THE DIAGNOSTIC DILEMMA

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The differential diagnosis of lymphocytic exudative pleural effusion includes infective diseases, inflammatory disorders, malignancies and tuberculosis. In fact 30-60% of patients with exudative pleural effusion have tuberculosis worldwide.

Roll back forty years and the confirmation of tuberculosis, as the cause of pleural effusion was difficult using noninvasive diagnostic tools because of low sensitivity and specificity. Pleural fluid staining for acid-fast bacilli (AFB) was virtually negative and pleural fluid culture was positive in 25-30% of cases. Pleural biopsy, an invasive investigation, is positive in 50-80% of patients but cannot be done in all patients because of lack of facilities, or minimal or inadequate effusion, or technical difficulties. Pleural fluid polymerase chain reaction (PCR) has a sensitivity of 78% in active disease. Thus search for a noninvasive, quick and cheap test with high sensitivity and specific was on.

Piras and colleagues in 1978 were the first to report raised adenosine deaminase (ADA) in pleural effusion of tuberculous effusion.[1] The ADA activity is contributed to by two main isoenzymes, ADA-1 and ADA-2; ADA-2 is found only in macrophages, which release it when stimulated by the presence of live microorganisms within them, thus increasing the ADA content of body fluids. Since ADA-2 is more specific for tuberculosis but total ADA activity in tuberculosis is almost all due to ADA-2, thus only total ADA level is measured.[2]

Later studies in 1990s proved ADA to be a highly sensitive and specific biochemical marker of tuberculosis in pleural effusion. In one study overall sensitivity in this role has been 99% and its specificity 93%.[3] In 2008 a meta-analysis summary calculated estimated sensitivity 0.92 (95% confidence interval 0.90–0.93), specificity 0.90 (95% confidence interval 0.89–0.91), positive likelihood ratio 9.03 (95% confidence interval 7.19–11.35) for ADA in the diagnosis of tuberculous pleurisy in the studies included.[4]

In the current issue of Pakistan Journal of Chest Medicine Ashraf et al reported their observation about the cut off level for diagnostic accuracy of ADA. The authors suggest cutoff level of 40 IU/L to make this biochemical parameter highly sensitive and specific. The commercial kits available usually suggest a cutoff level of 30 IU/L. ADA values ranging from 40 to 70 U/l have been advocated as cutoff level in diagnosing tuberculous pleuritis.[5] What is the best cutoff value for this tool is still debatable. More studies need to be conducted in our local population to define the appropriate cutoff value for diagnosing tuberculosis.

One more issue is the availability of this tool. Not many laboratories offer this test. Moreover not many practitioners ask for this investigation specifically. It needs to be stressed among all students, practitioners, specialists and particularly pulmonologists to inculcate a culture of specifically requesting this important non-invasive yet highly sensitive and specific diagnostic tool.

REFERENCES

1. Piras MA, Gakis C, Budroni M, Andrioni G. Adenosine deaminase activity in pleural effusion, an aid to differential diagnosis. BMJ 1978; 2: 1751–1752
2. Alvarez DA, Sarandeses A, Pose B, Choma A, Alvarez-Doba AA, Salgueiro M. Diagnosis of Tuberculous Pleurisy Using the Biologic Parameters Adenosine Deaminase, Lysozyme, and Interferon Gamma. Chest 1993; 103(2):458-65

3. Valdes L, San Jose, E, Alvarez, D, Valle JM. Adenosine deaminase (ADA) isoenzyme analysis in pleural effusions: diagnostic role, and relevance to the origin of increased ADA in tuberculous pleurisy. Eur Respir J 1996; 9: 747–751

4. Liang QL, Shi HZ, Wang K, Qin SM, Qin XJ. Diagnostic accuracy of adenosine deaminase in tuberculous pleurisy: A meta-analysis .Respiratory Medicine 2008; 102: 744–754

5. Burgess LJ, Maritz FJ, Roux IL, Taljaard JF. Use of adnesoine deaminase as a diagnostic tool for tuberculous pleurisy. Thorax 1995;50:672-674