



Clinical And Etiological Profile of Patients With Pleural Effusion: A Retrospective Cross-Sectional Study in North India

KEYWORDS

Pleural Effusion, Etiological profile, Tuberculosis, Exudative

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ABSTRACT Objective: To evaluate the Clinical and etiological profile of patients with Pleural Effusion.

Methods: This was a retrospective cross-sectional hospital based study. The data was taken from medical record section. A total of 130 cases diagnosed with pleural effusion by chest x-ray (poster-anterior, anteroposterior and lateral view), and ultrasonogram were included in the study.

Results: More than half pleural patients were between 20-40 years (60%) and were males (66.9%). Majority of pleural patients presented with chest pain (78.5%) followed by cough (50.7%), fever (46.1%) and breathlessness (32.2%). The small extent of pleural effusion was seen among 53.1% patients and moderate was in 30.7% patients. The large extent of pleural effusion was observed in 16.2% patients. The right side (46.9%) of pleural effusion was found to be most common. Exudative was among majority of pleural patients (90.8%). Tuberculosis (64.6%) was the most common etiology.

Conclusion: We found various presenting features for pleural effusion. Thoracoscopy should be done if all the other investigative modalities fail to yield a confirmatory result.

INTRODUCTION

Pleural effusion (PE) is an abnormal collection of fluid in the pleural space. The etiological

spectrum of pleural effusion depends on the geographical region and the local incidence of different diseases that cause pleural effusions. In the developed countries, the common causes of pleural effusion in adult are cardiac failure, malignancy and pneumonia (Light, 2002). Whereas, in developing countries tuberculosis and par pneumonic effusions are more prevalent (Afful et al, 2008; Jamaluddin et al, 2015).

Many infectious, benign, and malignant diseases can cause pleural effusion. Approximately, one-fourth of all pleural effusions and 30 – 70% of all exudative effusions in hospital settings are secondary to cancer (Light, 2000). Lung cancer is the most common metastatic tumor to the pleura in men, while breast cancer is the most common tumour in women (Roberts et al, 2010). Together, both cancers account for 50 – 65% of all malignant effusions. Lymphomas and tumours of the genitourinary and gastrointestinal (GI) tracts account for a further 25% (Roberts et al, 2008; Johnston, 1985).

Pneumonia is associated with an exudative pleural effusion in up to 57% of cases and is the most common cause of pleural effusion in young patients. The majority resolves with antibiotic treatment, but a certain number will progress to an infected pleural space. The mortality of empyema is as high as 15% and up to 40% of these patients require surgery because medical treatment has failed (Davies et al, 2003).

Pleural effusion due to tuberculosis develops from a delayed hypersensitivity reaction to mycobacteria in the pleural space following rupture of a sub pleural caseous focus,

and is common in areas of tuberculosis endemicity. Tuberculosis pleurisy may occur during primary infection, when it tends to affect younger individuals in areas with a high prevalence of tuberculosis, or it may be recognized as a manifestation of disease reactivation, particularly affecting older patients (Valdes et al, 2003; Jamaluddin et al, 2015).

The present study was designed to evaluate the Clinical and etiological profile of patients with Pleural Effusion.

MATERIAL AND METHODS

This was a retrospective cross-sectional hospital based study conducted in the Department of Pulmonary Medicine of a tertiary teaching hospital in north India. The study was approved by the Ethical Committee of the Institute. Since, this was a retrospective study design, there was no requirement to take consent of the patients. The data was taken from medical record section. A total of 130 cases diagnosed with pleural effusion by chest x-ray (poster-anterior, anteroposterior and lateral view), and ultrasonogram were included in the study. Patient's demographics such as age and gender were recorded. To avoid duplicate case, patients were alphabetically arranged and a unique identification number was given. Any patient with confusion was excluded from the study.

Patients underwent thoracentesis in the first 24 hours after Ultrasonography under aseptic conditions, a 16-gauge needle was used, and 100 mL samples of pleural fluid was collected and immediately sent to the biochemical, cytological and microbiological laboratories for analysis. At the same time, blood samples were taken for simultaneous pleural fluid and blood determination of the levels of total protein, albumin, lactate dehydrogenase and glucose.

The descriptive statistics such as percentages are reported.

RESULTS

More than half pleural patients were between 20-40 years (60%) and were males (66.9%) (Table-1).

Majority of pleural patients presented with chest pain (78.5%) followed by cough (50.7%), fever (46.1%) and breathlessness (32.2%). The percentages of other clinical presentation was less than 15% (Table-2).

The small extent of pleural effusion was seen among 53.1% patients and moderate was in 30.7% patients. The large extent of pleural effusion was observed in 16.2% patients. The right side (46.9%) of pleural effusion was found to be most common followed by left (38.5%) and bilateral (14.6%) side (Table-3).

Table-4 shows the etiological profile of patients with pleural effusion. Exudative was among majority of pleural patients (90.8%). In concern with etiology of pleural effusion, tuberculosis (64.6%) was the most common. However, para pneumonic (14.6%) was the second most common with malignancy (11.5%) being third most common. The percentage of other etiological factors was less than 10%.

DISCUSSION

In the present study, a total of 130 diagnosed cases PE were included. Majority of the pleural patients were between 20-40 years (60%) and were males (66.9%) in this study. The majority of pleural patients presented with chest pain (78.5%) followed by cough (50.7%), fever (46.1%) and breathlessness (32.2%) in the present study. The finding of this study is similar with poor and developing countries studies (Afful et al, 2008; Koffi et al, 1997) but differ from some western studies (Light, 2002; Marel et al, 1993) due to low prevalence of infectious disease in their population.

This study showed that the small extent of pleural effusion was most common followed by moderate large extent of pleural effusion. The right side (46.9%) of pleural effusion was found to be most common followed by left (38.5%) and bilateral (14.6%) side. However, in developed countries as shown in study by Storey and coworkers (1976) reported that malignancy accounted for nearly 50% of patients with pleural effusion. Tubercular effusion is the most common cause of exudative pleural effusion in many areas of the world (Kalaajieh, 2001; Liam et al, 2000) which is consistent with the present study.

In a study in southern Rajasthan found that the majority of Patients were Male. Cough (70.19%), Chest pain (65.38%) and Fever (53.84%) were common symptoms. Majority of Effusions were right sided (51), followed by left sided (40) and bilateral (13). Majority of Effusion were Exudate (85.57%). Tuberculosis was the leading cause of effusion (52.61%) followed by Malignancy (12.5%) and cardiac cause (7.69%). No diagnosis could be made in 11 patients (Sharma et al, 2015).

In another study, PE occurred more among males (68%) and in the age group between 46 to 60 years (33%). Majority of the cases (95%) were having exudative effusion. Tuberculosis was the commonest cause of exudative effusion (41%) followed by malignancy (38%). Majority of tuberculous PE (63%) was right sided whereas malignant effusion was left sided (57%). The Mantoux test, pleural fluid protein, pleural fluid ADA and age of patients had statistically significant correlation when PE due to tuberculosis and malignancy were compared. Conclusions: Tuberculosis and malignancy are the two major causes for PE in the

hospital. Tuberculous PE predominates slightly than malignant effusion. Tuberculous PE occurred in younger age group (Manu, 2012).

In the present study, the exudative was among majority of pleural patients (90.8%). In concern with etiology of pleural effusion, tuberculosis (64.6%) was the most common in this study. We observed the para pneumonic (14.6%) was the second most common with malignancy (11.5%) being third most common.

This study would help in early diagnosis and prompt treatment of patients with pleural effusion especially in remote areas which remains a challenging problem. More detailed epidemiologic studies are required to improve understanding of the burden of pleural effusion with its potential risk factors in this region.

CONCLUSION

We found various presenting features for pleural effusion. Thoracoscopy should be done if all the other investigative modalities fail to yield a confirmatory result. Knowledge of etiological pattern helps to plan relevant investigations in patients with PE and reduces the delay in diagnosis.

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Table-1: Distribution of patients on the basis of age and sex

(n=130)		
Age and sex	No.	Percentage
Age in years		
<20	16	12.3
20-40	78	60.0
40-60	25	19.2
>60	11	8.5
Sex		
Males	87	66.9
Females	43	34.1

Table-2: Clinical presentation of patients with pleural effusion

(n=130)		
Symptoms*	No.	Percentage
Chest pain	102	78.5
Cough	66	50.7
Expectoration	18	13.8
Breathlessness	42	32.2
Fever	60	46.1
Loss of weight	15	11.5
Loss of appetite	19	14.6
Others**	13	10.0

*Multiple response, **Others- Headache, bodyache, myalgia, night sweats, weakness

Table-3: Characteristics of pleural effusion

(n=130)		
Characteristics	No.	Percentage
Extent		
Small	69	53.1
Moderate	40	30.7
Large	21	16.2
Side		

Right sided	61	46.9
Left sided	50	38.5
Bilateral	19	14.6
Nature		
Exudative	118	90.8
Transudative	12	9.2
Etiology		
Tuberculosis	84	64.6
Para pneumonic	19	14.6
Malignancy	15	11.5
Congestive heart failure	7	5.3
Undetermined etiology / Not able to aspirate fluid	5	3.8

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