



## Role of pleural fluid adenosine deaminase in etiological diagnosis of pleural effusion

### KEYWORDS

*Spodoptera litura*, artificial diet, mass rearing

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**ABSTRACT** Pleural effusion is a common respiratory problem which is a manifestation of various underlying disorders that includes respiratory,renal,cardiovascular,connective tissue and other diseases.Inspite of good history,thorough clinical,radiological,complete examination of aspirated fluid and pleural biopsy<sup>1</sup> , etiological diagnosis cannot be established in about 20% of cases. So there is a need of simple, rapid and reliable diagnostic test to establish etiology of pleural effusion.Considering this, a prospective study was designed to find out how much is pleural fluid ADA level useful in establishing diagnosis of pleural effusion.

This study was carried out in 75 patients in age group of 18-75 years both Out and In patients in ASRAM hospital,Eluru with intial diagnosis of Pleural effusion during September 2013-February 2014.Complete evaluation with clinical history,physical examination and chest imaging was done.Pleural fluid analysis using Lights criteria was followed to differentiate exudate/transudate.Sputum smear for AFB,Pleural biopsy,pleural fluid for cytology and ADA estimation by Galanti and Giusti<sup>2</sup> calorimetric method was done.

55 subjects were categorised as Tuberculosis,10 subjects as malignancy,7 subjects as transudative effusion and 3 subjects as empyema.Pleural fluid ADA was more than 40IU/L in TB,less than 40IU/Lin malignancy,Transudates and Empyema.The mean ADA activity in tuberculous pleural effusion is significantly high when compared to malignant and transudate effusions ( $p < 0.01$ ).When ADA 40 IU/L is taken as cut off point ,tuberculous effusions had sensitivity of 98.8%,specificity 100% with positive predictive value of 100%.

Pleural fluid ADA is a very good parameter to differentiate tubercular from non-tubercular effusion.It is a simple, low cost investigation and should be considered routinely in all cases of pleural effusion .

### Introduction :

Pleural effusion is a common respiratory problem which is a manifestation of various underlying disorders that includes respiratory,renal,cardiovascular,connective tissue and other diseases.Inspite of good history,thorough clinical,radiological,complete examination of aspirated fluid and pleural biopsy<sup>1</sup> , etiological diagnosis cannot be established in about 20% of cases. So there is a need of simple, rapid and reliable diagnostic test to establish etiology of pleural effusion.Considering this, a prospective study was designed to find out how much is pleural fluid ADA level useful in establishing diagnosis of pleural effusion.

### Material and Methods :

This study was carried out in 75 patients in age group of 18-75 years both Out and In patients in ASRAM hospital,Eluru with intial diagnosis of Pleural effusion during September 2013-February 2014.Complete evaluation with clinical history,physical examination and chest imaging was done. Pleural fluid analysis using Lights criteria was followed to differentiate exudate/transudate.Sputum smear for AFB,Pleural biopsy,pleural fluid for cytology and ADA estimation by Galanti and Giusti<sup>2</sup> calorimetric method was done.

### Results:

55 subjects were categorised as Tuberculosis,10 subjects

as malignancy,7 subjects as transudative effusion and 3 subjects as empyema.Pleural fluid ADA was more than 40IU/L in TB,less than 40IU/Lin malignancy,Transudates and Empyema.The mean ADA activity in tuberculous pleural effusion is significantly high when compared to malignant and transudate effusions ( $p < 0.01$ ).When ADA 40 IU/L is taken as cut off point ,tuberculous effusions had sensitivity of 98.8%,specificity 100% with positive predictive value of 100%.

**Table 1:** Pleural fluid ADA level in different etiologies

Type of PLEF	No.of cases	ADA activity(IU/L) (X±SD)
Tuberculosis	55	66.41±25.31
Malignancy	10	17.32±2.64
Transudative	7	11±3.12
Empyema	3	31±8.12

**Table 2:** Utility of ADA in Tuberculous pleural effusion with cut off 40IU/L

Sensitivity	98.8 %
Specificity	100 %
Predictive value	100 %

**Discussion :**

Pleural effusion are divided into transudates and exudates based on Lights criteria<sup>3</sup>. Transudates do not require further diagnostic workup in majority of cases as the underlying cause can be established clinically. Further investigations are necessary to define the cause of pleural effusion in exudates. **Inma Ocana et al** >45 IU/L(1995), **Carstens ME et al** >40 IU/L(1998) and **Kamaldeen BABA et al** >40 IU/L(2008) suggested pleural fluid ADA >40 IU/L as cut off to differentiate Tuberculous and non tuberculous effusions which was confirmed in our study. So we can say the estimation of ADA level in pleural fluid is extremely helpful in establishing etiology of tubercular pleural effusion and to rule out other diagnosis especially of other diseases in which lymphocyte predominance of pleural effusion is seen such as malignancy and collagen vascular diseases.

**Conclusion :**

Pleural fluid ADA is a very good parameter to differentiate tubercular from non-tubercular effusion. It is a simple, low cost investigation and should be considered routinely in all cases of pleural effusion .

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