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**Original Research Article**

# Study of etiology of pleural effusion in Telangana population

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## ABSTRACT

**Background:** Among 86 patients aged between 18 to 65 of both sexes having pleural effusion due to various clinical etiologies were studied.
**Methods:** Chest x-ray PA. was studied, 20 ml of pleural fluid was aspirated to study bio-chemically, microbiologically and pathological. Echo-cardiography, USG abdomen and biopsy of pleura was also done in same patients in whom diagnosis or etiology was unclear.
**Results:** Among 59(68.6%) had fever, 68(79%) had cough, 40(46.5%) had breathlessness, 20(23.2%) had pedal edema, 42(48.8%) had chest pain, 5(5.8%) had abdominal distention. 52(60.4%) had tubercular pleural effusion 34(39.5%) had non- tubercular pleural types of non-tubercular PE effusion (PE) included 8(23.5%) synpneumonic, 5(14.7%) had CCF, 11(32.3%) had malignancy, 2(5.88%) had RA, 2(5.88%) had dengue fever, 2(5.88%) had pancreatitis, 4(11.7%) had Hypoproteinaemia.
**Conclusions:** This pragmatic approach to pleural effusion for patients with different clinical manifestations as pleural fluid analysis is gold standard method in evaluation pleural effusion of different etiology.

**Keywords:** Chest X-ray, Congestive cardiac failure, Non-Tubercular, Pleural effusion, Rheumatoid Arthritis, Tubercular

## INTRODUCTION

Pleural effusion suggests serious local or systemic disease and calls for urgent investigations to determine its cause. The pathophysiologic mechanisms under lying the accumulation of fluid in the normally pleural space include an increased pulmonary capillary pressure, decreased plasma oncotic pressure, increased permeability of pleural membrane, mediastinal involvement with reduced pleural lymphatic drainage, bronchial obstruction with high negative intrapleural pressure, and imbalance between formation and absorption of fluid.[1] The effusion occurring through pressure filtration without capillary injury is termed as transudate. E.g. CCF, renal failure, superior vena cava obstruction, constructive pericarditis. Liver cirrhosis, hypoalbuminaemia.[2] On the other hand inflammatory fluid leaking between the cells due to local factors is termed an exudate, as a bacterial pneumonia. Viral infections, tuberculosis, malignancy. Sub phrenic pathology and Dressler 's syndromes. Common cases of pleural effusion are CCF, pneumonia, malignancy, pulmonary embolism. And viral infections.[3] Hence pleural effusion is a significant respiratory problem needs to be evaluated the etiology. Therefore, attempt was made to study the same at different age groups and in both sexes.

## METHODS

Among 86 patients admitted in Medi Citi Institute of medical sciences at various wards were studied for pleural effusion etiology.

***Inclusion criteria***

- Adults patients aged between 18 to 65 years in whom pleural effusion was accumulated and having the related clinical manifestation were selected.

***Exclusion criteria***

- Patients having neurological complications, pediatric, patients having pleural effusion were excluded from the study.

***Method***

chest X-ray PA was taken all the patients were subjected to diagnostic thoracentesis. Under the aseptic precautions about 20 ml of fluid was aspirated and subjected to pleural fluid analysis- Biochemical, microbiological and pathological analysis were done. Apart from this AFB stain and sputum for AFB Routine blood examination, ESR was also studied Moreover. Echocardiography of USG abdomen were done in patients with different clinical manifestation to ruled out differential diagnosis.

***Statistical analysis***

The patients having similar clinical manifestation were classified with percentage. Tubercular and non-tubercular patients were segregated with percentage. Non tubercular patients were noted with different etiologies and classified with percentage. The ratio of the male and female were 2:1. The duration of the study was about three years (2016 to 2018).

## RESULTS

Among 59(68.6%) had fever 68(79%) Cough, 40% had breathlessness, 20(23.2%) had pedal edema, 42(48.8%) had chest pain, 5(5.8%) had abdominal distention. Such type of different clinical manifestations was observed associate with plural effusion in present study.

**Table 1: Clinical manifestations of patients with pleural effusion.**

| Clinical manifestations | No of patients | Percentage |
|---|---|---|
| Fever | 59 | 68.6% |
| Cough | 68 | 79% |
| Breathlessness | 40 | 46.5% |
| Pedal edema | 20 | 23.2% |
| Chest pain | 42 | 48.8% |
| Abdominal distention | 05 | 5.80% |

In the present study cough was highest manifestation 68(79%) followed by fever 59(68.6%) and Abdominal distention was the least manifestation 5(5.80%) (Table 1).

Among 52(60.4%) had tubercular plural effusion 34(39.5%) had non-tubercular pleural effusion was observed in present study.

**Table 2: Types of pleural effusion.**

| Particulars | No of patients | Percentage % |
|---|---|---|
| Tuberculosis pleural effusion | 52 | 60.4 |
| Non- tuberculosis pleural effusion | 34 | 39.5 |

Tubercular patients were more 52(60.4%) than non-tubercular 34(39.5%) (Table 2).

Among 8(23.5%) synpnemonic 5(14.7%) CCF, 11(32.3%) had malignant, 2(5.88%) had rheumatoid arthritis, 2(5.88%) had dengue fever 2(5.88%) had pancreatitis. 4(11.7%) had hypoproteinemia were associated with pleural effusion study.

**Table 3: Types of non-tubercular pleural effusion.**

| Particulars | No of patients | Percentage |
|---|---|---|
| Synpnemonic | 8 | 23.5% |
| CCF | 5 | 14.7% |
| Malignant | 11 | 32.3% |
| Rheumatoid arthritis | 2 | 5.88% |
| Dengue fever | 2 | 5.88% |
| Pancreatitis | 2 | 5.88% |
| Hypoproteinemia (nephrotic syndrome) | 4 | 11.7% |

In the Associated diseases Malignant was the highest 11(32.3%) followed by Synpnemonic 8(23.5%), CCF 5(14.7%) and least were Dengue fever, Pancreatitis 2(5.88%) (Table 3).

## DISCUSSION

In the present study of etiology of pleural effusion in Telangana population. The clinical manifestations of the patients were 59(68%) had fever 68(79%) had cough, 40(46.5%) had breathlessness, 20(23.2%) had pedal edema, 42(48.8%) had chest pain 5(5.81%) had abdominal distention (Table-1). The types of pleural effusion 52(60.4%) was tubercular pleural effusion, 34(39.5%) was non-tubercular pleural effusion. (Table 2). Types of non-tubercular pleural effusion had 8(23.5%) synpneumonic, 5(14.7%) had CCF, 11(32.3%) had malignancy, 2(5.88%) had Rheumatoid arthritis, 2(5.88%) had Dengue fever, 2(5.88%) had pancreatitis 4(11.7%) hypoproteinemia (Table 3). These findings were more or less in agreement with previous studies.[4-6]

History of the patients provides information about the possible etiology of pleural effusion (PE) and guidelines for necessary investigations History of pneumonia suggest para pneumonic effusion, either complicated

(empyema or empyema like), or uncomplicated, fever indicates an ineffective etiology. A history of cardiac, renal, or liver impairment can suggest transudative effusion, older age, weight loss, and a history of smoking point towards a diagnosis of malignant PE. Recant pedal edema, or deep venous thrombosis (DVT) may result in an effusion related to pulmonary embolism.

Trauma may result into hemothorax, or chylothorax. Benign or malignant effusion related to mesothelioma. Recent esophageal procedures or history of alcohol bringing suggest PE related to esophageal rapture physical findings such as ascitis may indicate cirrhosis, ovarian cancer or Meigs syndrome. 75% malignant PE are caused by neoplasm of lung, breast or ovary or by lymphoma.[7] Inflammatory PE are uncommon complications seen in about 2% to 5% of patients with rheumatoid arthritis.[8]

Pancreatitis PE are largely due to close proximity of the pancreas to the diaphragm.[9] The patients with CCF and PE present with Orthopnea, Paroxysmal nocturnal dyspnea, and on examination have crackles. PE associated with cirrhosis of liver. Hepatic hydrothorax is PE that develops in patients with pulmonary hypertension in the absence of cardiopulmonary disease. Effusion is caused by the passage of ascetic fluid from the peritoneal cavity into pleural space through diaphragmatic defects.[10,11] About 20% of patients with nephritic syndrome develop PE from severe hypo albuminemia which leads to sever oncotic pressure.

Tuberculosis is quite common in underdeveloped countries due to poor socio-economic conditions.[12]

## CONCLUSION

The present study of etiology of pleural effusion in Telangana population will be quite helpful to physician, radiologist. PE a is common clinical problem. The major cause of PE as tuberculosis, followed by pneumonic, and malignant causes, cirrhosis of liver etc. Most common cause of pleural transudate was CCF.

Histological examination and culture of pleural biopsy were most useful to find out the exact cause of PE in both tubercular and malignant effusions. But this study demands further pathophysiological, nutritional, genetic and immunological study because exact factors and pathogenesis of pleural effusion is still unclear.

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## REFERENCES

1. Chinchkar NJ, Talwar D, Jain SK. A stepwise approach to the etiologic diagnosis of pleural effusion in respiratory intensive care unit and short-term evaluation of treatment. Lung Ind: offic organ Ind Chest Soci. 2015;32(2):107.
2. Mehta AA, Patel MN, Soni AH, Patel TB, Parmar SA, Dumra HS, et al. Investigation into role of medical pleuroscopy in the diagnosis and management of patients with pleural diseases. Ind J Thora Cardio Surg. 2012;28(2):120-6.
3. Ijazk AB, Mohd KT. Management of Tuberculosis Pleural effusion. J Biomed SC Res. 2011;3:302.
4. Khan FY, Alsamawi M, Yasin M, Ibrahim AS, Hamza M, Lingawi M, et al. Etiology of pleural effusion among adults in the state of Qatar: a l-year hospital-based study. East Mediterr Health J. 2011;17(7):611-8.
5. Light RW. Clinical practice, pleural effusion. New Eng J Medi 2002;346:1971-77.
6. Marel M, Zrůtová M, Štasny B, Light RW. The incidence of pleural effusion in a well-defined region: epidemiologic study in central Bohemia. Chest. 1993;104(5):1486-9.
7. Mudaly DK, Deo SVS, subi TS, Shukla NK, Kallianpur AA. An update in the management of malignant pleural effusion. Ind. J Palliat Care. 2011;17:98-101.
8. Walker WC, Wright V. Pulmonary lesions and rheumatoid arthritis. Medi. 1968;47(6):501-20.
9. Kays MD. Pleuro pulmonary complications of pancreatitis. Thorax. 1968;23:297-305.
10. Alberts WM, Salem AJ, Solomon DA, Boyce G. Hepatic hydrothorax: cause and management. Archives of internal medicine. 1991;151(12):2383-8.
11. Cengiz A, Şakı H, Ürekli Y. Hepatik hidrotoraksta sintigrafik değerlendirme. Ege Tıp Dergisi. 2013;52(3):175-7.
12. Cavina C, Vichi G. Radiological aspects of pleural effusions in medical nephropathy in children. Annali Di Radiol Diagnostica. 1958;31(3):163-202.

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