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CAUSES OF TRANSUDATIVE AND EXUDATIVE PLEURAL EFFUSION IN ADULTS: A DESCRIPTIVE CROSS SECTIONAL STUDY

[1]Dr. Shagufta Sultan, [2]Dr. Anam Iqbal, [3]Dr. Maryam Arif
[1]MBBS; Rawalpindi medical college, Rawalpindi, Pakistan.
[2]MBBS, Fatima Jinnah Medical College, Lahore, Pakistan.
[3]MBBS, Fatima Jinnah Medical College, Lahore, Pakistan

Abstract:
Objective: *The study aims to find causes of all the patients presented with pleural effusion to a tertiary care hospital in Lahore, Pakistan.*
Methods: *study follows descriptive, cross sectional study design. It was conducted over a period of 6 months from January 2017 to June 2017. Total 100 cases who presented with pleural effusion were studied in this research.*
Results: *Tuberculosis constituted 28% of pleural effusion cases followed by pneumonia 25% and malignancy 9% in exudative cases and CCF 13% and hepatic cirrhosis 8% in transudative cases.*
Conclusion: *Tuberculosis is the most common cause of exudative pleural effusion while congestive cardiac failure is the most common cause of transudative pleural effusion with other diseases like infections, malignancies, liver cirrhosis also contributing to a significant extent.*
Key Words: *pleural effusion, causes, adults.*

Corresponding author:
Dr. Shagufta Sultan,
MBBS; Rawalpindi medical college,
Rawalpindi, Pakistan.

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INTRODUCTION:

Pleural effusion is defined as presence of fluid in the pleural cavity. It is of two types, exudative and transudative. Light's criteria is used to differentiate between transudative and exudative pleural effusion. Following points are used for detection of transudative or exudative pleural effusion, serum proteins more than 0.5fluid LDH/serum LDH ratio more than 0.6, pleural fluid LDH more than two third* serum LDH upper limit of normal falls in exudative pleural effusion category [1].

There are multiple causes of pleural effusion including tuberculosis, congestive cardiac failure, malignancy, trauma, etc. It is diagnosed on chest radiography. For complicated cases CT chest is also done [2]. Multiple treatment modalities have been given trial for pleural effusion. Extracorporeal veno-arterial membrane oxygenation is one of the modality tested by Tincres F, et al.[3]

The impact of pleural effusion on weaning from mechanical ventilation was tested by Dres, et al. in which it was concluded that 13% of the patients on mechanical ventilation have pleural effusion and it has impact on the pulmonary vessel resistance and hinders the weaning process [4].

MATERIALS AND METHODS:

This cross sectional study was conducted at teaching hospital at Lahore from January to June 2017 over 100 cases of pleural effusion who visited medical department. It was a case series study. All participants had age more than 12 years belonging to both genders. Those who had effusion due to chest trauma were excluded. Complete history and clinical examination was performed on patients. Chest Xray postero-anterior view was done on all the patients after history and examination to confirm the pleural effusion. Thoracocentesis was performed on all .

patients to obtain fluid sample and ultrasound guided thoracocentesis was performed on those with mild effusion. Post thoracocentesis Xray chest was advised to rule out any post procedure pneumothorax. Sample obtained was sent for LDH level, glucose, proteins, cytology, gram staining, malignancy, AFB staining, biochemistry. Culture was done on exudative samples which filled the light's criteria. Lymphocytic exudative pleural effusion cases underwent percutaneous needle biopsy. Complete blood picture, blood sugar level, serum proteins, LDH, serum creatinine, was performed on all cases.

Those with exudative effusion also underwent montoux test. In specific circumstances ultrasonography, CT angiography, hormonal assays was also performed. Standard treatment protocol was adopted for all patients. Therapeutic thoracocentesis was done in cases with massive pleural effusion with lead to respiratory compromise. Chest intubation was done in case of exudative or complicated pleural effusion. Follow up was done in outdoor. SPSS version 10 was used for data analysis. Statistical tests of significance were not needed, as it was an observational study.

RESULTS:

1 hundred patients were enrolled from 18 to more than 80 years of age. 61 were male and 39 were females. Male to female ratio was 1.56 to 1.00. 59% of study sample was from 20 to 49 years of age. Only 1 patient was more than 80% years. 8 subgroups were formed from the study sample. Tuberculosis was cause of effusion in 28% patients, parapneumonic in 25%in case exudative, 9% malignancy and CCF 13% in case of transudative effusion.

Respiratory distress was the most common symptom, in 86% patients. Other symptoms were cough, chest pain, fever, ankle swelling. 70% population was illiterate, illiteracy was common among females than in males.

Table 1: causes.

No.	Diagnosis	Male	Female	Total
1	TB	16	12	28
2	Parapneumonic	16	9	25
3	Malignancy	6	3	9
4	CCF	9	4	13
5	Liver cirrhosis	3	5	8
6	Renal failure	5	0	5
7	Nephrotic	1	1	2
8	Pancreatitis	2	0	2
9	SLE	0	2	2
10	Pulmonary embolism	0	1	1
11	Scleroderma			
12	Sclerotherapy	0	1	1
13	Liver abscess	1	0	1
14	Hypothyroidism	1	0	1
15	Cushing	1	0	1
16		0	1	1
Total		61	39	100

Table 2: age and gender stratification.

Age	Males	Females	Total
12 to 19	3	4	7
20 to 29	12	10	22
30 to 39	13	6	19
40 to 49	9	7	16
50 to 59	7	4	11
60 to 69	8	6	14
70 to 79	9	1	10
80 and above	0	1	1
Total	61	39	100

Table 3: Educational level of patients.

Literacy level	Male	Female	Total
Illiterate	41	29	70
Primary	5	4	9
Middle	5	2	7
High	1	2	6
Higher	4	1	6
Graduate	2	1	3
Post graduate	2	0	2
Total	61%	39%	100%

Table 4: symptoms.

No.	Symptoms	Percentage
1	Breathlessness	86
2	Chest pain	46
3	Cough	64
4	Fever	59
5	Expectoration	20
6	Ankle swelling	18

DISCUSSION:

Clinical trials for pleural effusion management are widely in practice due to increased disease burden. The role of thrombolytics in malignant pleural effusion was studied by Schembri F, et al and it was concluded that in a double blind randomized controlled trial the effect of thrombolytics use in pleural effusion was compared with placebo and outcomes with thrombolytics were better[5].

Pleural effusion is a common complication associated with carcinoma lung. The effect of nanoparticle albumin bound paclitaxel plus carboplatin in non-small cell lung cancer was studied by Koyama N, et al. insignificant results were observed upon testing the hypothesis [6,7].

The faiure of tPA/DNAs in parapneumonic pleural effusion were pleural membrane thickening at the top, followed by abscess or necrotizing pneumonia, protein level or loculations lead to treatment failure [8].

CONCLUSION:

Tuberculosis is the most common cause of exudative pleural effusion while congestive cardiac failure is the most common cause of transudative pleural effusion with other diseases like infections, malignancies, liver cirrhosis also contributing to a significant extent.

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