

Etiology Underlying Pleural Effusion in Thanjavur Medical College Hospital: A Descriptive Study

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Abstract

Background: Pleural effusion is one of the most common signs seen in respiratory pathologies. An attempt to establish common etiologies underlying pleural effusion helps in effective management of the same.

Materials and Methods: After obtaining proper informed consent, patients presenting with pleural effusion underwent clinical examination in addition to radiological and biochemical investigations. Where needed, the diagnosis was confirmed using pleural biopsy and bacteriological analysis.

Results: Investigations confirmed tuberculosis in 23 patients, malignancy in seven cases, congestive cardiac failure in four cases, parapneumonic causes in 12 patients, hypoproteinemia in two patients, and pulmonary thromboembolism in two patients.

Conclusion: The present findings show that tuberculosis is the most common cause of pleural effusion in our patients. A more comprehensive study would help us to further strengthen our findings.

Key words: Etiology, Pleural effusion, Tuberculosis

INTRODUCTION

A pleural effusion represents the disruption of the normal mechanisms of formation and drainage of fluid from the pleural space. Pleural effusions are associated with diseases of varied etiologies and often carry a grave prognosis.^[1] Thus, a pleural effusion is abnormal excessive collection of fluid in pleural cavity resulting from excess fluid formation or decreased absorption.^[2,3]

Pleural effusion is classified as exudative and transudative on the basis of Light's criteria. According to these criteria, all exudates have at least one of the following while transudates have none.

- Ratio of pleural fluid protein to serum protein >0.5.
- Ratio of pleural fluid lactate dehydrogenase (LDH) to serum LDH >0.6.

- Pleural fluid LDH > 2/3 of the upper limit of serum LDH.4.

Worldwide, exudative effusions are usually due to empyema, malignancy, tuberculosis, pulmonary embolism, and connective tissue diseases.^[4,5] In our setup, the common causes of exudative pleural effusions are tuberculosis, parapneumonic effusion, and malignancy.^[6,7]

The relative frequency of the cause of pleural effusion is known to vary in different parts of world.^[8] However, in developing nations, infections – especially tuberculosis and parapneumonic effusions, are more prevalent.^[9]

Objectives

The aim of this study was to find out the etiological basis of pleural effusion in patients presenting with pleural effusion in Thanjavur Medical College Hospital.

MATERIALS AND METHODS

This descriptive study was conducted in the Department of Thoracic Medicine, Thanjavur Medical College Hospital, Thanjavur, over a period of 12 months from January 2018

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to December 2018. Following proper clinical examination, the underlying cause of pleural effusion was established using pleural biopsy, radiological, biochemical, cytological, and bacteriological methods. Where necessary, one or combination of many investigations was used to confirm diagnosis. About 50 patients presenting with pleural effusion were involved in the study. Patients were informed about the study and proper informed consent was given by them.

OBSERVATION AND RESULTS

It was observed that of the 50 patients presenting with pleural effusion, investigations confirmed tuberculosis in

23 patients, malignancy in seven cases, congestive cardiac failure in four cases, parapneumonic causes in 12 patients, hypoproteinemia in two patients, and pulmonary embolism in two patients.

Confirmed Diagnosis Based on Combination of Investigations

As seen in Table 1, based on combination of investigations, 23 cases were confirmed as tuberculous pleuritis, 7 cases were malignancies, 12 cases were parapneumonic, 4 cases were Congestive cardiac failure, 2 cases were due to hypoproteinemia and a further 2 cases were confirmed as pulmonary embolism. This is clearly illustrated in Figure 1.

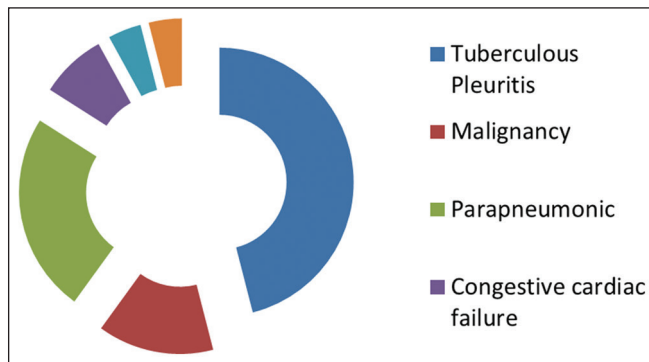


Figure 1: Break-up of etiology of Pleural effusion

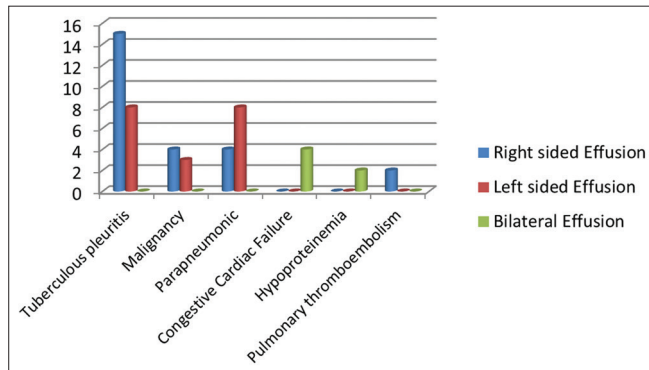


Figure 2: Sidedness of Pleural effusion in various pathologies

Sidedness of Pleural Effusion

As seen in Table 2, 25 cases had right sided pleural effusion, 19 cases had left sided effusion, while only 6 cases had bilateral effusion. This is clearly illustrated in Figure 2.

DISCUSSION

This prospective study was carried out to establish the most common causes for pleural effusion.

Of 50 patients, 31 (62%) were male, whereas 19 (38%) were female with an approximate male-female ratio of 3:2. In our study, tuberculosis was the leading cause of pleural effusion accounting for 46% of cases. This is in concordance with many such studies conducted in developing countries such as Iraq, Ghana, and Pakistan.^[9-11]

Most of the patients in the present study had right-sided pleural effusion (50%) which is fairly comparable with the study of Ambethiya (right side pleural effusion - 60%) and Dambal *et al.* (right side pleural effusion - 58.2%).^[12,13] Tuberculous pleural effusion more commonly occurs in the right side because it involves the right lung more than the left lung. Majority of pleural effusions were right sided then followed by left sided and bilateral pleural

Table 1: Confirmed Diagnosis

Tuberculous Pleuritis	Malignancy	Parapneumonic	Congestive cardiac failure	Hypoproteinemia	Pulmonary embolism
23	7	12	4	2	2

Table 2: Sidedness of Pleural Effusion

Diagnosis	Right-sided effusion	Left-sided effusion	Bilateral effusion
Tuberculous pleuritis	15	8	0
Malignancy	4	3	0
Parapneumonic	4	8	0
Congestive cardiac failure	0	0	4
Hypoproteinemia	0	0	2
Pulmonary thromboembolism	2	0	0

effusion. These results are comparable to a study done in Ethiopia.^[14]

In our study, parapneumonic effusion and malignancy respectively come next in frequency as the causes. This is similar to a study done in Lahore.^[6,7] Parapneumonic effusion occurred in 24% of patients which is higher compared to results from an international study by Zablockis and Nargela^[4] which showed parapneumonic causes being responsible for only 13% of effusions. Malignancy accounted for 14% of our cases which is similar to the studies done by Ambethiya (malignancy - 18%) and Dambal *et al.*^[12,13]

Pleural effusions in patients with congestive heart failure are typically bilateral. In our study, CCF accounted for only 8% of cases. Hypoproteinemia and pulmonary thromboembolism are less frequent with each accounting for 4% of cases in our study.

CONCLUSION

Tuberculosis is the leading cause of pleural effusion in our study. This is similar to what is being seen in many studies conducted across developing countries. Hence, we conclude that intensive antitubercular measures may go a long way in bring down the number of patients presenting with pleural effusion.

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