improved in-hospital and long term mortality.

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Aetiopathogenesis, Diagnostic Approach and Management of Sarcoidosis - A Review

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[Chest & Heart Journal 2006; 30(2) : 123-125]

Introduction

Sarcoidosis is a multisystem granulomatous disorder of unknown aeteology. most commonly_affecting young adults and presenting most frequently with bilateral hilar hyphodenopathy, pulmonary infiltration and skin or eye lesions.

The diagnosis is established most securely when clinicoradiographic findings are supported by histological evidence of widespread noncaseating epithelial granulomas in more than one organ or a positive kveim-siltzbach skin test. There may also be hypercalciurin_ with or without hypercalcaemin. The course and prognosis may correlate with the mode of onset: an acute onset with erythma nodosum heralds a self limiting course and spontaneous resolution, while an insidious onset may be followed by relentless progressive fibrosis.

Regarding historical background, Hut clisar 1998 described skin lesions that principally affected the face, arms and hands and which was called as lupus vulgaris multiplex. On 1940, universal acceptance of term sarcoidosis.

There are considerable difficulties in obtaining reliable prevalence figure for sarcoidosis that allow valid comparisons between different geographical areas. The nature of the diseases in such that many asymtomatic cases escape detection particularly in countries where radiographic screening programme are not available.

A more recent study from Sweden in which 64% of the population over 15 years were screened at 3 yearly intervals gave a prevalence of 19 per 100000. A similar intensive study was conducted in UK and found 5 per 100000.

The highest incidence in the third and fourth decades with a variable female predominances and diseases is uncommon at the extreme of life. Sarcoidosis is 16 times more common in Black compared with non-black.

A British Thoracic Society Research Committee investigation reported 59 families in Britain with more than one case of sarcoidosis and there were three families with more than two cases and a number of studies of human leucocyte antigen (HLA) in . sarcoidosis have been undertaken and the evidence that HLA type does not influence susceptibility to sarcoidosis.

The cause of sarcoidosis is unknown. There are many aetiologies come into study such as exposure to pine pollen or beryllium and infection with mycobacterium, virus and fungi, but lastly it is rejected. The implication that M. tuberculosis might have a pathogenetic role in sarcoidosis has been further explored by sophisticated and very sensitive molecular biological techniques, including polymerase chain reaction (PCR) for the mycobacterial DNA sequence. In contrast, a meticulous controlled North American Study found DNA from M. tuberculosis in only a minority of patients with sarcoidosis.

The histologic reaction in active sarcoidosis consist essentially of nodular collection of large closely packed pale-staining histocytes (epitheloid cell): Three different type of inclusion body may be found in the cytoplasm of epitheloid cell, these are schaumann bodies, doubly refractile crystaline inclusion bodies and Asteroid bodies.

Necrosis does not occur in the sarcoid nodule or is only minimal. The epitheloid cells are large mononuclear cells about 20um in diameter with

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round or oval nuclei are derived from macrophages. The lymphocytes associated with the granulomas are larger than usual and morphologically appear activated. The histological features of the sarcoid lesion are not specific and many occur in tuberculosis as well as leprosy, tertiary syphilis, brucellosis primary biliary cirrhosis, fungal infection and beryllosis.

The diversity of the possible clinical manifestation in such that a practitioner in almost any branch of medicine may be called upon to make the diagnosis.

All kinds of combinations of organ involvement are possible, with the exception of the pleura, the serous membrane are rarely involved but only adrenal gland appear to be sacrosanct[2].The hilar glands and the lungs are the organ most commonly affected in sarcoidosis. Regarding the stage of sarcoidosis Stage-I, representing hilar lympho- . adenopathy stage-II hilar lymph-adenopathy plus pulmonary opacity and stage-III pulmonary opacity only. Stage-IV represents the development of irreversible pulmonary fibrosis[3,4].

Enlargement of hilar lymphglands with or without paratracheal lymphoadenopathy is the commonest manifestation of sarcoidosis. Usually, the glands are bilaterally and symmetrically involved, although rarely hilar enlargement may appear unilateral.

The association of erythema nodosum with sarcoidosis varies throughout the world.

In a worldwide study of sarcoidosis, the erytehma nodosum with more commonly the mode of onset[8,9].

Polyarthalgia affecting principally the knee, ankles, wrists and elbow -is a frequent accompaniment of erythema nodosum, other presenting symtoms may include cough, dyspnoea, chest pain, loss of weight, malaise or excessive fatigue. Radiologically manifestation of sarcoidosis as follows:

1. Disseminated miliary lesion
2. Disseminated nodular lesion 3. Diffuse fibrosis
3. Diffuse fibrosis with cavitation
4. Diffuse ground glass shadow
5. Bilateral confluent massive opacity
6. Resembling pneumonia
7. Atelectasis

Extrathoracic Sarcoidosis

Occular manifestation have been reported in as many as 25% of patients with sarcoidosis uvitis is the most frequent manifestation of eye involvement causing symptom, erythema nodosum is the most frequent skin manifestation. Maculopapular eruption, subcutaneous nodular plaque and Lupus pernio are other lesions that may be found[5,6,9]. Nose, naropharyngeal muscosa and the larynx also involved in sarcoidosis.

Involvement of the salivary glands and liver is common. Pancreatitis has been reported and bloody ascites secondary to granulomatous involvement of the peritoneum has been described.

Unoparotid fever is reported in many case characterized by febrile illness, uveitis and swelling of parotid gland.

Enlargement of the spleen in relatively common in sarcoidosis. Sarcoidosis affecting the nervous system by infiltration of sarcoid deposits may result in a variety of clinical pictures, peripheral neuropathy, mononuritis multiplex, cranial neuropathy, meningoencephalitis space occupying lesion and epilepsy has been described.[7]

Bone involvement in sarcoidosis are most commonly affecting the terminal pharynx at hand and feet. Sarcoid granuloma may occur in skeletal muscle.

Sarcoidosis, may affecting the kidney in two ways both of which can cause varying degree of functional impair. There may be deposition of calcium in and around the tubules as calcium metabolism in sarcoidosis is imbalance. Regarding cardiovascular, heart failure and sudden death may occur, pericarditis has been reported.

To explore the disease and to diagnosis the sarcoidosis there are many investigation procedure, pulmonary function test is the important procedure by which we can find out the reduced co-diffusing capacity, decrease lung compliance and also lung volume. Sometime bronchial hyperreactivity has been reported. It is now well established that particulate saline suspension of sarcoid tissue contain in varying amounts. Some component that when injected intradermally in a patient with active sarcoidosis can provoke the slow development of an epitheloid cell granuloma of sarcoid type. This is the basis of

Kvein test. Strictly speaking, an absolute diagnosis of sarcoidosis cannot be made on suggestive clinical radiographic findings alone. THe tissues found to be useful for biopsy in sarcoidosis have increased in number with the years and include superficial lymphnode, Mediastional gland, skin, lung, liver etc. Transbronchial biopsy of lung and bronchial wall via FOB is the diagnosis, if diffuse pulmonary abnormality, +ve MT test sometimes exclude sarcoidosis. Serum ACE has been reported to be elevated in 75% of the patients with sarcoidosis. The enzyme probably originates from the active epithelial and giant cell and is elevated in BAL. Gallium-67 scanning test where Gallium-67 is concentrated in metabolically and mitotically active tissue. U Gallium-67 uptake by the lungs is found in the majority of patients with pulmonary surcoidosis. Lastly CT scan of chest may be helpful.

There is no universal agreement about the indications for corticosteroid therapy in stage-II and stag-Ill thoracic sarcoidosis and bilateral hilar lymphodenopathy alone is not a indication for corticosteroid given. The vast majority resolve spontaneously with the passage of time. The associated anthralgin may necessitate treatment with nonsteroid antiinflammatory -drugs. Some patients of stage-II and stage-111· with systemic involvement treated with corticosteroid and is initiated with prednisolone 20-40mg in daily or alternate day regimens and is continued for 3-6 months then a slow and graduated reduction in dosage may be attempted while clinical, radiographic and functional status is improved. The prednisolone dose is reduced below 7.5-15 for a period of 6-12 month on a continuing maintaining dose 10 mg daily.

There has been in report of successful treatment of pulmonary sarcoidosis with cyclosporir and chlorambucil.

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CASE REPORT

Tracheal Carcinoid: A Case Report

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Abstract:
A 14 years old boy presented with respiratory distress for 3 month and was treated as bronchial asthma, but progression was not satisfactory. Chest skiagram reveal no positive findings. Endoscopy show highly vascular tumour at the lower end of the trachea. CT Scan of Chest was suggestive of tracheal growth, Excision of the tumour done. Biopsy show Carcinoid tumour. Post-operative period was satisfactory. 2 years follow-up show no recurrence of symptoms or growth.

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Introduction:

Carcinoid tumour develop from argentaffin cells or Kulchitzsky cells. Which is under APUD cell system. The tumour are locally invasive and show little or no distal metastasis, so it is classified as intermediate group. Commonest site is GI tract especially in the appendix, less commonly describe in the Lung, Thyroid & Pancreas. As the tumour arise from APUD cell system its cells produce variable clinical feature according to the site of origin. But 1% of all tumour & 20% of them with metastasis in the liver produce carcinoid syndrome. Clinical feature is usually due to local effect. J B Walter, M S Israel[1] who classified the bronchial carcinoid as truly malignant, it is centrally located. Among the other malignant tumour its incidence is low & in the trachea is very rare and rarely produce carcinoid syndrome[2]. Very little report about bronchial carcinoid is available till now.

Case Note:

Mst. Jewel, a 14 years old boy present on 1s^{t} january2003, with gradually increasing respiratory distress for last 3 months without previous history of respiratory problem. He was diagnosed as childhood bronchial asthma and treated accordingly, but after little initial improvement his condition gradually deteriorated and pattern of distress was in favour of mechanical obstruction. FOB was done in suspicion of foreign body inhalation but it revealed a small highly vascular growth at the lower end of the trachea. Tracheal lumen and opening of the left principal bronchus was partially obliterated by the mass. Biopsy was not taken and distal extension not evaluated due to the risk of haemorrhage. Further evaluation done with CT scan and total assessment of the lesion was made. It was 1x1 cm in size, oval in shape, partial obliteration of the lumen of the trachea and opening of the left principal bronchus. After proper counseling about the nature of the surgery, surgical excision was planned for treatment. For surgical intervention main problem was about ventilation and induction of anaesthesia. Anaesthetist was consulted regarding this problem and planned for initial induction and ventilation with laryngeal musk. Right thoracotomy done through 4th intercostals space. Trachea and right main bronchi was identified and taken into control. An incision was made about 2 cm at lateral wall of lower trachea and extended up to right principal bronchus for 1 cm. The tumour came into view. A small bore tube immediately introduced into left main bronchus and connected with anaesthesia circuit. Anaesthesia maintained with ventilating left lung. After proper delineation and assessment of the

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tumour it was found arose from the tracheal wall and hang into the lumen. Tumour was excised with proper margin that included a portion of tracheal wall. After meticulous haemostasis with diathermy coagulation, repair was done. Anaesthesia circuit changed into laryngeal musk, tracheo bronchial wound closed, right lung inflated completely and chest wound was closed in layers properly, keeping a chest tube connected with water seal system. Biopsy show it was carcinoid tumour with margins were free from invasion. Post operative period was un eventful. Immediately after operation patient became totally free from respiratory distress and other pulmonary symptoms. He was discharged on 11th post operative day. Successive follow-up up to 2 years reveal no recurrences. No adjuvant therapy was prescribed for the patient after consulting with oncologist.

Discussion:

Occurrence of pulmonary carcinoid is less than GI tract, and tracheal carcinoid is less common than bronchial tree. Presentation correlate with obstructive airway disease and thus mislead the clinicians, but careful evaluation and investigations eliminate the problem. Treatment of carcinoid when diagnosis is always surgical. Excision in early stage is curative. Yael Refaely, Dov Weissberg, studied 22 tracheal tumour, and found 2 carcinoid , 5 sq.cell carcinoma, 13 adenoid cystic carcinoma, leomyoma and histocytoma 1 each. All the tumour resected surgically Adjuvant therapy applied in all cases except carcinoid and benign cases, where they advocate surgical resection without any adjuvant therapy.

Pier Luigi Filosso et al[4] retrospectively studied 92 cases of bronchial carcinoid , treated with resectional surgery. Biologic behavior and prognosis for bronchial carcinoid tumors are better than for other lung cancers. Surgical treatment requires radical excision Paul Schneider et al[5] found 1 Carcinoid tumour out of 14 resected tracheal tumour in their study. They advocate endoscopic resection in early stage. Ton J. van Boxem et al[6] studied 19 patients of carcinoid tumour treated endoscopically. They found bronchoscopic treatment may be an effective alternative to surgical resection in a subgroup of patients with respectable intraluminal typical bronchial carcinoid. It alleviated the necessity of surgical resection

Satish C. Chada, Sujeeth Punnam, Apama Punnam[7] presented a single case of carcinoid tumour involving larynx, trachea and bronchi and treated by local excision. Alberto Terzi et al[8] performed bronchoplastic procedures in 92 cases of carcinoid tumour of central airway. Short and long term follow-up show excellent prognosis. Present experience of single case of carcinoid tumour correlate with other study in respect of diagnosis, treatment with surgical excision.

Conclusion:

To our knowledge this type of tumour and their presentation is extremely rare, so case with this presentation should be evaluated with care, endoscopic evaluation with rigid endoscope by experienced thoracic surgeon should be done. Biopsy may be tried with caution as the tumour is highly vascular. Treatment depend upon biopsy report and surgical resection is mandatory as complete resection show excellent prognosis.

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