

ETIOLOGY AND CHARACTERISTICS OF PLEURAL FLUIDS :A STUDY OF 104 CASES OF PLEURAL EFFUSION

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ABSTRACT:

Objective: Pleural effusion is a common clinical condition ,specially in developing countries, with different etiologies. To study clinic-radiological profile of patients of Southern Rajasthan, suffering from Pleural Effusion. **Methods:** Prospective study conducted on 104 patients with Pleural Effusion coming to our Tertiary Care center. All patients underwent Pleural Aspiration and Samples were sent for ADA, Biochemistry, cytology and Microbiological studies. CT Thorax with/ without FNAC/Biopsy and Bronchoscopy were done in appropriate cases. **Results:** Majority of Patients were Male. Cough (70.19%), Chest pain (65.38%) and Fever (53.84%) were common symptoms. Majority of Effusions were right sided (51), followed by left sided (40) and bilateral (13). Majority of Effusion were Exudate (85.57%). Tuberculosis was the leading cause of effusion (52.61%) followed by Malignancy (12.5%) and cardiac cause (7.69%). No diagnosis could be made in 11 patients. **Conclusion:** Tuberculosis remains the most common cause of Pleural effusion in Southern Rajasthan. Higher diagnostic modalities (e.g. Thoracoscopic Pleural Biopsy) should be used in undiagnosed cases.

Key words: Pleural Effusion, Tuberculosis, Malignancy.

INTRODUCTION

A pleural effusion is abnormal collection of fluid in pleural cavity resulting from excess fluid formation or decreased absorption (1). Many systemic and local diseases result into formation of Pleural fluid. Systemic diseases usually cause

Transudative pleural effusion, while local diseases usually cause Exudative pleural effusion. Separation between exudative and transudative pleural effusion is best done by Light's criterion. The relative frequency of cause

of pleural effusion is known to vary in different parts of world (2). However, in developing nations, infections – especially Tuberculosis and parapneumonic effusions are more prevalent (3).

Our hospital (Geetanjali Medical College and Hospital) is a tertiary care center which caters a large no. of population in southern Rajasthan. This study was done to know the clinical and etiological pattern of patients of pleural effusion in this region.

MATERIAL AND METHODS

This prospective study was done in Department of Pulmonary Medicine, Geetanjali Medical College and Hospital during July 2011 to June 2012. The study includes patients with pleural effusion coming to Pulmonary Medicine OPD or referred from other department for evaluation of Pleural effusion.

Research protocol was approved by ethical committee of Geetanjali University. Informed written consent was taken from each patient and confidentiality was maintained while using patient's data.

Methods

This study was done on 104 patients with pleural effusion. Thorough clinical history was taken and physical examination was done in each patient. A chest x-ray was obtained and sputum examination, when present, was done for AFB smear and for cytological examination. Pleural fluid was aspirated and samples were sent for ADA, biochemistry, cytology and Microbiological studies. Bronchoscopy and CT thorax were done when it was thought to be indicated.

RESULTS

Out of 104 patients, Male were 75 (72.11 %) and Female were 29 (28.43 %). Patients were between 16 – 90 yrs of age. Pleural Effusion was right sided in 51 patients, left sided in 40 patients and bilateral in 13 patients. Effusion was mild in 58 patients, moderate in 35 patients and massive in 11 patients. Majority of patients were having Exudative pleural effusion (89, 85.57 %). Table 1 represents the presenting symptoms in these patients.

Table 1

Symptoms	Number	Percent
Cough	73	70.19
Chest pain	68	65.38
Decreased appetite	60	57.69
Fever	56	53.84
Breathlessness	51	49.03
Weight loss	11	10.57
Joint pain	8	7.69

Table 2 represents final diagnosis of these patients

Table 2

Diagnosis	Number	Percentage
Tuberculosis	62	52.61
Malignancy	13	12.5
Cardiac	8	7.69
Pneumonia	7	5.76
CRF	3	2.88
Inconclusive	11	10.57

Clinical evidence of Malignancy was present in 6 cases.

Cardiac cause of pleural effusion was present in 8 cases. Cardiomegaly was seen in 6 out of 8 patients and fluid was bilateral in 5 /8 cases. 7 patients were having Synpneumonic pleural effusion with 2 patients showing Pseudomonas and E.coli bacteria on pleural effusion culture. No diagnosis could be made in 11 patients.

DISCUSSION

Our study represents clinical patterns and etiological profile of patients of pleural effusion in southern Rajasthan. The common symptoms were cough (70.19%) and chest pain (65.38%). A study done by Porcel and Vives (4) also showed these symptoms to be common in such patients. Majority of Pleural fluid were right sided (51, 49.03%) followed by left sided (40, 38.46%) and bilateral pleural effusion (13, 12.5%). These results were similar to a study done in Ethiopia (5). Most of the pleural fluids were exudates (89/104, 85.57 %) with Tuberculosis and Malignancy as two most common etiologies.

Tuberculosis was the leading cause of pleural effusion in this region (62 patients, 52.61 %). This seems reasonable in a developing country like India. Majority of these patients were young adults (41/62 patients, 66.12%). Similar results were shown in a study done in Iraq with Tuberculosis as the leading cause with majority of cases occurring in young adults (6). A similar study done in Ghana (3) also showed Tuberculosis as the most common cause. In 3 patients (4.68%), diagnosis was made on clinical history and positive response with trial ATT. This finding was comparable to a study, done in

state of Qatar, in which 2 patients (3.1 %) were diagnosed as having Tuberculosis entirely on clinical judgement and response to ATT. Mean ADA value in this group was 78.(7)

Malignancy was found in 13 patients (12.5%) in our study. This low incidence may be due to the fact that Tuberculosis is very common in our country. A study done in Peshawar (8) and Malaysia (9) also found Malignancy as second most common cause in patients of pleural effusion with Tuberculosis leading the list. Most of the patients were of more than 40 yrs of age and smoking history was present in majority of them.

In our study, no diagnosis could be made in 11 patients. The facility of Pleural biopsy / Thoracoscopy was not present in our institute at the time of study. It seems likely that more cases of Tuberculosis or Malignancy could have been diagnosed with the help of these two investigations.

CONCLUSION

Tuberculosis remains the most common cause of Pleural effusion in Southern Rajasthan. Higher diagnostic modalities (e.g. Thoracoscopic Pleural Biopsy) should be used in undiagnosed cases.

REFERENCES

- 1.Diaz – Guzman E, Dweik RA. Diagnosis & Management of Pleural Effusions: A practical approach. *Compr Ther.*2007;33(4):237-46
- 2.Storey, D.D., Dines, D.E. and Coles, D.T.(1976) Pleural Effusion, a diagnostic dilemma. *JAMA*,236,2183-86

3. Afful B, Murphy S, Antunes G, and Dudzevicius V (2008) The characteristics and causes of pleural effusions in Kumasi Ghana, a prospective study. *Tropical Doctor*, 38, 219-20

4. Porcel JM, Vives M (2003). Etiology and Pleural fluid characteristics of large and massive pleural effusions. *Chest*, 124, 978-983

5. Desalew M, Amanuel A, Addis A, Zewdu H et al. Pleural Effusion: Presentation, cause and treatment outcome in a resource limited area, Ethiopia. *Health*, Vol 4, No 1, 15-19 (2012)

6. Al Alusi F A. Pleural effusion in Iraq: A prospective study of 100 cases. *Thorax* 1986;41: 492-493

7. Khan F Y, Alsamawi M, Yasin M, Ibrahim A S, Hamza M, Lingawi M et al. Etiology of Pleural Effusion among adults in state of Qatar: a 1 year hospital based study. *EMHJ*. 2011; 17(7): 611-18.

8. Khan Y, Bilal, Zia S. Etiological spectrum of exudative Pleural effusion in a tertiary care hospital based on closed pleural biopsy. *Ann Pak Inst Med Sci*. 2011;7 (3): 133-136

9. Ngoh HL. Pleural effusion in 100 Malaysian patients. *Med J Malaysia*. Vol 46, No 4, December 1991