Research Paper Medical Science

Study of Etiological and Clinical Profile of Pleural Effusion in a Teritary Care Hospital , Bareilly.

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ABSTRACT

Pleural effusion is the collection of air or fluid in the pleural space or cavity . It can cause significant respiratory symptoms and may lead to respiratory failure and mortality if not treated otherwise. This hospital based study was carried out on 40 patients to find the etiological profile and clinical presentation of patients with pleural effusion in the patients presenting at a tertiary health care center. Results of this study revealed that Tubercular effusion, para pneumonic effusion, malignant effusion, Congestive cardiac failure, Liver disease, Renal disease are major important disease factors with various presenting feature of patients with pleural effusion, mainly shortness of breath, fever, cough, chest pain, edema, haemoptysis and weight loss. This study would help in early diagnosis and possible intervention and prompt treatment of patients with pleural effusion.

KEYWORDS :

INTRODUCTION:

Pleural effusion is an abnormal collection of fluid in the pleural space. In developing countries tuberculosis and par pneumonic effusions are more prevalent.[1] 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[2,3] . The pleural space normally contains 0.1–0.2ml/kg body weight of fluid, filtered from systemic capillaries down a small pressure gradient. A systemic approach to the investigations is needed because of the extensive differential diagnosis. Pleural effusions can be transudative or exudative.[7,8] In cases with transudative pleural effusion the diagnosis is usually made without much difficulties but exudative pleural effusion requires careful differential diagnosis that includes par pneumonic effusion, tuberculosis, and metastatic cancers which are found to be the cases in large number of patients[9,10] Criteria known as Light's criteria define the exudative and transudative effusion. An exudative effusion will have a ratio of pleural fluid protein to serum protein greater than 0.5, a ratio of pleural fluid lactate dehydrogenase to serum lactate dehydrogenase greater than 0.6 or a pleural fluid lactate dehydrogenase greater than two thirds the upper limit of normal for serum lactate dehydrogenase.

Pneumonia is associated with an exudative pleural effusion in maximum cases and is the most common cause of pleural effusion in young patients in developed countries , however in the developing countries tuberculosis is the most common cause of pleural effusion in the adult age group. 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 . Malignancy is the most common cause of exudative pleural effusions in patients aged >60 years.

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 adult individuals in areas with a high prevalence of tuberculosis.

MATERIAL & METHODS: It was a prospective study and was carried out in the department of pulmonary medice at Rohilkhand Medical College and Hospital, bareilly, which was preapproved by the Ethical Committee of this institution review board. Data from all the cases diagnosed with pleural effusion in the pulmonary medicine department of RMCH from July 2014 to July 2015 were included. Data was taken from medical record section. Altogether 40 cases diagnosed with pleural effusion by chest x-ray (poster-anterior, anterioposterior and lateral view), and ultra-sonogram were taken. Patients with diagnosis other than tubercular effusion, par pneumonic effusion, and malignant effusion, congestive heart failure, due to liver disease and due to renal disease were mentioned as others.

This study involved all adult patients (> 18 years) with pleural effusions who were admitted to RMCH. 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 were 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.

OBSERVATION: Observations are represented below in tables.

Table 1: Age wise distribution of patients

Age in years	No. of patients (40)	Percentage (%)
16-20	9	28.75
21-30	3	8.75
31-40	4	10.00
41-50	6	13.75
51-60	6	13.75
61-70	9	28.75
71-80	3	8.75

Table 2: Gender wise distribution of patients

Sex	Male	Female
No. of patients	18	22
Percentage (%)	53.75	46.25

Table 3: Distribution of pleural effusion patients based on diagnosis

Diagnosis	No. of patients	Percentage (%)
Tubercular effusion	14	36.25
Par pneumonic effusion	7	18.75
Malignant effusion	6	13.75
Congestive Heart failure	5	11.25
Liver disease	3	7.50
Renal disease	2	5.00
Other	3	7.50

Table 4: Pleural effusion Patients presented with Fever with different etiology

Diagnosis	No. of patients presented with Cough	Percentage (%)
Tubercular effusion	12	86.20
Par pneumonic effusion	07	93.33
Malignant effusion	04	36.36
Congestive Heart failure	1	11.11
Liver disease	1	50.00
Renal disease	1	33.33
Other	nil	0

RESULTS: Table 1 shows, Out of 40 patients of Pleural effusion studied, majority of patients were aged between 61-70 years (28.75%) and were males 53.75 % (Table-2). Commonest cause of pleural effusion is tuberculosis 14 (36.25%), Second commonest cause of pleural effusion is par pneumonic effusion in 7 patients 18.75% (Table-3).

11 patients of tubercular effusion out of 14 patients of tubercular effusion presented with shortness of breath, 6 patients out of 8 patients of prapnemonic effusion presented with shortness of breath, 12 patients of tubercular effusion out of 14 patients presented with cough, No any patients of pleural effusion due to renal disease presented with cough. 12 patients of tubercular effusion out of 14 patients presented with fever, 4 patients of par pneumonic effusion out of 07 patients presented with fever.

DISCUSSION:

Out of 40 patients of pleural effusion studied, majority of patients were age group of 51 to 70 year 47.50% (Table-1) this finding is consistent with poor and developing countries studies[3] but differ from some western studies[1-2] due to low prevalence of infectious disease in their population. Our study was in coordinance with Dhital KR et al who concluded that the most common cause of unilateral pleural effusion is tuberculosis followed by parapneumonic effusion and most cases of those belong to younger age group (21-30 yrs) and most common cause of bilateral pleural effusion is congestive cardiac failure [5].

Our study concludes that the tubercular effusion is the commonest cause of unilateral pleural effusion followed by par pneumonic effusion and congestive heart failure is the commonest cause of pleural effusion (Table-3). But in developed countries as shown in study by Storey and coworkers[9] reported that malignancy accounted for nearly 50% of patients with pleural effusion. Tubercular effusion is the common cause of exudative pleural effusion in many areas of the world which is consistent with our study which shows that 14 patients were having tubercular effusion out of 40 patients. Tubercular effusion and para pneumonic effusion predominantly in younger patients but pleural effusion due to malignancy and congestive cardiac failure is common in old patients. Shortness of breath, fever and cough are the commonest mode of clinical presentation.

This study also shows that in par pneumonic effusion mean total neutrophil is 72% which shows that par pneumonic effusion is an acute process affecting pleura whereas predominance of mononuclear cells indicates a chronic process. A preponderance of small lymphocytes indicates that the patient most likely has cancer or tuberculous pleuritis . This study is just the retrospective cross-sectional study, with small sample size, the findings should be interpreted with caution. However our study collaborates well with the other study and shows the various mode of clinical presentation, importance of sputum profile and pleural fluid analysis in patient presenting with pleural effusion. Further study would be required to determine the complete clinical profile patient presenting with pleural effusion in this region.

CONCLUSION:

We have observed various presenting features for pleural effusion are short ness of breath, cough, fever, chest pain etc.; sand important disease factors for the occurrence of pleural effusion such as tubercular effusion, par pneumonic effusion, malignant effusion, congestive heart failure etc. 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.

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