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Original Research Article

# Study of Etiology of Pleural Effusion in Andhra Pradesh Population

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**Abstract**

**Background:** Pleural effusion is an excessive accumulation of fluid in the pleural space. It can be a diagnostic dilemma for clinicians because of the multiple etiologies of lung, pleura or systemic disorders.

**Material and Methods:** 95 patients with newly diagnosed pleural effusion based on Chest – x-ray PA view we're studied . 20 ml of pleural fluid was aspirated and sent for biochemical, microbiological, and pathological analysis. Echocardiography, USG abdomen, and biopsy of the pleura were carried out in the same patients whose etiology or diagnosis was not clear.

**Results:** Clinical manifestations were: 65 (68.4%) had fever, 75 (78.9%) had cough, 44 (46.3%) had breathlessness, 22 (23.1%) had pedal oedema, 46 (48.4%) had chest pain, and 5 (5.26%) had abdominal distention. 57 (60%) patients had tubercular pleural effusion, and 38 (40%) had non-tubercular pleural effusion. In non-tubercular pleural effusion 9 had (23.6%) synpnemonic effusion, 6 (15.7%) had CCF, and 13 (34.2%) had malignancy, 2 (2.1%) had rheumatoid arthritis, 2 (2.1%) had dengue fever, 2 (2.1%) had pancreatitis, and 4 (4.20%) had nephrotic syndrome.

**Conclusion:** In the present study, it was concluded that most of the pleural effusions are tubercular, but the etiological evaluation of plural effusions is very important to diagnose and treat accordingly.

**Key words:** tubercular, non-tubercular, malignant, cell cytology, CCF, cirrhosis



## Introduction

Pleural effusion is an excessive accumulation of fluid in the pleural space, it indicates an imbalance between plural fluid formation and removal [1]. Accumulation of pleural fluid is not a specific disease, but rather a reflection of the underlying pathology [2]. Therefore, for a patient with pleural effusion, it is a challenge for clinicians to know the exact etiology of pleural effusion. Without knowing the cause of pleural effusion, It can't be treated appropriately. Pleural effusions accompany a wide variety of disorders of the lung, pleura and systemic disorders [3].

Hence to diagnose pleural effusion appropriately, pleural fluid cytology, biochemistry and clinical presentation are important to establish a etiological diagnosis. The common causes of pleural effusion are CCF, cirrhosis, nephrotic syndrome, tuberculosis, malignancy. Hence attempt is made to evaluate the etiology of pleural effusion and treated accordingly.

## Material and Methods

95 adult patients who visited the medicine department of Kurnool Medical College Hospital in Kurnool, Andhra Pradesh-518002 were studied.

**Inclusion criteria:** Adult patients aged between 18 to 65 years in whom pleural effusion was newly diagnosed.

**Exclusive criteria:** patients who were critically ill, age<18 and >65 years were excluded from the study

**Methods : Chest** X-ray PA view was taken. All the patients were subjected to diagnostic thoracentesis. Under aseptic precautions, about 20 ml of fluid was aspirated and subjected to pleural fluid analysis. Biochemical, microbiological, and pathological analyses were done. Apart from this AFB stain and sputum for AFB, routine blood examination and ESR were also studied. Echocardiography , USG abdomen done based on clinical manifestations.

Duration of study: May 2023 to October 2023

**Statistical Analysis:** The patients having similar clinical manifestations were classified by percentage. Tubercular and non-tubercular patients were segregated by percentage. Non-tubercular patients were noted with different etiologies and classified by percentage. The ratio of males and females was 2:1.

## Observation and Results

**Table 1:** Clinical manifestations of patients with pleural effusion 65 (68.4%) had fever, 75 (78.9%) had cough, 44 (46.3%) had breathlessness, 22 (23.1%) had pedal oedema, 46 (48.4%) had chest pain, and 5 (5.26%) had abdominal distention.

**Table 1: (Total No of patients- 95) Clinical manifestations of patients with pleural effusion**

| Sl no | Clinical manifestations | No of patients | Percentage % |
|---|---|---|---|
| 1 | Fever | 65 | 68.4 |
| 2 | Cough | 75 | 78.9 |
| 3 | Breathlessness | 44 | 46.3 |
| 4 | Pedal edema | 22 | 23.1 |
| 5 | Chest pain | 46 | 48.4 |
| 6 | Abdominal distention | 5 | 5.26 |

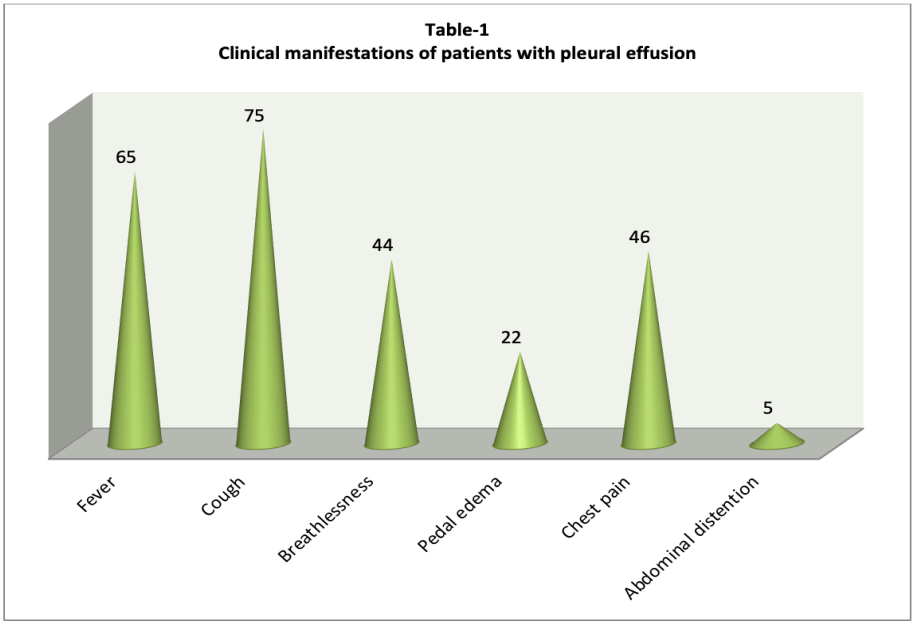



**Table 2:** Types of plural effusion 57 (60%) had tubercular plural effusion, and 38 (40%) had non-tubercular pleural effusion.

**Table 2: Types of pleural effusion**

| Sl no | Particulars | No of patients | Percentage % |
|---|---|---|---|
| 1 | Tubercular pleural effusion | 57 | 60 |
| 2 | Non- tubercular pleural effusion | 38 | 40 |

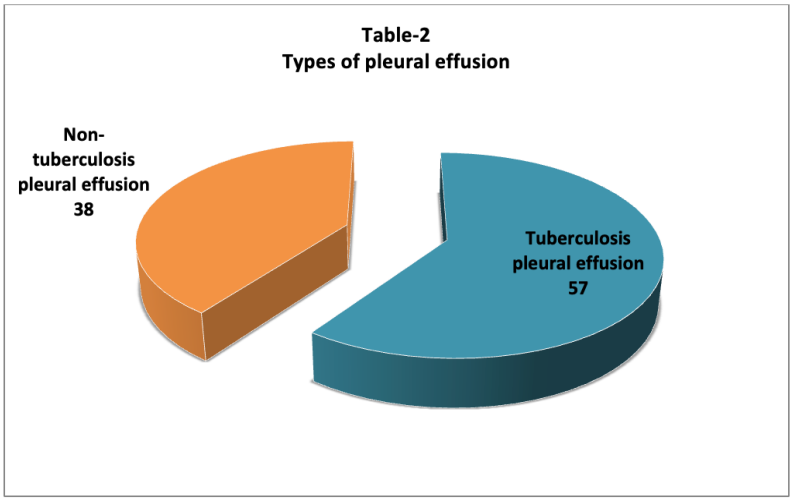
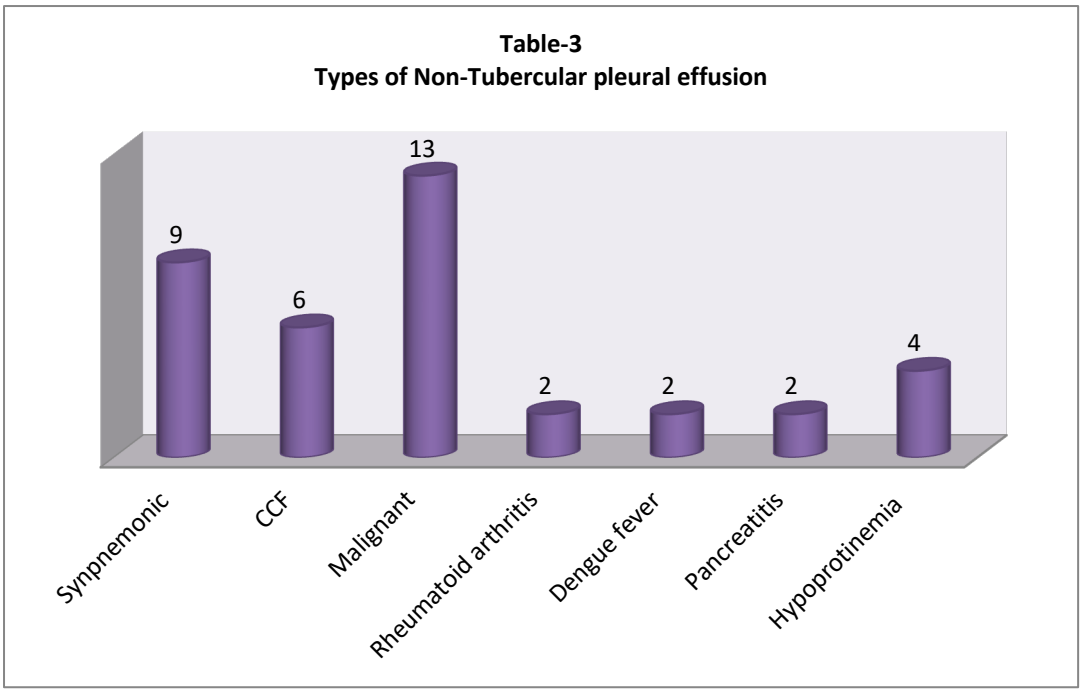


**Table 3**: Types of non-tubercular pleural effusion (out of 38 non-tubercular effusions): 9 (23.6%) synpnemonic effusion, 6 (15.7%) CCF, 13 (34.2%) had malignant effusion, 2 (2.1%) had rheumatoid arthritis, 2 (2.1%) had dengue fever, 2 (2.1%) had pancreatitis ,4 (4.21%) had nephrotic syndrome.

**Table 3: Types of Non-Tubercular pleural effusion (No of patients 38)**

| Sl no | Particulars | No of patients (38) | Percentage % |
|---|---|---|---|
| 1 | Synpnemonic | 9 | 23.6 |
| 2 | CCF | 6 | 15.7 |
| 3 | Malignant | 13 | 34.2 |
| 4 | Rheumatoid arthritis | 2 | 2.1 |
| 5 | Dengue fever | 2 | 2.1 |
| 6 | Pancreatitis | 2 | 2.1 |
| 7 | Nephrotic syndrome | 4 | 4.21 |




## Discussion

Present study of pleural effusion in the Andhra Pradesh population 65 (68.4%) had a fever, 75 (78.9%) had a cough, 44 (46.3%) had breathlessness, 22 (23%) had pedal oedema, 46 (48.4%) had chest pain, and 5 (5.26%) had abdominal distention (Table 1). Out of 95 patients, 57 (60%) had tubercular pleural effusion and 38 (40%) were non-tubercular (Table 2). Among the non-tubercular, 9 (23.6%) were synpneumonic effusion, 6 (15.7%) had CCF, 13 (34.2%) had malignancy, 2 (2.1%) had rheumatoid arthritis, 2 (2.1%) had dengue fever, 2 (2.1%) had pancreatitis, and 4 (4.21%) had nephrotic syndrome (Table 3). These findings were more or less in agreement with previous studies [4-7].

The history of the patients provides information about the possible aetiology of pleural effusion (PE) and guidelines for necessary investigations. A history of pneumonia suggests para-pneumonic effusion, either complicated (empyema-like) or uncomplicated; fever indicates an infective 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 Pleural Effusion. Recent pedal edema, or deep venous thrombosis (DVT), may result in an effusion related to pulmonary embolism. Trauma may result in hemothorax or chylothorax. Recent esophageal procedures or a history of alcohol use suggest Pleural effusion related to oesophageal rupture. Physical findings such as ascites may indicate cirrhosis, ovarian cancer, or Meigs syndrome. 75% of malignant pleural effusions (PE) are caused by neoplasms of the lung, breast, ovary, lymphoma or mesothelioma. [7] Inflammatory pleural effusion is an uncommon complication seen in about 2% to 5% of patients with rheumatoid arthritis. [8] Pancreatitis related pleural effusion is largely due to the close proximity of the pancreas to the diaphragm. [9] patients with CCF and pleural effusion present with orthopnea and paroxysmal nocturnal dyspnea and on lung auscultation have crackles. Pleural effusion is associated with cirrhosis of the liver and is called

Hepatic hydrothorax. Effusion is caused by the passage of ascetic fluid from the peritoneal cavity into the pleural space through diaphragmatic defects [10-12]. About 20% of patients with nephrotic syndrome develop pleural effusion from severe hypoalbuminemia, which leads to decreased oncotic pressure.

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

## Summary and Conclusion

The present study of the aetiology of pleural effusion in the Andhra Pradesh population will be quite helpful to physicians and radiologists as pleural effusion (PE) is a common clinical problem. The major cause of pleural effusion may be tuberculosis, followed by pneumonic and malignant causes, cirrhosis of the liver, etc. The most common cause of pleural transudate was CCF. Histological examination and pleural biopsy were most useful to find out the exact cause of Pleural effusion in both tubercular and malignant effusions. But this study demands further pathophysiological, nutritional, genetic, and immunological studies because the exact factors and pathogenesis of pleural effusion are still unclear.

**Limitations of Study:** Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest techniques, we have limited findings and results.

- This research paper was approved by the ethical committee of Kurnool Medical College Hospital, Kurnool, Andhra Pradesh (51802).
- No conflict of interest
- Self funding

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