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A cross-sectional observational Study to assess the factors responsible for resolution of tubercular pleural effusion

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Abstract--Tuberculous pleuritis is the most common form of EPTB and common cause of pleural effusion in India. TPE is more common in young healthy adults, results from *Mycobacterium tuberculosis* infection of the pleura, characterized by an intense chronic accumulation of fluid and inflammatory cells in pleural space. A total of 200 patients were selected whom are having Lymphocytic Exudative non malignant pleural effusion with ADA >70 or histopathologically diagnosed TB pleural effusion and not on ATT. There is preponderance of male gender among the patients 69.5% were male 30.5% were female. The mean age of participant is 36.96 ±3.01 years most of participant were belong to middle and lower class. Smoking, preexisting diabetes, hypertension and low BMI affect the resolution. Our study showed that the good economic status, young age, normal BMI help in resolving the pleural effusion.

Keywords--EPTB, Pleural effusion, SES.

Introduction

India has a unique position in the global tuberculosis epidemic. Tuberculosis (TB) remains the leading cause of death for infectious diseases in India, killing nearly 500,000 people annually. India has far more cases of tuberculosis than any other country in the world, with about 2 million new cases each year, accounting for almost one-third of the world's major cases. "The whole world is benefiting from the results of India's [tuberculosis] research, and the whole world except India is benefiting," said the director of the World Health Organization. [1] This disease is a major obstacle to social and economic development. An estimated 100 million business days have been lost due to illness. [2] Tuberculous pleural effusion is usually a secondary immune response to the rupture of M. tuberculosis. The pleural effusion contains few bacteria and is difficult to diagnose. Recent studies of the prevalence of tuberculosis have reported that tuberculous pleural effusion (TPE) occurs in approximately 30% of tuberculosis patients. [3] Tuberculosis kills and infects millions of people in both developed and developing countries. Although pulmonary tuberculosis is the most common form of tuberculosis, tuberculous pleural effusion (TPE) is a common form of extrapulmonary tuberculosis [4,5]. Furthermore, tuberculosis is the most common cause of exudative effusions in tuberculosis-endemic areas [5,6]. TPE can result from either a primary M. tuberculosis infection or a reactivation of the disease [5,7]. Because TPE is curable, it is critical to make an accurate diagnosis as soon as possible. However, distinguishing TPE from the many other causes of lymphocytic leukaemia Pleural effusions is frequently difficult to treat. TPE diagnosis is dependent on the presence of M. tuberculosis in pleural fluid or tissue, or the presence of epithelioid cell granulomas and/or caseating Pleural granulomas [4,8]. This article reports the experience of 200 patients with ADA > 70 lymphocytic exudative non-malignant pleural effusion or histopathologically diagnosed tuberculous pleural effusion.

Materials and Methods

A Cross-sectional observational study done over a period of 1 year in a tertiary care hospital of central India. Patients from both both OPD and ID diagnosed with TB pleural effusion and fits in our inclusion criteria were included in the study Inclusion Criteria- Age >18to <75 Lymphocytic Exudative non malignant pleural effusion with ADA >70 or histopathologically diagnosed TB pleural effusion. Exclusion Criteria- PTB Diagnosed cases, Undiagnosed exudative pleural effusion cases, Malignancy diagnosed cases purposive sampling done. All patients were examined for quantitative analysis of pleural fluid by USG chest and ATT drugs were started. The patient were followed up after every month and seen the improvement.

Result

In this study most of (56%) participant were belong to age group of 18-35 years, followed by(27 %) were belong to 36-55years years and least (17%) belong to age group of above 55 years. And 69.50% participants were Male and 30.50% were female. most of participant were belong to lower middle class(39%),followed by upper middle (26.5%), followed by lower class (22%) and least participant were

belong to upper class (12.5%). Presentation of patient Most of the participant (41%) were presented with the complaint of cough, followed by cough with fever (13%), followed by chest pain with shortness of breath (10%), followed by cough with chest pain (8.5%). And the duration of symptoms among all participants 60.5% participant were reported within 4 weeks of appearance of symptoms, 39.5% were reported after 4 weeks. Previous H/O pleural effusion only 1 case presented with past H/O pleural effusion. Past H/O Pulmonary Tuberculosis among participant only 5 participant i.e. 2.5 % were presented past H/O PTB. Systemic Hypertension present among 5 % cases and 7% cases were having Diabetes Mellitus .which affect the resolution of TPE. 13% of participants were addicted of alcohol and 24.5 % were addicted to smoking. Which affect the resolution TPE.

Table 1
Demographic and clinical characteristics in patients with TPE

Variables		All patients(n=200)	Percentage
Gender	Male	139	69.5
	Female	61	30.5
Age group (years)	18-35	112	56
	36-55	54	27
	>55	34	17
Body mass index	≤18.5	76	38
	Normal weight = 18.5–24.9	116	58
	Overweight ≥25	8	4
Socio economic status of participant	Lower	44	22
	Lower middle	78	39
	Upper middle	53	26.5
	Upper	25	12.5
Symptoms	Cough	82	41
	Chest pain	13	6.5
	Sob	7	3.5
	Fever	7	3.5
	Cough with chest pain	17	8.5
	Cough with SOB	13	6.5
	Cough with fever	26	13
	Chest pain with sob	20	10
	Chest pain with fever	12	6
Others	3	1.5	
Duration of symptoms	≤4 weeks	121	60.5
	>4 weeks	79	39.5
H/O Pleural Effusion	Yes	1	0.5
	No	199	99.50
Past H/O PTB-	Yes	5	2.5
	No	195	97.5
Hypertension (HTN)	Yes	10	5
	No	190	95
DiabetiusMelitus	Yes	15	7.50

	No	185	92.50
Personal H/O alcohol intake	Yes	27	13.50
	No	173	86.50
Personal H/O Smoking	Yes	49	24.50
	No	151	74.50

USG finding among participant most of the participant were having mild effusion (39%) followed by Moderate effusion (30%), followed by gross effusion(17%) and moderate septated effusion(13%) respectively Random Blood Sugar of participant checked and only 10 % of participant were having RBS \geq 200mg/dl. Among all cases only 1 participant present positive HIV status.

Table 2
Pleural Effusion at follow up after starting ATT

Variables		At the time of diagnosis	1 st (n=200)	2 nd (n=145)	3 rd (n=99)	4 th (n=40)	5 th visit
Pleural Effusion classification (according to type and quantity)	Moderate effusion	34	7	00	00	00	00
	Moderate septated effusion	2	0	00	00	00	00
	Mild to moderate effusion	60	9	00	00	00	00
	mild to moderate septated effusion	26	0	00	00	00	00
	mild effusion	78	58	22	20	17	14
	Mild septated effusion	00	11	07	06	03	02
	Mild to minimal effusion	00	33	30	5	04	02
	Minimal effusion	00	47	57	34	9	04
	No significant	00	35	46	58	30	9
Status	Resolved	00	35	44	59	31	9
	Unresolved	200	165	121	62	31	22

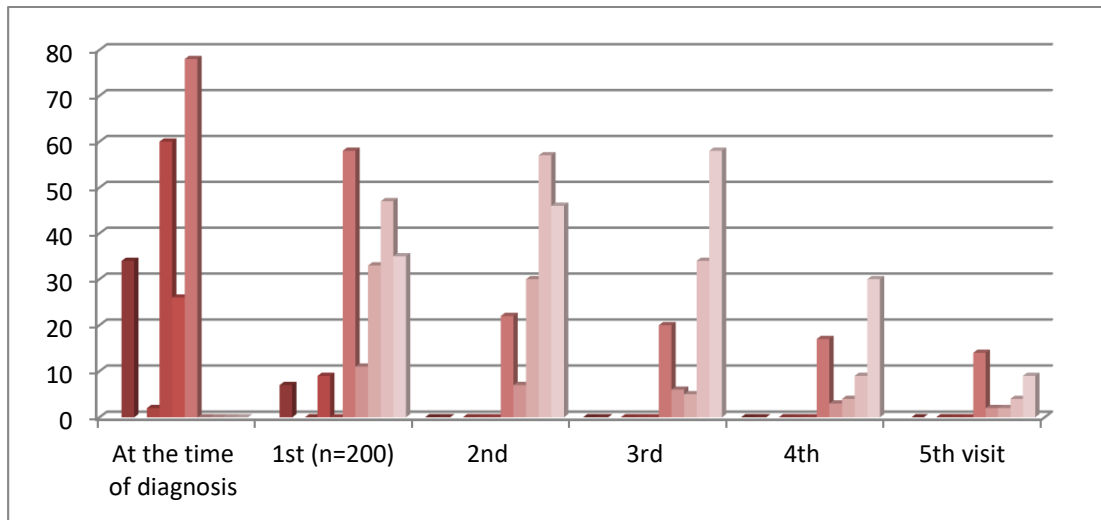


Figure -1

Discussion

In this study, the majority of participants (56%) were between the ages of 18 and 35, followed by those between the ages of 36 and 55, and the fewest (17%) were over the age of 55. And 69.50 percent of participants were men, while 30.50 percent were women. The majority of participants (39%) were from the lower middle class, followed by the upper middle (26.5%), the lower class (22%), and the upper class (2%). (12.5 percent). This demonstrates a higher level of trust in the public health system in cases of tuberculosis. Pavit Tewatia et al [9] discovered similar results in their investigation. A similar conclusion was found in a study conducted by Bhuniya et al.: Thoracentesis in Pleural Effusion. [10] According to our survey, the majority of participants (58%) were normal weight, followed by underweight (38%) and only 4% were overweight. Pavit Tewatia et al [9] found that 20.6 percent of the cases were underweight, which is equivalent to the 38 percent seen in this study. Patient presentation The most common complaint among participants (41%) was cough, followed by cough with fever (13%), chest discomfort with shortness of breath (10%), and cough with chest pain (11%). (8.5 percent). Pavit Tewatia et al [9] found that 42.3 percent of cases had cough, which is similar to our findings. According to Z. Wang et al. [11], the most typical presentation of TPE is cough. Furthermore, the duration of symptoms among all participants 60.5 percent of participants were reported within four weeks of the onset of symptoms, while 39.5 percent were reported after four weeks. This demonstrates public awareness about tuberculosis. Only five participants, or 2.5 percent, had a history of H/O pulmonary tuberculosis. Pavit Tewatia et al [9] discovered a history of PTB in 10.8 percent of cases. Systemic Hypertension was present in 5% of the cases, while Diabetes Mellitus was present in 7% of the cases. This has an impact on TPE resolution Thirteen percent of participants were addicted to alcohol, and 24.5 percent were hooked to smoking, which influenced the TPE resolution. Regular alcohol usage was detected in 47.8 percent of cases in a research conducted by Pavit Tewatia et al [9].

USG findings revealed that the majority of participants had mild effusion (39%) followed by moderate effusion (30%), extensive effusion (17%), and moderate septated effusion (13%), respectively. Similar findings were found in a study conducted by Bhuniya et al.: Thoracentesis in pleural effusion [10] The radiographic finding demonstrates extensive pleural effusion in 28 percent of cases, and it is present in 17 percent of cases in our study. Participants' random blood sugar levels were examined, and only 10% had RBS levels of 200mg/dl. Only one person in all cases has positive HIV status. The entire patient was started on ATT treatment. And requested a follow-up on a specific date each month. The study found a significant reduction in symptoms in those with progression. At the start of the trial, 33 participants had no symptoms, but by the fifth month, 167 people had become asymptomatic. And pleural effusion was cured in 178 of the 200 individuals, whereas 22 remained unresolved after completing the 6-month ATT.

Conclusion

The major factor which promote the resolution of TPE are Normal BMI, less symptoms at the time of presentation, minimal to mild effusion, and non addiction of alcohol, young age and fair economic status.

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Conflict of interest: None declared

References

1. Khatri GR, Frieden TR. Controlling tuberculosis in India. *N Engl J Med* 2002;347:1420-5
2. Vashishtha VM. Current Status of Tuberculosis and Acute Respiratory infections in India: Much More Needs to be Done! *Ind Pediat* 2010; 47: 88-89.
3. Reechaipichitkul W, Lulitanond V, Sungkeeree S, Patjanasoonorn B. Rapid Diagnosis Of Tuberculous Pleural Effusion Using Polymerase Chain Reaction. *Southeast Asian J Trop Med Public Health*. 2000; 31(3): 509-514.
4. A. Gopi, S.M. Madhavan, S.K. Sharma, S.A. Sahn, Diagnosis and treatment of tuberculous pleural effusion in 2006, *Chest* 131 (2007) 880e889.
5. R.W. Light, Update on tuberculous pleural effusion, *Respirology* 15 (2010) 451e458.
6. A. Zumla, M. Raviglione, R. Hafner, C.F. von Reyn, Tuberculosis, *N. Engl. J. Med.* 368 (2013) 745e755.
7. R. Thomas, Y.C. Lee, Causes and management of common benign pleural effusions, *Thorac. Surg. Clin.* 23 (2013) 25e42.
8. A.H. Diacon, B.W. Van de Wal, C. Wyser, et al., Diagnostic tools in tuberculous pleurisy: a direct comparative study, *Eur. Respir. J.* 22 (2003) 589e591.
9. Tewatia, P., Kaushik, R., Kaushik, R., & Kumar, S. (2020). Tobacco smoking as a risk factor for tuberculous pleural effusion: A case-control study. *Global Health, Epidemiology and Genomics*, 5, E1. doi:10.1017/ghg.2020.1
10. Bhuniya S, Arunabha DC, Choudhury S, Saha I, Roy TS, Saha M. Role of therapeutic thoracentesis in tuberculous pleural effusion. *Ann Thorac Med*.

2012 Oct;7(4):215-9. doi: 10.4103/1817-1737.102176. PMID: 23189098; PMCID: PMC3506101.

11. Zhen Wang, Li-Li Xu, Yan-Bing Wu, Xiao-Juan Wang, Yuan Yang, Jun Zhang, Zhao-Hui Tong, Huan-Zhong Shi, Diagnostic value and safety of medical thoracoscopy in tuberculous pleural effusion, *Respiratory Medicine*, Volume 109, Issue 9, 2015, Pages 1188-1192, ISSN 0954-6111, <https://doi.org/10.1016/j.rmed.2015.06.008>.
(<https://www.sciencedirect.com/science/article/pii/S0954611115300111>)