



## TO STUDY THE CLINICAL PROFILE OF PATIENTS WITH PLEURAL EFFUSION

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**ABSTRACT** **Background:** Pleural effusion is one of the manifestations of various diseases with cardiopulmonary symptoms. The diagnosis in cases with transudative pleural effusion is not that troublesome a compared to exudative pleural effusion requires careful differential diagnosis that includes parapneumonic effusion, tuberculosis, and metastatic cancers which are found to be the cases in large number of patients.

**Aims and objectives:** The main objective of this study is to find out the various causes of pleural effusion, and their clinical presentation and importance of laboratory analysis of blood and pleural fluid to aid diagnosis of patients with pleural effusion

**Methodology:** A prospective non-interventional observational study where data from all the cases all patients (age >14years) detected having pleural effusion attending MGM hospital for treatment from NOV 2015 to Dec 2016. All patients were subjected for routine blood investigation and pleural fluid analysis. USG chest HRCT chest and other special investigations carried out if considered necessary in particular cases.

**Sample size:** 100

**Observation:** In our study the maximum number of patients with pleural effusion belonged to the age group 14-29 and 30-44 years and majority of cases were males. The most common cause of pleural effusion was tubercular type followed by malignancy. Majority of the cases presented with an exudative effusion. The most common mode of presentation being fever, followed by other symptoms like cough, Shortness of breath, chest pain.

**Conclusion:** Pleural fluid analysis is the diagnostic method to distinguish exudative from transudative pleural effusion. The prevalence of tuberculous pleural effusion among the younger population in a developing country like ours is reflected in this study.

**KEYWORDS :** Pleural Effusion , Light's criteria , Exudates, Transudates

## INTRODUCTION

Pleural effusion is a common finding among patients presenting with cardiopulmonary symptoms. A systemic approach to the investigations is needed because of the extensive differential diagnosis.

The pleural space lies between the lungs & chest wall & it contains a thin layer of fluid, which serves as coupling system, A small physiologic amount of pleural fluid (0.2 ml per kg) normally rests within this potential space Any excess quantity of fluid within this space is referred to as pleural effusion. The maintenance of this amount depends on the oncotic and hydrostatic pressure. With an increase in capillary and interstitial hydrostatic pressures or a decrease in capillary oncotic pressure the fluid accumulates as a result of an imbalance produces transudative effusions. Whereas inflammatory and malignant processes can cause an abnormal increase in local capillary and pleural membrane permeability or lymphatic blockage, which causes accumulation of exudative pleural fluid (i.e. fluid that is higher in protein and lactate dehydrogenase than transudative fluid). The patients were evaluated for a diagnosis of malignant effusion, Congestive Heart Failure (CHF), Tuberculosis (TB), pancreatitis, collagen vascular disease, Pulmonary Embolism (PE) or Dressler's syndrome based on pre-set non pleural fluid-based criteria.

Even with this high association of pleural effusion in so many different diseases, specific researches are lacking in studying this clinical spectrum in our country. This study gives the brief overview of clinical presentations and laboratory findings of all those patients admitted

## MATERIALS AND METHODS:

**Study Design and Setting:** Prospective non-interventional observational study.

**Study Population:** All patients (age >14years) detected having pleural effusion were included.

**Tool :** The pleural fluid was sent for routine microscopy, biochemical analysis which included total protein, sugar, LDH, Adenosine deaminase, albumin, bilirubin, cholesterol, also cytological analysis was done.

**Ethical Review:** The study protocol was approved by the ethics committees of MGM Medical College.

## Statistical analysis :

The data collected in this study is analysed statistically using descriptive statistics. SPSS software used for analysing the data with the help of statistician.

## RESULTS

All the cases with the diagnosis of pleural effusion admitted were included in the study. The demographic profile of the patients studied is depicted in Table 1. Out of the total 100 cases, 64 were male and 34 females.

The maximum number of patients with pleural effusion belonged to the age group 14-29 and 30-44 years and majority of cases were male. Among the various causes of pleural effusion, the most common cause was tubercular type (74%) followed by malignancy (9%) as shown in Graph 1. In the study majority of the cases were males with an exudative effusion (62%). Among the transudate group 77.7% were males while the remaining were females. In comparison to transudative pleural effusion, females accounted for 37.3% of exudative effusion. The average age of exudates in our study for males was 38.88, which was lower compared to the average age of transudate, which was noted to be 67.88.

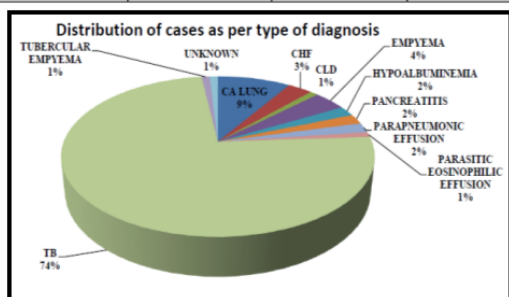
Table 2 shows the various symptoms of the patients. Amongst exudative pleural effusion mostly TB being underlying etiology, the most common mode of presentation being fever 82 %, cough in 58%, Shortness of breath constituted 53%, chest pain in 49%.

Evaluation of all the samples collected reveals mean plus standard deviation with average protein level as  $4.7 \pm 1.2$ , LDH as  $1093 \pm 3159$ , albumin as  $2.41 \pm 0.74$ , bilirubin as  $0.7193 \pm 0.33$ , cholesterol as  $.75.67 \pm 28.60$ . The level of lactate dehydrogenase in the pleural fluid correlates with the degree of pleural inflammation. In our study, also raised level of LDH was seen in inflammatory conditions like TB and Empyema and eosinophilic effusion and low in other conditions like congestive heart failure and liver disease. Our study collaborates well with the other study and shows the various mode of clinical

presentation importance of pleural fluid analysis in patient presenting with pleural effusion.

**Table – 1: Distribution of cases as per Age and Sex**

Age group	Sex		Total (%)
	Female	Male	
14 – 29	17	23	40
30 – 44	10	23	33
45 – 59	8	14	22
60+	1	4	5
<b>Total (%)</b>	<b>36</b>	<b>64</b>	<b>100</b>



**Graph 1: Distribution of cases as per Sex with exudate and transudate separation**

**Table 2 : Distribution of cases as per clinical symptomatology**

Clinical Features	Pleural Effusion		Total (%)
	Exudates	Transudates	
Fever	82	8	90
Chest Pain	49	3	52
Dyspnoea	53	6	59
Cough	58	6	64
Haemoptysis	1	1	2
Others	17	6	23
<b>Total</b>	<b>91</b>	<b>9</b>	<b>100</b>

**DISCUSSION :**

Srinath et al in 2016 did a study on differentiating pleural effusions and found that among the exudate group, 26 were male and 8 were female. The average age of patients presenting with transudate was slightly higher at 55.84 compared with those presenting with exudates at 49.18, in our study it was found that the average age of transudate was noted to be 67.88 and exudates in our study for males was 38.88.

Among the 74 cases diagnosed as Tuberculous pleural effusion, 2 were transudative in nature. This was an unexpected finding in our study. The 2 cases were diagnosed cases of pulmonary TB on treatment, which presented to the casualty as a hydropneumothorax and upon evaluation came out as transudative pleural effusion based on light's criteria. Among the 9 cases diagnosed as CA lung, 8 were exudates while 1 was transudate in nature (para-malignant effusion). The diagnosis of CA lung was confirmed by histopathological evidence.

In the study by Bhavsar et al maximum number of cases of pleural effusion were tuberculous (66%) followed by malignant (18%) and parapneumonic effusion (10%). Alireza et al in 2016 did a study similar to ours and found that 43 % cases were malignant effusion followed by 36 % cases as transudates due to heart failure. Empyema was seen in 5 % while tuberculosis was seen only in 4 % followed by pulmonary embolism and End stage renal disease. This shows the wide spectrum of effusion related disease based on population under study. In comparison with studies done abroad, our study highlights the higher incidence of TB in a developing country. In our study maximum exudative cases had fever followed by cough dyspnea and chest pain. It is similar to other studies of Srinath et al and Bhavsar et al.

**CONCLUSION :**

Our study concluded that the most common cause of pleural effusion is tuberculosis followed by malignancy and most cases of those belong to younger age group (14 -29yrs). Our study concluded that fever, cough, and shortness of breath are the three most common mode of clinical presentation in patient with pleural effusion. Pleural fluid analysis is the diagnostic method to distinguish exudative from transudative pleural effusion. The prevalence of tuberculous pleural effusion among the younger population in a developing country like ours is reflected in this study.

**REFERENCES :**

- Sahn SA. The differential diagnosis of pleural effusions. West J Med. 1982 Aug; 137(2):99-108.
- Garcia-Vidal C, Carratalà J. Early and late treatment failure in community acquired pneumonia. Semin Respir Crit Care Med. 2009 Apr; 30(2):154-60.
- Heffner JE. Diagnosis and management of malignant pleural effusions. Respirology. 2008 Jan; 13(1):5-20.
- Maskell NA, Butland RJ; Pleural Diseases Group, Standards of Care Committee, British Thoracic Society. BTS guidelines for the investigation of a unilateral pleural effusion in adults. Thorax. 2003;58(suppl 2):ii8-ii17.
- Srinath Dhandapani, Sivakumar Reddy, Rajalakshmi Rajagopalan Differentiating Pleural Effusions: Criteria Based on Pleural Fluid Cholesterol Department of Pulmonary Medicine, SRM Medical College Hospital and Research Center, Chennai, Tamil Nadu, India 76 Eurasian J Pulmonol 2016; 18: 76-9.
- Bhavsar Kaushal , Pujara Krupal Pleural Effusion: A Two Year Prospective Study in Western India India Scholars Journal of Applied Medical Sciences (SJAMS) ISSN 2320-6691 (Online) Sch. J. App. Med. Sci., 2015; 3(8A):2790-2793
- Diagnostic Value of Measurement Specific Gravity by Refractometric and Dipstick Method in Differentiation between Transudate and Exudate in Pleural and Peritoneal Fluid. Alireza Abdollahi and Zohreh Nozarian Iran J Pathol. 2016 Fall; 11(4): 363-369.