

Diagnostic value of adenosine deaminase activity in tuberculous effusions

We read with interest the recent paper by QUEROL JM, BARBE F, MANRESA F, ESTEBAN L and CANETE [1]. The authors presented some patients with tuberculous pleural effusion and adenosine deaminase activity (ADA) values less than 43 U·l⁻¹.

We reported previously that ADA values (Guisti method) were statistically significantly higher in tuberculous pleural effusions than in most other diseases [2]. High ADA values of pleural fluid (between 140 U·l⁻¹ and 273 U·l⁻¹) were measured in five patients with rheumatoid arthritis [3]. The distinction between rheumatoid and tuberculous pleurisy must be made with other methods.

A study to determine ADA in pleural fluid, bronchial washings and serum is in progress in Greece [4]. The major problem is the limit value of ADA over which tuberculosis can be diagnosed. Table 1 shows that none of our patients with tuberculous pleural effusions, confirmed by bacterial cultures or pathological findings of pleural tissue, had ADA value less than 39 U·l⁻¹. One patient with pneumonia and one patient with carcinoma had empyema with ADA pleural fluid values greater than 39 U·l⁻¹. According to these data sensitivity and specificity, of the test in tuberculosis are at the highest point when the ADA value of pleural fluid is more than 38 U·l⁻¹ or the ratio ADA pleural fluid/ADA serum is more than two (table 2). We propose diagnostic ADA values of tuberculous pleural effusions more than 38 U·l⁻¹ and the use of the ratio ADA pleural fluid/ADA serum as a valuable tool to improve the accuracy of the test for diagnosis of pleural effusion.

Table 1. – ADA values in pleural fluid and serum

Disease		ADA IU·l ⁻¹ 37°C Mean (min-max)	
		Pleural fluid	Serum
Tuberculosis	37	109 (39–330)	37 (15–96)
Other disease	83	20 (4–47)	33 (13–200)

p<0.01

In our study we present evidence that in some patients with bacteriologically and/or pathologically proven tuberculous pleural effusion, a low value of adenosine desaminase (ADA) (< 43 U·l⁻¹) can be found and that this value changes along the clinical evolution of the disease.

Gourgoulianis *et al.* solve "the major problem" of the value of ADA in the diagnosis of tuberculous pleural effusion by decreasing the point of discrimination from the commonly accepted value of 43 U·l⁻¹ to 39 U·l⁻¹; but since many diseases other than tuberculosis will give a high ADA value in pleural effusion, this new value will decrease the specificity of this diagnostic method.

The problem according to our experience is not only a false positive result, but also a false negative one

Table 2. – Diagnostic accuracy of ADA pleural fluid and serum

Disease	Test	Sensitivity	Specificity
Tuberculosis	1. ADA pl >38 IU·l ⁻¹ *	1	0.98
	2. ADApl/ADAser >2	0.80	1
	3. 1 or 2	1	1

* ADA pl: ADA of pleural fluid; ADA ser: ADA of serum

The determination of ADA is an easy test with low cost. We believe that ADA is not of low diagnostic value in tuberculous pleural effusion. Further mathematical approach is required for the improvement of the capabilities of the test, particularly if tuberculosis is suspected.

K I Gourgoulianis
Pulmonary Dept.
University of Athens, Athens
Greece

References

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REPLY TO LETTER

(below 43·U·l⁻¹, and even lower than 39 U·l⁻¹) for ADA obtained for diagnosing tuberculous pleural effusion.

In fact some patients of the series of Gourgoulianis *et al.* should have had values below 43 U·l⁻¹ in order to advise a lower discriminative diagnostic point.

We do not believe that decreasing the value of ADA to 39 U·l⁻¹ or, even worse, applying more mathematical methods, will increase the clinical applicability of this biological parameter.

J M Querol
F Barbé
Servei de Pneumologia
Hospital de Bellvitge, Barcelona
Spain.