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A clinical study of cases of tuberculous pleural effusion

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Abstract
Background: Pleural effusion is one of the common complications of primary tuberculosis or in conjunction with pulmonary infiltrate typical of post primary tuberculosis. The present study was conducted to determine the cases of tuberculous pleural effusion.
Materials & Methods: It included 110 patients with pleural effusion, having positive AFB in pleural fluid or positive histology of tuberculosis in pleural biopsy.
All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee. Detailed history, thorough physical examination, radiological findings, Haematological and biochemical findings were recorded. Pleural aspiration and biopsy was performed on all patients. Two pieces of pleural tissue were taken and one piece of each sample of pleural tissue was cultured for mycobacteria and the rest was sent for histological examination.
Results: Out of 110 patients, males were 50 and females were 60. The difference was non- significant (P- 0.1). Out of 110 patients, 2 found positive by ZN stain, 8 by culture of pleural effusion in LJ medium and 4 by culture of biopsy tissue in LJ medium. The difference was non- significant (P>1). Common symptoms were hemoptysis (42), sputum secretions (64), chest pain (76), weight loss (80), loss of appetite (98), night sweats (95), fever (100) and cough (102). The difference was non- significant (P>1). Physical signs were clubbing of fingers (18), fever (58), cachexia (25) and lymphadenopathy (23). The difference was non-significant (P>1). Right side chest was involved in 65 cases, left side in 40 cases and both side in 5 cases. The difference was non-significant (P>1).
Conclusion: Pleural effusion is one of the common complications of primary tuberculosis. Common symptoms are hemoptysis, sputum secretions, chest pain, weight loss, loss of appetite, night sweats, fever and cough.

Keywords: hemoptysis, pleural effusion, tuberculous

Introduction

Mycobacteria tuberculosis affects approximately 2 millions people globally. More than 8 million people develop active TB and about 2 million die every year. "Annual Hospital Statistical Report, Ministry of Health", stated that it is the 8th single leading cause of morbidity, 1998 - 2003 and the 2nd single leading cause of mortality by sex treated in hospitals, 2003 (Ministry of Health, 2003) [1].

Pleural effusion is one of the common complications of primary tuberculosis or in conjunction with pulmonary infiltrate typical of post primary tuberculosis. According to study by Ferrer JS [2] et, 28.7% of pleural effusions develop due to tuberculosis among Spanish patients.

The inner surface of the chest wall and the surface of the lungs are covered by the parietal and visceral pleural, respectively, with a potential space of 10-24 μm between the 2 pleural surfaces. This space is normally filled with approximately 1 ml of fluid, representing the balance between (1) hydrostatic and oncotic forces in the visceral and parietal pleural vessels and (2) extensive lymphatic drainage. Pleural effusions result from disruption of this balance. Large amounts of fluid can accumulate in the pleural space under pathologic conditions. The parietal pleura have sensory innervation and small apertures that aid in the absorption of particles and fluid [3].

The diagnosis of tuberculosis pleural effusion (TPE) requires the presence of granulomas in pleural tissue or a stained AFB or positive culture from the pleural tissue or pleural fluid. The physical signs of the presence of pleural effusions may identify patients who require further diagnostic procedures. A met analysis addressed the diagnostic accuracy of the physical examination for pleural effusion using CXR or computed tomography (CT) scan as the reference standard [4].

Clinical features involves pleuritic chest pain, dry, nonproductive cough and dyspnea. Physical examination can show the presence of an effusion are reduced tactile fremitus, stony dull note on

percussion, and diminished or absent breath sounds on auscultation. TB pleural effusion is usually unilateral and is small to moderate in size although massive effusion can also occur. Bilateral effusion is rare. The pleural fluid is exudative and lymphocyte rich [5].

The present study was conducted to determine the cases of tuberculous pleural effusion.

Materials & Methods

This study was conducted in the department of General Medicine in year 2015. It included 110 patients with pleural effusion, having positive AFB in pleural fluid or positive

histology of tuberculosis in pleural biopsy.

All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee. Detailed history, thorough physical examination, radiological findings, haematological and biochemical findings were recorded. Pleural aspiration and biopsy was performed on all patients. Two pieces of pleural tissue were taken and one piece of each sample of pleural tissue was cultured for mycobacteria and the rest was sent for histological examination. Results were tabulated and subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table 1 shows that out of 110 patients, males were 50 and females were 60. The difference was non- significant (P- 0.1). Fig 1 shows that out of 110 patients, 2 found positive by ZN stain, 8 by culture of pleural effusion in LJ medium and 4 by culture of biopsy tissue in LJ medium. The difference was non- significant (P>1). Fig 2 shows that common symptoms were hemoptysis (42), sputum secretions (64), chest pain (76), weight loss (80), loss of appetite (98), night sweats (95), fever (100) and cough (102). The difference was non- significant (P>1). Fig 3 shows that physical signs were clubbing of fingers (18), fever (58), cachexia (25) and lymphadenopathy (23). The difference was non- significant (P>1). Fig 4 shows that right side chest was involved in 65 cases, left side in 40 cases and both side in 5 cases. The difference was non-significant (P>1).

Table 1: Distribution of patients

Total - 110		
Males	**Females**	**P value**
50	60	0.1

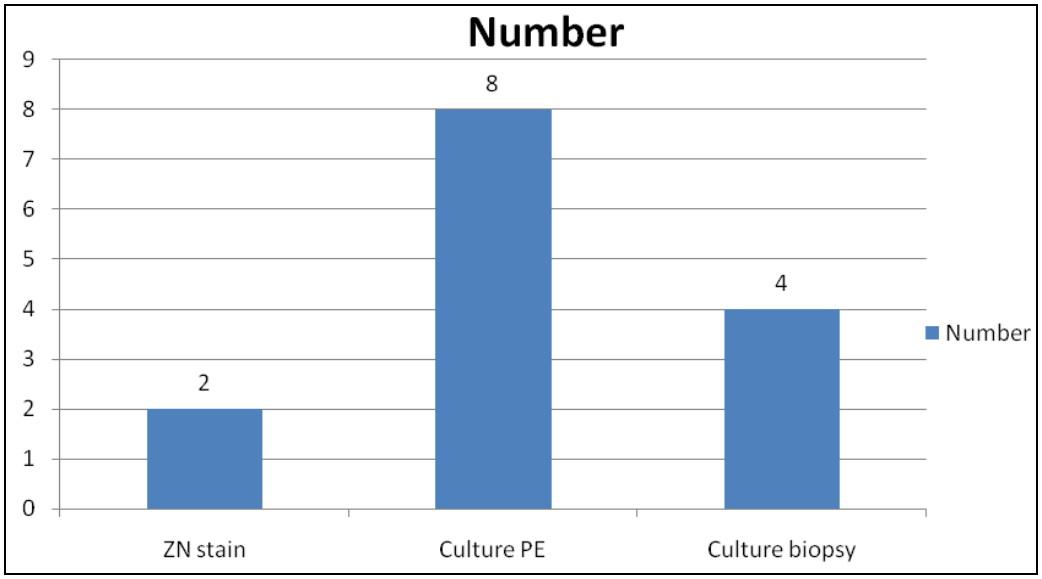

Fig 1: Number of microbiological procedures

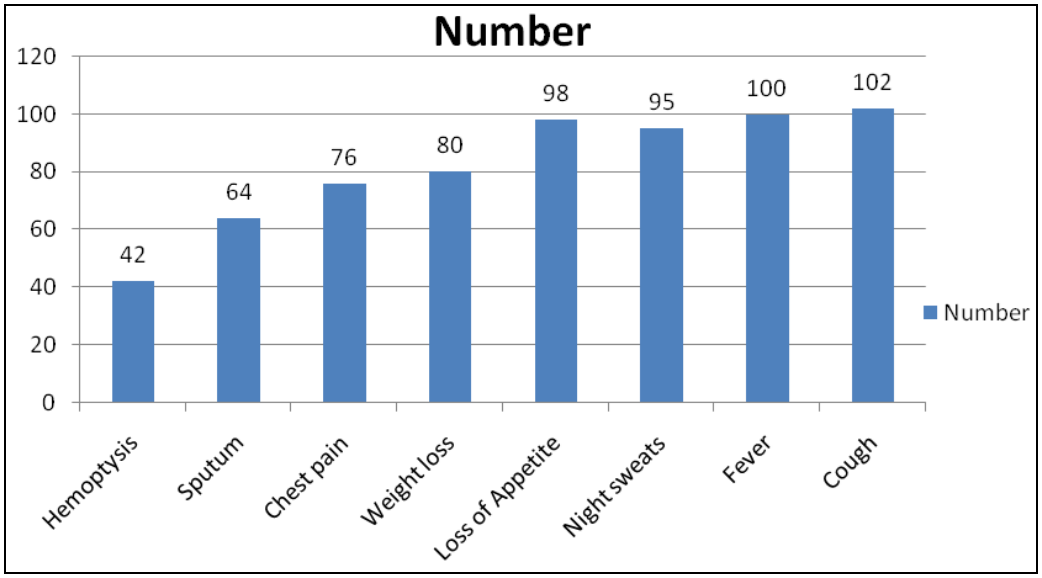

Fig 2: Symptoms recorded

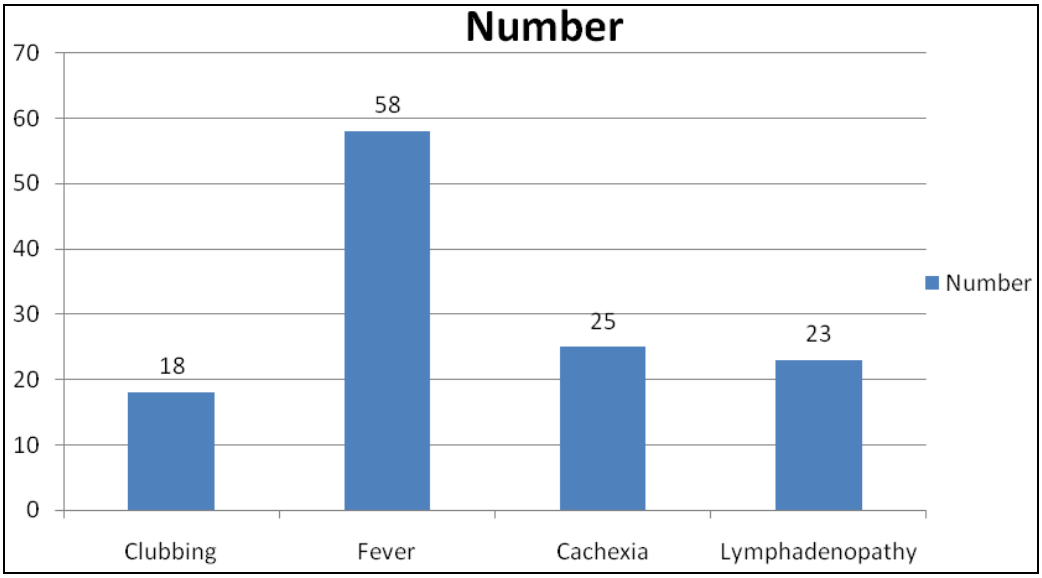

Fig 3: Number of patients with peripheral physical signs

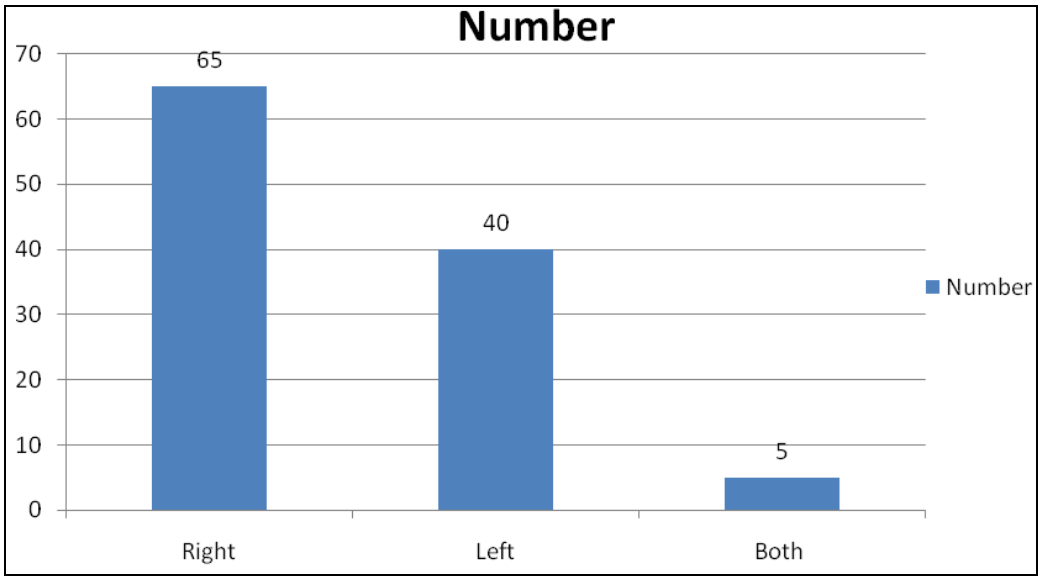

Fig 4: Side of chest involved in patients with TB pleural effusion

Discussion

A pleural effusion is excess fluid that accumulates in the pleural cavity, the fluid-filled space that surrounds the lungs. This excess can impair breathing by limiting the expansion of the lungs. Various kinds of pleural effusion, depending on the nature of the fluid and what caused its entry into the pleural space, are hydrothorax (serous fluid), hemothorax (blood), chylothorax (chyle), or pyothorax (pus). Cough was mainly unproductive. Haemoptysis was rare and if present, was associated with parenchymal lesion. Generally clinical symptoms and physical signs do not positively help for definitive diagnosis of TPE [6]. The present study was conducted to determine the cases of tuberculous pleural effusion.

In our study, out of 110 patients, males were 50 and females were 60. We found that out of 110 patients, 2 found positive by ZN stain, 8 by culture of pleural effusion in LJ medium and 4 by culture of biopsy tissue in LJ medium. This is in accordance to Dhega *et al* [7].

We recorded that common symptoms were hemoptysis, sputum secretions, chest pain, weight loss, loss of appetite, night sweats, fever and cough. A study by Ferrer[2] recorded fever, chest pain and cough as most common symptoms in patients. We found that physical signs were clubbing of fingers, fever, cachexia and lymphadenopathy. This is similar to Light et al.[8] In present study right side chest was involved in 65 cases, left side in 40 cases and both side in 5 cases. This is in accordance to Mihmalni *et al.* [9].

The most common causes of transudative pleural effusions are heart failure and cirrhosis. Nephrotic syndrome, leading to the loss of large amounts of albumin in urine and resultant low albumin levels in the blood and reduced colloid osmotic pressure, is another less common cause of pleural effusion. When a pleural effusion has been determined to be exudative, additional evaluation is needed to determine its cause, and amylase, glucose, pH and cell counts should be measured [10].

Conclusion

Pleural effusion is one of the common complications of primary tuberculosis. Common symptoms are hemoptysis, sputum secretions, chest pain, weight loss, loss of appetite, night sweats, fever and cough.

References

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