Original Research Article

An observational study on clinical Profile of Pediatric Patients with Tuberculous Pleural Effusion

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Received: 03-06-2021 / Revised: 06-08-2021 / Accepted: 16-09-2021

Abstract

Background: The prognosis of tuberculous pleural effusion is by demonstration of the causative organism that is mycobacterium tuberculosis. Biochemical investigations like pleural fluid ADA which is shed by way of the lymphocytes is very non-specific. **Aim:** The purpose is to find out about the scientific profile of patients with tuberculous pleural effusion. **Methods:** A study used to be carried out on 30 subjects. The sufferers had been requested a special history with regards to chest pain and its nature, dyspnoea, cough, fever and constitutional symptoms. Also specific past history about pleural tuberculosis and pleural aspiration/ICD insertion and AKT records was once taken. Patients had been then subjected to a scientific examination, which included a thorough widespread examination and distinctive respiratory system examination in phrases of reduce in actions of the chest on any unique side, bulge on any unique side, stony stupid observe on percussion, presence of transferring dullness, and limit in breath sounds with limit in vocal resonance. Patients were later subjected to an X ray examination for affirmation of the diagnosis. In some patients ultrasonography of the chest was once completed specially in loculated effusion for factor marking. After confirming the diagnosis, patients have been subjected to a transthoracic pleural aspiration the usage of all aseptic precautions. **Results:** Most of the sufferers belonged to age group between 1-12 years . The symptom evaluation of 30 subjects printed that almost all these patients had fever and respiratory distress as predominant symptom followed by cough and chest pain. The constitutional symptom such as loss of appetite was once existing in 93% of patients and weight loss in 85% of patients. Right sided pleural effusion was extra frequent than left side. The incidence of bilateral effusion was very less. **Conclusion:** Most common presentation of tuberculous pleural effusion was fever and respiratory distress. Right sided pleural effusion was greater frequent than left aspect.

Keywords: Clinical profile, Tuberculosis, Pleural effusion.

Introduction

The diagnosis of tuberculous pleural effusion is by demonstration of the causative organism that is mycobacterium tuberculosis. Biochemical investigations like pleural fluid ADA which is shed by the lymphocytes isvery non specific. It is raised in other conditions like empyema, lymphoreticular malignancies, bronchogenic carcinoma, rheumatoid arthritis and tuberculosis (TB) [1,2]. Pleural biopsy can give the diagnosis but is an invasive and painful procedure with the risk of pneumothorax. When reviewing data regarding yield of pleural biopsy, it is important to distinguish histopathologic demonstration of granuloma from growth of M. tuberculosis in a culture of biopsy, though either is generally accepted as diagnostic.Certain clinical conditions like TB, plague, fungal infections, rheumatoid arthritis, and sarcoidosis may cause difficulty in distinguishing them histopathologically because of certain common feature. Pleural fluid acid fast bacilli (AFB) smear is positive in less than 10% of cases. This phenomenon has been attributed to low bacillary counts in the fluid and the diminished likelihood of recovery of AFB in the absence of apparent parenchymal disease. Also the tuberculin test is negative in about 30% of patients because of the aggregation of T lymphocytes at the site of pleural focus. Diagnostic tests like PCR are too expensive and unaffordable for the common man. Hence it becomes very important to use less expensive and reliable tests like culturing the mycobacteria. Culture yield of mycobacteria from pleural fluid is less than 30%[3]. Therefore, The purpose is to find out about the scientific profile of pediatric patients with tuberculous pleural effusion.

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Material and methods

Study design

This prospective study was conducted at Department of Pediatrics and neonatology, at Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga. The study was conducted over a period of 1 year from January 2016 to December 2016.The study was approved by institutional research and ethical research committee. Informed consent was taken from all the participants after explaining the study protocol.

Inclusion criteria

All clinically suspected tuberculous pleural effusion having exudative character by Light's criteria and which on gram stain examination show no organisms.

Exclusion criteria

Those patients having parenchymal lesions on X ray chest Those patients having hydro pneumothorax.

Study method

A study was conducted on 60 patients at our hospital. The patients were asked a detailed history with regards to chest pain and its nature, dyspnoea, cough, fever and constitutional symptoms. Also detailed past history about pleural tuberculosis and pleural aspiration / ICD insertion and AKT history was taken. Patients were then subjected to a clinical examination, which included a thorough general examination and detailed respiratory system examination in terms of decrease in movements of the chest on any particular side, bulge on

any particular side, stony dull note on percussion, presence of shifting dullness, and decrease in breath sounds with decrease in vocal resonance. Patients were later subjected to an X ray examination for confirmation of the diagnosis. In some patients ultrasonography of the chest was done especially in loculated effusion for point marking.

Statistical analysis

The data was tabulated in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

Results

Age distribution of cases, 15 (50%) were within 4 years, 10 (33.3%) were between 4 to 8 years, 5 (16.7%) were 8 to 12years of age (Table-I).

Table-1 : Distribution of study population according to Age (n=30)

Age (years)	Number	Percentage
1-4	15	50
4-8	10	33.3
8-12	5	16.7
Total	**30**	**100**

Positivity was higher in male children, 66.7% and 33.3% offemale children was positive (Fig-1).

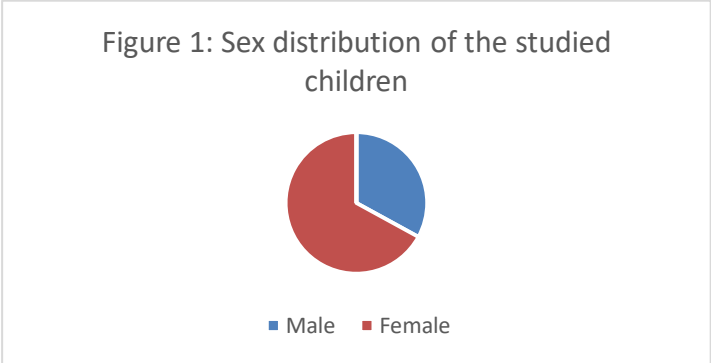

Fig 1:Sex distribution of the studied children

Nutritional status (according to WHO classification), 12 (40%) cases were severely malnourished, 12(40%) were moderately and 6(20%) were mildly malnourished (Table-2).

Table-2 : Nutritional status among studied children (n=30)

Status	Case	Percentage
Severe	12	40
Moderate	12	40
Mild	6	20
Total	**30**	**100**

Clinical presentation, history of respiratory distress & fever was present in 29 (96.7%), cough in 27 (90%), and chest pain in 10 (33.3%) cases (Table-3).

Table-3: Clinical presentation of studied children

Presenting Features	Case	Percentage
Respiratory distress	29	96.7
Fever	29	96.7
Cough	27	90
Chest pain	10	33.3

Regarding physical signs, all (100%) children had diminished chest movement, sub costal recession dull on percussion and diminished breath sound on the affected side,on the other hand. On the other hand 10 (37%) cases had mediastinal shifting (Table-4).

Table-4: Physical signs of studied children

Diminished chest movement	30	100
Sub costal recession	30	100
Dullness on percussion	30	100
Diminished breath sound	30	100
Mediastinal shifting	10	37

Completely immunized were 17(56.7%), partially immunized 10(33.3%), and 3 (10%) were not given immunization. The constitutional symptom such as loss of appetite was once existing in 93% of patients and weight loss in 85% of patients.

Table 5: Site of pleutal effusion among study population (n=30)

Involvement	Number	Percentage
Right side	16	53.3
Left side	12	40
Bilateral	2	6.7

Discussion`

Our study group included 20 boys and 10 girls , ranging in age from 1-12 years old. In a similar report from Taiwan, boys out numbered girls; the reported age ranged from 10 to 17 years old [9]. Tuberculosis pleural effusion (TPE) is common in older children, but it is not common in young children [4,9]. In contrast TPE was found in young children in a Philippine investigation [3]. Tuberculous PE usually appears as an acute illness with fever (96.7%), cough (90%), and respiratory distress (96.7%). Our findings are similar to those reported from Taiwan and Malaysia [9,15]. Results of a report from

Pakistan showed fever (97%), cough (91%) and chest pain (80%) as the main clinical manifestations (16). A number of clinical findings (such as fever) reported from a research conducted in Athens was similar to our study [11]. The clinical features of childhood TB is not definite. In the present work, patients with TPE frequently had chest pain (33.3%). A survey from Pakistan revealed chest pain in 80% of their patients [16]. Clinical findings, chest radiography, tuberculin skin testing and a history of contact with a case of active pulmonary TB provide a basis for the diagnosis of childhood TB [17-20)] A positive tuberculin skin test result is helpful evidence in the diagnosis of TB pleural effusions in areas of low prevalence (or no vaccination). However, a negative tuberculin skin test result may occur in roughly one third of patients [8]. A history of contact with tuberculous case was present in 10 patients (33.3%). In Taiwan's study positive history was identified in 6 patients (46%) [9]. TPE is usually unilateral[4,8]. In our series, unilateral PE was seen in all of the subjects. A research was carried out in Taiwan (2007) and Spain in which unilateral PE was seen in 92% and 100% of patients, respectively [9,4]. Mediastinal lymphadenopathy (22.2%) was the most common radiographic feature followed by parenchymal consolidation (11.1%). Parenchymal consolidation was the most common finding reported from a survey conducted in Spain in 2008 [4]. Results from Athens study demonstrated mediastinal lymphadenopathy in 33% of the patients [11]. Analysis of effusion showed lymphocytic exudative effusion in all our patients. A research from Spain showed lymphocytic fluid in 71% of the patients [4]. A neutrophil predominance was not found in our series. In our series, smears and cultures of pleural fluid and pleural biopsy were negative. Tuberculosis is associated with lack of positive cultures of pleural fluid [4]. Some reports have shown higher specificity and sensitivity rates for the measurement of ADA activity in the diagnosis of pleural TB [1,4,13]. In our series 2 of the 18 patients (11.1%) showed ADA activity

Conclusion

Although pleural effusion in children is a rare finding and is asymptomatic in most affected children, but in conditions with an excessive fluid collection, it may be complicated with empyema or other serious complications leading high rates of morbidity and even morbidity. Thus, selection of the best management approach including removal of underlying diseases, supportive cares, selection of proper antibiotics, and invasive approaches if required can result in favorable outcome

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Conflict of Interest: Nil Source of support: Nil