

# THE ETIOLOGY OF PLEURAL EFFUSION IN CHILDREN: HYDERABAD EXPERIENCE

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## ABSTRACT

**Objective:** To evaluate the common causes of pleural effusion in children.

**Design:** Retrospective study.

**Setting:** Liaquat University Hospitals Jamshoro, Hyderabad.

**Method:** The data of all paediatric patients of major pleural effusion from January 2005 was collected and analyzed retrospectively to determine the cause of pleural effusion.

**Result:** This study was conducted on 50 patients. The boys were 30 (60%) and 20 (40%) were girls; male to female ration was 3:2. Age range was three years to 14 years. All patients belonged to poor socioeconomic class. The common symptoms were fever and cough. X-Ray chest showed large pleural effusion. Forty (80%) patients were anemic with less than 8gm Hb level. In 39 patients the ESR was less than 40mm in the first hour. The pleural fluid specimen was taken for culture and sensitivity. Sputum was sent for acid fast bacilli. In two patients, the puss was thick; these patients underwent thoracotomy and decortications.

**Conclusion:** Tuberculous pleural effusion was the most commonly encountered. It was found in 35 (66%) cases. The second most common cause was paraneumonic pleural effusion.

**KEY WORDS:** Pleural effusion, Etiology.

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## INTRODUCTION

It was observed by Olgilive that pleural fluid analysis is needed for diagnosis as well as therapeutic purposes.<sup>1</sup> In 1984 Ladonzy inoculated guinea pig to demonstrate tuberculosis bacillus for the first time.<sup>2</sup> Paraneumonic effusion complicating pneumonia has increased dramatically in children over the last decade.<sup>3,4</sup> The purpose of this study was to describe clinical features and etiology of pleural effusion in children presented to Liaquat University Hospital Jamshoro, Hyderabad.

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## PATIENTS AND METHOD

Fifty consecutive cases of pleural effusion were collected from January 2004 to January 2005. Referrals were from other hospitals of interior Sindh and Paediatric Medical Unit of Liaquat University of Medical & Health Sciences Hospitals. Comprehensive clinical history and complete physical examination of the patients suspected of pleural effusion were recorded. All cases were less than 14 years of age. The investigation carried out were, complete blood picture, ESR, serum urea and electrolytes, sputum for acid fast bacilli, x-ray chest and ultrasound chest were also performed. Informed parental consent was obtained. A sample of 10ml pleural fluid was collected at the time of chest drain insertion and routine bacterial culture were requested.

## RESULTS

Fifty patients were included in this study the age distribution was from three years to 14 years. The median age was 5-8 years; the male, female ratio was 2:1. The symptoms analysis of tuberculous and paraneumonic pleural

Table-I: Analysis of presenting symptoms

<i>Tuberculous</i> (n= 35)	<i>Percentage</i> %	<i>Parapneumonic</i> (n=15)	<i>Percentage</i> %
Fever	34	Fever	14
Cough	32	Cough	13
Chest pain	28	Chest Pain	11
Breathlessness	15	Breathlessness	08
Loss of weight	10	Loss of weight	05
Generalized weakness	15	Generalized weakness	03

effusion is shown in Table-I. The gross appearance of pleural effusion of fluid and predominant cells is shown in Table-II and the result of culture of pleural fluid in parapneumonic effusion is shown in Table-III. Out of 50 patients 48 underwent chest intubation. In thirty five patients effusion showed tubercular, 13 patients parapneumonic and in two patients puss was thick, specimen was taken for culture and sensitivity and patient underwent thoracotomy and decortication.

### DISCUSSION

The tertiary referral system in Pakistan differs from UK, here children present directly to the hospital for the management of pleural effusion. The incidence of tuberculous effusion is more than parapneumonic effusion in our study; however in western countries the incidence in parapneumonic effusion is higher and has been increasing.<sup>1,2</sup> In this study common clinical features of pleural effusion were cough and fever this is in concordance with a study in UK.<sup>5</sup>

The mean age in our series was 5-8 years this is consistent with UK data.<sup>6</sup> In a study of UK it was found that pneumococcus was the major pathogen in childhood empyema thorax serotype-I which was the prevalent serotype.<sup>6</sup> This has implication for vaccine development, while in our study in majority

Table- III: Culture of pleural fluid in pneumonic effusion

<i>Organism</i>	<i>n</i>	<i>%</i>
E.Coli	1	7
Staph. Aureus	3	20
Pseudomonas	1	7
Strpt. Pneumonia	1	7
Mixed	2	13
No growth	5	33

Table -II: Gross appearance of pleural fluid and predominant cells in tuberculous and parapneumonic pleural effusion

<i>Gross appearance of pleural fluid</i>	<i>Tuberculous Pleural effusion</i> (n= 35)	<i>Parapneumonic Pleural effusion</i> (n=15)
Straw -coloured	30 (90%)	2 (13.3%)
Frank puss	Nil	10 (66.6%)
Turbid	3 (4%)	1 (6.6%)
Predominant cells	Lymphocytes	Neutrophils

of cases there was no growth. Isolation of the infectious organism from parapneumonic groups was staph aureus which is different from other studies done else where.<sup>7</sup>

In our study parapneumonic effusion culture of pleural fluid revealed no growth in most cases while in a study from UK it was pneumococcus.<sup>8</sup> We found no seasonal variation of empyema thorax in patient who were admitted in the hospital, while a study from Nepal quoted that all cases of empyema thorax were seen during the winter and spring season.<sup>9</sup>

In conclusion the etiology of pleural effusion varies in different regions of the world, in developed countries the common cause of pleural effusion is parapneumonic due to pneumococci while in developing countries it is tuberculous, which is related to poverty, over crowding, decreased availability and improper use of anti-tuberculous drugs.

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