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Clinical and Etiological Profile of the Patients Presenting With Pleural Effusion in the Department of Pulmonary Medicine RMCH, Bareilly

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ABSTRACT

Pleural effusion can occur primarily or secondarily as complications of various diseases and classified into exudative or transudative. It becomes essential to differentiate between the types of pleural effusion due to its extensive differential diagnosis. Hence we decided to conduct a study which provides a brief overview of clinical and etiological profile of the patients with pleural effusion. Pleural fluid cytological and biochemical analysis is the most important and commonly used diagnostic method to distinguish exudative from transudative pleural effusion. 350 patients were enrolled in study, out of which 94.9% patients were having exudative and 5.1% patients were with transudative cause. Tuberculosis was the most common exudative cause while CHF was most common cause for transudative pleural effusion.

KEYWORDS :

Introduction

A pleural effusion is a buildup of fluid in the pleural space, an area between the layers of tissue that line the lungs and the chest cavity or in more simple words pleural effusion is the abnormal collection of fluid in the pleural space. It can occur primarily or secondarily as complications of various diseases. It is one of the most common finding among the patients presenting with cardiopulmonary symptoms. Pleural effusion can be classified as transudative or exudative, depending on its cytological and biological analysis. Therefore, pleural fluid analysis becomes very important tool to differentiate between transudative and exudative fluids, especially in extensive differential diagnosis[1, 2]. Normally, fluid that enters the pleural space can originate in the pleural capillaries, the interstitial spaces of the lung, the intrathoracic lymphatics, the intrathoracic blood vessels or the peritoneal cavity fluid clearance in pleural space occurs by lymphatic vessels in parietal pleura and capillaries in visceral pleura. Pleural fluid accumulates when the rate of pleural fluid formation exceeds the rate of pleural fluid absorption[3]. The etiological distribution of pleural effusion may vary as per geographic region, age and lifestyle of an individual. Determining the etiological and clinical profile of pleural effusion helps in adoption of regionally optimized diagnosis and therapeutic approach. Hence, we decided to conduct a study which gives the brief overview of clinical and of etiological profile of the patients presenting with pleural effusion.

Material and Method

A prospective study was conducted on 350 patients with pleural effusion above 15 years of age visiting Pulmonary Medicine department of Rohilkhand Medical College and Hospital, in duration from july 2012 to September 2014. Institutional ethical committee permission was taken before starting the study. Patients with positive HIV status and not willing for study were excluded from the study. Diagnosis of pleural effusion was made by the help of detailed history & examination, chest x ray and chest ultrasonogram. Diagnostic thoracocentesis was performed and fluid was send for cytobiological analysis and adenosine deaminase(ADA).

Result

The demographic profile of the patients studied is elaborated in table 1. 70.6% of patients were male and rest 29.4% was female. Thus male to female ratio was 2.4:1. All the patients were from Bareilly district region. The age group was above 14 years and the maximum number of patients belonged to the age group of 15-30 years.

Table 1: Age and Sex distribution of study population:

GROUPS	NUMBER OF PATIENTS (%)
Age in years	
16- 30 years	234 (67.14%)
31- 40 years	56 (16%)
41-50 years	32 (9.14%)
51- 60 years	20 (5.71%)
›60 years	8 (2.28%)
Sex	
Male	247(70.57%)
Female	103(29.42 %)

Breathlessness (77%) fallowed by chest pain (60%) were the most common presentation. Unilateral pleural effusion was seen in 89% of cases with right side predominance 48% (Table 2).

Table 2: clinical profile of patients with Pleural Effusion:

SYMPTOMS	NUMBER OF PATIENTS (%)
Breathlessness	270(77.14%)
Chest Pain	210(60%)
Fever	190(54.28%)
Dry Cough	105(30%)
Productive Cough	93(26.57%)
Hemoptysis	12(3.42%)
No Symptom	46(13.14%)

94.9% patients were having exudative cause for pleural effusion whereas rest 5.1% patients were having transudative cause. Among the various causes, our study concludes that the tubercular effusion (58%) is the commonest cause of unilateral pleural effusion fallowed by parapneumonic effusion (25%) and congestive heart failure (4.6%, n=350) is the commonest cause of bilateral pleural effusion (Table 4 & 5).

Table 4: Etiological profile of patients with Pleural Effusion:

ETIOLOGY OF EFFUSION	NUMBER OF PATIENTS (%)	UNILATERAL	BILATERAL
Tuberculosis	204(58%)	196	8
Pneumonia	88(25%)	78	10
Malignancy	32(9%)	26	6
Eosinophillic	8(2.28%)	5	3
Transudate	18(6%)	5	13
Total	350(100%)	310	40

Table 5: Etiological profile of Transudative Pleural Effusion:

ETIOLOGY OF EFFUSION	NUMBER OF PATIENTS (%)	UNILATERAL	BILATERAL
Congestive Heart Failure	16(88.88%)	3	13
Cirrhosis of liver	02(11.11%)	2	0
Total	18	5	13

Pleural fluid total and differential count reveals that out of 350 samples 226 had lymphocytes >50% and only 124 had predominant poly-morphonuclear cells. Mean protein level in exudative fluid was >3gm/dl and <3gm/dl in transudative fluid. >5gm/dl protein in pleural fluid was also observed in majority patients with tuberculosis. ADA level >70 U/L in pleural fluid was found only in tubercular pleural effusion. Mean value of ADA for tubercular effusion was 86.3 U/L.

DISCUSSION

Pleural fluid analysis is the definite mode of separating transudative from exudative. In our study the main cause of pleural effusion was tuberculosis fallowed by pneumonia and CHF. Same observation was observed by Dhital KR et al[4], which shows the common scenario of developing countries like India, Nepal etc where incidence of tuberculosis is commonly encountered. In contrast, Storey DD et al who conducted a study on pleural effusion patients in developed countries reported that malignancy accounted for nearly 50% of patients and less than 15% of the patients had heart failure[5]. Shortness of breath, chest pain and fever is the commonest mode of clinical presentation observed in various studies[2] fallowed by dry cough , productive cough and hemoptysis. Many of the patients were also found symptomless. Most common cause of pleural effusion in many areas of the world is tuberculosis[6,7]. In developing countries like United States, Europe etc the leading cause of pleural effusion in adults are CHF, pneumonia, malignancy, pulmonary embolus and cirrhosis of liver with ascitis[8]. The acute and chronic pleural effusion can be divided by differentiated cell count. A predominance of neutrophils in pleural fluid defines the acute process whereas small lymphocytes defines the chronic process[2]. Pleural fluid protein level >3gm/dl among patients with exudative effusion like parapneumonic effusion and >5gm/dl suggests tubercular pleuritis[3]. Pleural fluid protein level is low in transudative effusion like CHF, a fact confirmed by our study.

All patients with a pleural fluid ADA level above 70 U/L had TB, whereas tuberculosis pleuritis below ADA level 40 U/L is rare[1]. In our study mean cut off value for TB pleural effusion is 86.3 U/L. Although cut off value for ADA varies from 40-60 U/L[9]. Further studies should be conducted at greater level evaluating more diversity in the clinical and etiological presentation in patients with pleural effusion.

CONCLUSION

Breathlessness is the most common symptom of pleural effusion fallowed by chest pain. Pleural fluid analysis is the most important diagnostic method to distinguish exudative from transudative pleural effusion. Most common cause of unilateral pleural effusion is tuberculosis fallowed by pneumonia, whereas cause of bilateral pleural effusion is CHF.

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