

Clinical Profile of Children with Pleural Effusion Admitted In a Tertiary Care Hospital of Bangladesh

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Abstract

Background: Pleural effusion is a problem commonly encountered by chest physicians. **Objective:** This study was an attempt to know the clinical presentation in order to avoid delay in diagnosis that may influence treatment and outcome. **Methods:** This cross-sectional study of thirty (30) admitted cases with pleural effusion were confirmed by chest radiography and aspiration of pleural fluid from one (1) year to twelve (12) years age of either sex the patients were selected purposively, was studied from July 2009 to Feb 2010 in the Department of Pediatrics, Rajshahi Medical College Hospital. All information were recorded in pre tested semi structured questionnaire. **Results:** Positivity was higher in male children, (66.7%). Completely immunized were 56.7%. One third of cases were severely malnourished. History of respiratory distress & fever was present in 96.7%, cough in 90%. All cases had diminished chest movement, sub costal recession, and diminished breath sound on the affected side. Lobar consolidation was observed in 33.3% cases, patchy opacities in 53.3% cases. Fluid levels were observed in 76.7% cases. Color of pleural fluid was straw in 56.7%, clear in 30.0%, blood stained in 13.3%. **Conclusion:** History and good clinical examination can diagnose pleural effusion.

Key words: pleural effusion, respiratory distress, Para pneumonic effusion.

Introduction

Pleural effusion is a problem commonly encountered by chest physicians, accounting for approximately 4% of all attendances to the chest clinic¹. Pleural effusions are accumulations of fluid within the pleural space. The fluid enters the pleural space from systemic capillaries in the parietal pleura and exits via parietal pleural stomas and lymphatics. Pleural fluid accumulates when too much fluid enters or too little fluid exits the pleural space. They are classified as transudates or exudates. Detection of pleural effusion is done by physical examinations, chest X-ray & thoracentesis. Asymptomatic transudates require no treatment. Symptomatic transudates and almost all exudates require thoracentesis, chest tube drainage, pleurodesis, pleurectomy or a combination².

In various study it has been reported that, incidence of parapneumonic effusion ranges from 20% to 91% with an increase in morbidity and mortality³. Incidence of childhood empyema increased in UK in the mid to late 1990⁴. Parapneumonic effusion is more common in boys

than girls and more frequently encountered in infants and young children⁵. Non bacterial infectious agents such as virus and *Mycoplasma pneumoniae* are the common causes of pleural effusion in children throughout the world. The frequency of viral infection in children is much higher than bacterial infection, though bacteria are more likely than virus to causes pleural effusion. Around 20% of these infections can cause small and transient effusion which can resolve spontaneously⁶. In a study it has been found that out of 176 children with pulmonary tuberculosis, from Spain, 39 (22%) patients had pleural effusion⁷. In a review of 74 patients with intrathoracic lymphomas, Chaginaud⁸ found pleural effusion in 10 (71%) of 14 children with lymphoblastic lymphomas and in 7 (12%) of 60 children with non-Hodgkins lymphoma.

It is justified to know the clinical presentation in order to avoid delays in diagnosis that may influence treatment and outcome. The aim of the present study was to know the clinical presentation in order to avoid delay in diagnosis that may influence treatment and outcome.

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Methodology

This cross-sectional study was conducted in the Department of Pediatrics at Rajshahi Medical College Hospital from July 2009 to Feb 2010. A total number of thirty (30) admitted patients with pleural effusion, confirmed by chest radiography and aspiration of pleural fluid of one (1) year to twelve (12) years age of either sex were selected purposively. The parents were explained about the purpose of the study. Both the written & verbal consents were taken from the parents. When parents did not give consent for any particular case next case was selected. The exclusion criteria were very sick children, age below one year and above twelve years, previously treated pleural effusion cases, cases having any other chronic illness or co-morbid situation, parents don't give consent for the study. All information's were recorded in pre-tested semi-structured questionnaire. Ethical clearance was taken from institutional ethical committee.

Result

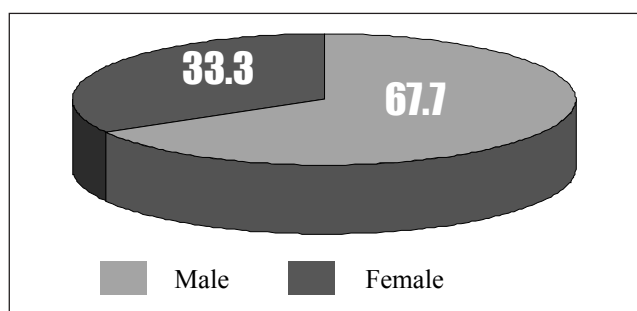
Age distribution of cases, 15 (50%) were within 4 years, 10(33.3%) were between 4 to 8 years, 5(16.7%) were 8 to 12 years of age (Table-I).

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% of female children was positive (Fig-1).

Figure 1: Sex distribution of the studied children



Completely immunized were 17(56.7%), partially immunized 10(33.3%), and 3 (10%) were not given immunization.

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

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

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

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 10 (37%) cases had mediastinal shifting (Table-IV).

Table-4 : Physical signs of studied children

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

Discussion

In this study male cases were more, probably due to greater attention to the male children. A study found that parapneumonic effusions are more common in boys than girls and most frequently encountered in infants and young children⁵. Yilmaz et al⁹ showed that the malnutrition was a common association with effusion in children. Here two fifth cases was severely malnourished. In this study fever, respiratory distress and cough were predominant presenting features. Restricted chest movement, subcostal recession, dullness on percussion and diminished breath

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

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

sound were common physical findings. Presenting features were similar to another study done in Ethiopia¹⁰.

Barnes¹¹ found that 96% of the cases were diagnosed by ultrasonography though in this study, X-ray chest and

thoracentesis were the main diagnostic tools for the diagnosis.

Conclusion

This study concluded that most of the children were malnourished. Fever, cough, respiratory distress and chest pain were the common presentations. Physical findings of effusion were present in all cases. Right sided pleural effusion was more than the left sided. History and good clinical examination can diagnosis pleural effusion.

References

1. Dev D, Basran Gs Pleural effusion: A clinical review, *Monalde. Ach Chest Dis* 1994; 49: 25-35.
2. Pleural Effusion: Mediastinal and Pleural Disorders: Merck Manual <http://www.merck.com/mmpe/sec05/ch060/ch060d> (access on 6/24/2010).
3. Moreira GDO, Ribeiro JD, Tresoldi ATZ. Utility of a scoring system & indicative variables of assessing the neck for pleural drainage in peditrics patients with parapneumonic pleural effusion, *Journal Brasileiro de Pneumologia*. 2005; 31: 205-211.
4. Saglari S, Harries KA. Empyema: The use of broad range 16S rDNA PCR for pathogen detection. *Chest* 2004; 155: 26-30.
5. Freij BJ, Kusmiesz H, Nelson JD parapneumonic effusion and empyema in hospitalized children; a retrospective review. *AJR* 1984; 3: 578-91.
6. Hendren WH, Haggery RJ. Staphylococcal pneumonia in infancy and childhood. *JAMA* 1958; 168:6-16.
7. Merino JM, Carpintero I, Alverz T, et al. Tuberculosis pleural effusion in children. *Chest* 1999; 115: 26-30.
8. Chaginaud BE, Bansack TA, et al. Pleural effusion in lymphoblastic lymphoma a diagnostic alternative. *J Pediatr Surg* 1998; 33: 1355-7.
9. Yilmaz E, Dagon Y, Aydinoglu AH, et al. Parapneumonic empyema in children: Conservative approach. *Turk J Pediatr* 2002; 44:138-8.
10. Hailu S. Pediatric thoracis empyema in an Ethiopian referral hospital. *East Afr Med J* 2000; 77: 618-21.
11. Barnes NP, Hull J, Thomson AH. Medical management of parapneumonic pleural disease. *Pediatric Pulmonology* 2005;39:127-136.