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A RETROSPECTIVE STUDY OF 100 CASES OF PLEURAL EFFUSION AT A TERTIARY CARE CENTRE

Pathology

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ABSTRACT

Accumulation of excess fluid in pleural cavity is called as pleural effusion. In this study we are trying to correlate the clinical feature, and diagnostic features including biochemical, radiology , cytology and bacteriology for correct diagnosis of causes of pleural effusion. **Material and Method-** This retrospective study was conducted in the department of pathology katihar medical college in which 100 cases of pleural fluid of either sex and either age was included. Patients with pleural effusion either suspected clinically or radiologically included in this study. Non-aspirable effusion was excluded. **Result-**Most of the patients were in between the age group of 50-70 yrs and mostly male(70%).most of the patients are diagnosed as tubercular effusion with exudative fluid. Out of 85% exudative effusion 60 % were tubercular 15% were inflammatory and 10 % cases are malignant. Transudative fluids are diagnosed mostly due to congestive heart failure, cirrhosis, hypoproteinemia and paraproteinemia. **Conclusion-** Most of the patients are diagnosed as tuberculous effusion with elderly age. Right sided pleural effusion was most common in exudative fluid and bilateral effusion was most common in transudative fluid.

KEYWORDS

Pleural effusion, Tuberculosis, Exudative, Transduative

INTRODUCTION

Collection of an abnormal quantity and quality of fluid in pleural cavity is called pleural effusion[1].

Collection of fluid in pleural cavity has varying etiology[2]. Due to various etiological factor the thorough investigation is needed. Chief complain, clinical examination, lab diagnosis biochemical and pathological investigation with radiology are considered in the diagnosis. Transudative and exudative fluid can help in initial diagnosis. There are many criteria for differentiating of transudate and exudate but none of them is 100% sensitive and specific[3].

Aims and Objective

1. To analyse the patients according to age and sex.
2. Number of patients dividing in transudate and exudate.
3. Etiological classification of pleural effusion according to chief complains.
4. Final diagnosis after overall investigation

METHOD AND MATERIAL

The present study was conducted in the department of pathology katihar medical college and totals 100 cases of either sex and age of pleural effusion was included.

Inclusion Criteria

Adult patient with pleural effusion as determined by clinical and or radiological means, thoracocentesis on who yield a minimum amount of fluid enough to carry out routine test were included in the study.

Exclusion Criteria

Patients with pleural effusion with non aspirable fluid quantity decided clinically or radiologically, were excluded.

All patients underwent detailed clinical examination and routine laboratory examination like blood test for hemoglobin, total WBC count, differential WBC count, erythrocyte sedimentation rate, random blood sugar, RFTS, serum proteins, urine examination, sputum examination and tuberculin test will be carried out in all patients. A plain chest X ray postero-anterior view taken prior to thoracocentesis and another was taken after thoracocentesis to rule out complications. Additional films and ultrasound, computed tomography scan was done whenever indicated. Pleural fluid analysis was done for protein, sugar, total cell count, differential cell count, gram's stain, ZN stain, culture and sensitivity and adenosine deaminase (ADA) level. Pleural fluid cytology was done in suspected malignant pleural effusion.

Additional investigations like ANA screening, ANA profile, CECT thorax and 2D-Echo was done. In undiagnosed pleural effusion thoracoscopy guided pleural biopsy was taken. Diagnosis was made on clinical examination, radiological examination and analysis of laboratory data.

RESULTS

Most of the patients were between the age group of 61-70 years and 51-60 years and they constituted the 30% and 20% of total cases respectively and pleural effusion was more common in males (70% as compared to females (30%).

Table 1 : Age & Sex Wise Distribution Of Pleural Effusion

Age group (in years)	Number of patients			Percentage (%)
	Male	Female	Total	
<10	10	0	10	10%
11-20	10	10	20	20%
21-30	0	0	0	0%
31-40	10	0	10	10%
41-50	0	0	0	0%
51-60	0	20	20	20%
61-70	30	0	30	30%
71-80	10	0	10	10%
Total	70	30	100	100%

Table 1 suggests that out of 100 cases maximum numbers of cases of pleural effusion were tuberculous (60%). Out of 60 patients of tuberculous effusion, 6 patients were positive for HIV, 8 patients were diabetic, 1 patient was hypertensive and 2 patients had ischemic heart disease. Among 60 patents of tuberculous effusion only 4 patients had past history of tuberculosis. 2 patients with congestive cardiac failure were having ischemic heart disease in the past and 1 patient had hypertension. Out of 10 patients with parapneumonic effusion 2 patients were diabetic. Out of 10 patients of malignant pleural effusion 3 patients were hypertensive. Majority of patients had right sided effusion. Right sided effusions were also more common in tuberculous and malignant effusions.

The most common symptom was chest pain (72%) followed by fever (62%), breathlessness (58%) and cough (61%).

50% of patients of tuberculous patients,80% of malignant patients and 80% patients of parapneumonic effusion had pleural fluid ADA value>40. . In etiologies like congestive cardiac failure and hypoproteinemia ,cirrhosis all (100%) patients had pleural fluid protein <3 gm%..

Table 2 : Etiology Of Pleural Effusion.

Diagnosis	R	L	B/L	(%)
Tuberculous	42	18	0	60%

Malignant	8	2	0	10%
Parapneumonic	7	3	0	10%
CCF	0	1	4	5%
Cirrhosis	5	0	0	5%
Hypoproteinemia	0	0	5	5%
Other causes	1	2	2	5%
Total	63	26	11	100%

Pleural fluid cytology was positive for malignant cells in 6 patients of malignancy out of 10 patients, confirmed by biopsy. Total 85% patients had exudative pleural effusion (Table 2).

There were 10 patients with undiagnosed pleural effusion were gone through thoracoscopy guided pleural biopsy which gave 100% yield in diagnosis. Out of 10, biopsy suggests 6 patients with malignancy, 3 patients with tuberculosis and 1 patient with parapneumonic pleural effusion. Bronchoscopy was not performed in any patient in this study

DISCUSSION

In the present study pleural effusions were more common in 61-70 years of age group followed by 51-60 years of age group which is comparable with the study of Shah H. In study done by Burgers it was among 41-50 years of age group. In present study more common etiology was tuberculosis as India is prevalent country for it and the elderly patients are more immunocompromised due to metabolic syndromes and other chronic diseases. In the present study group male to female ratio was 2:3:1, which is comparable with the studies of Maldhure (2.13:1), Hirsch (2.53:1) and Parikh(2.21:1) [3,4,6]

Most of the patients in present study had right sided pleural effusion (63%) which is comparable with the study of Parikh(right side pleural effusion-60%) and Dambal A (right side pleural effusion-58.2%).[3,7]

Tuberculous pleural effusion more commonly occurs in right side because it involves right lung more than left lung.

In the present study incidence of exudative effusion was 85% which was comparable with the study of Parikh 90%. In various other studies the incidence of exudative effusion was low which can be explained by the fact that tuberculousis is more prevalent in India having exudative etiology.[3,5]

In the present study incidence of tuberculous pleural effusion was 60% which was comparable to the studies of Parekh(62%), Thiruvengadam (64%), and Damlal A (65.5%) which were done in India while in various other studies incidence of tuberculous pleural effusion was low, which can be explained by the fact that TB is more prevalent in india.[3,7,8]

Incidence of malignant pleural effusion was 10% which was comparable with the Indian studies Parikh (18%), Damlal Thinvengadan (21%) and Valdes (22.9%).[3,7,8,9]

Table 3 : Pleural Fluid ADA Levels In Various Pleural Effusions.

ADA(U/L) Level	<40	41-55	>55	Total
Tuberculous	30	10	20	60
Malignant	8	2	0	10
Parapneumonic	8	2	0	10
CCF	5	0	0	5
Cirrhosis	5	0	0	5
Hypoproteinemia	5	0	0	5
Other causes	2	1	2	5
Total	63	15	22	100

Table 3 suggests that most of the tuberculous pleural effusions had elevated levels of pleural fluid ADA. Some of the malignant and parapneumonic pleural effusions also had raised pleural fluid ADA.So it is advisable not rely only on this investigation for diagnosing tuberculous pleural effusion

Table 4 : Transudates V/s Exudates

Study	Transudate	Exudate
Valdes8	25.69%	74.31%
Ram KN9	32.5%	67.5%
Pujan Parikh et al	9%	91%
Present Study	15%	85%

Table 4 Suggests That Exudative Effusions Are More Common.

Malignant	8	2	0	10%
Parapneumonic	7	3	0	10%
CCF	0	1	4	5%
Cirrhosis	5	0	0	5%
Hypoproteinemia	0	0	5	5%
Other causes	1	2	2	5%
Total	63	26	11	100%

Table 5 : Thoracoscopy In Undiagnosed Pleural Effusion.

Study	No. of patients diagnosed
Tscheikuna et al [10]	95% (n=34)
Kendall et al	83% (n=48)
Mootha VK et al 12	74.3% (n=35)
Pujan Parikh et al	100% (n=15)
Present study	100% (n=10)

Thoracoscopy-guided pleural biopsy revealed a 100% diagnosis success rate in cases of undetected pleural effusion, which is consistent with a number of other investigations (Table 5).

CONCLUSION

Present study suggest that in india mostly tuberculosis is the etiology of pleural effusion as tuberculosis is prevalent in india.exudative fluid is most common than transudative and serumADA also play important role in investigation and further treatment is easy in tuberculous effusion.However thoracocentesis followed by pleural fluid analysis is the best method to diagnose the underlying etiology.

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