Short Communication

Validity of the CA125 Level in the Differential Diagnosis of Pulmonary Tuberculosis

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(Received June 19, 2007. Accepted October 9, 2007)

SUMMARY: The aim of the current study was to determine the possible crucial role of cancer antigen 125 (CA125) in the diagnosis of pulmonary tuberculosis (TB). The CA125 levels of study and control groups were statistically compared. In a total of 146 patients that were included in the current study, 30 had active PTB, 37 inactive PTB, 28 community-acquired pneumonia (CAP), 25 pleural or pulmonary malignancies, and 13 patients exacerbation of chronic obstructive pulmonary disease. The mean CA125 levels in PTB, inactive PTB, CAP, and pleural-pulmonary malignancies were 118.46 ± 248.41, 40.80 ± 50.95, 47.76 ± 60.76, and 57.77 ± 65.59, respectively. For active-inactive discrimination of PTB, with a cut-off level of ≥35 U/ml, the sensitivity, specificity, positive predictive value, and negative predictive value of CA125 were 63, 59, 56, and 67%, respectively. Increased CA125 levels were detected in active PTB in the current results. The current results also show that high level CA125 should be reconsidered in the prediagnosis and/or discrimination of active and inactive PTB patients.

Cancer antigen 125 (CA125) elevation has been shown to be related with many other conditions, including malignancy of the lungs, breasts, colon, pancreas, and some non-malign conditions such as endometriosis, hepatic cirrhosis or heart failure (1-10). In a review by Carlson and colleagues in 1994, it was suggested that elevation of the CA125 serum level (cut-off ≥35 U/ml) sensitivity and specificity of CA125 elevation in women with ovarian cancer was 78% and approximately 99%, respectively (2). It has also been reported that CA125 levels are elevated in patients with extra-pulmonary (pleural, peritoneal, pelvic, etc.) tuberculosis (11). A report by Yılmaz et al. suggested that CA125 elevation has 97.5% sensitivity and 100% specificity in discriminating active pulmonary tuberculosis (PTB) from inactive PTB (12). In our clinical practice, it was generally very difficult to discriminate active tuberculosis (TB) from inactive TB cases for commencing anti-TB therapy in a timely manner. Therefore, we think that the results claimed above by Yılmaz et al. could be valuable for TB diagnosis. These high sensitivity and specificity ratios encouraged us to examine whether CA125 is a useful marker in the differential diagnosis of active PTB.

We diagnosed 30 patients with active PTB; 37 patients with inactive PTB (15 of them with coexistent pulmonary diseases), 28 patients with community-acquired pneumonia (CAP), 25 patients with pleural or pulmonary malignancies, 13 patients with acute exacerbation of chronic obstructive pulmonary disease (COPD), and 13 patients belonging to the other categories. All were enrolled in the study. The active PTB group was diagnosed as the study group and the remaining patients as the control group. Bacteriologically confirmed TB patients with at least two sputum smears positive for acid-fast bacilli (AFB), or patients with a positive culture for the Mycobacterium tuberculosis complex were accepted as active TB. Pleural or pulmonary malignancies were diagnosed histologically. The mean age of the patients with active PTB (n = 30) was 54 ± 15, and the mean age of the controls (n = 116) was 57 ± 15 (P > 0.05). CA125 testing was performed within 2 days to all patients after diagnosis. Serum samples from the control and study groups were analyzed for CA125 levels by the Micro Particle Enzyme Immunoassay method using an automatic analyzer system (Abbott AXSYM® System; Abbott Laboratories Diagnostics Division, Chicago, Ill., USA) within 3 days after admittance. The results were defined in U/ml, and the cut-off point was considered to be ≥35 U/ml. The SPSS program was used for all statistical analyses in the presented results. The differences of the CA125 values between groups were compared by using the Mann-Whitney U test; P < 0.05 was accepted as significant.

A total of 146 patients were enrolled in this study; 75 of them had high CA125 values when the cut-off value was considered to be ≥35 U/ml. The mean value of CA125 in the patients with inactive PTB was significantly lower than in the patients with active PTB, but statistically non-significant when compared to the other groups (P = 0.07). The mean CA125 values of the other diagnostic categories were not statistically different from the mean value of patients with active PTB (P > 0.05) when compared to other groups. The mean serum CA125 values of the patient groups are shown in Table 1. In the inactive PTB group, 15 patients had coexistent diseases (inactive PTB+) of bronchiectasis (5 patients), and COPD (10 patients). The mean value of CA125 of the patients with solely inactive PTB was significantly different from that of the active PTB (P < 0.0001). On the other hand, the mean value of CA125 of the patients with inactive PTB+ was not different from the mean value of patients with active PTB (P = 0.981). For the active-inactive discrimination of PTB, with a cut-off level of ≥35 U/ml, the sensitivity, specificity, positive predicted value, and negative predicted value of CA125 were 63, 59, 56, and 67%, respect-

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tant role in determination of active and inactive PTB patients. However, when we subdivided the inactive PTB group based on whether an additional pulmonary disease was present or not, the value of CA125 testing was low in the patients with inactive PTB.

Wang et al. (13) and Younossian et al. (14) reported elevated serum CA125 levels in different patients with TB peritonitis. In the current study, our aim was to find out the validity of the serum CA125 levels in the evaluation of active PTB. Our primary results show the elevated serum CA125 level should be considered a crucial marker in the diagnosis of active PTB. We found that the serum CA125 levels were increased in patients with active PTB and diseases confused with active PTB. However, when we subdivided the inactive PTB group based on whether an additional pulmonary disease was present or not, the value of CA125 testing was low in the patients with inactive PTB.

Hypothesis of this study is whether CA125 can distinguish active PTB from various diseases that are confused with active PTB, including inactive PTB. The mean value of CA125 was higher in patients with active PTB; however, the mean CA125 values were also found to be high in patients with diseases that are confused with active PTB. In conclusion, the present results show that a high level of CA125 should be reconsidered when making a definitive diagnosis of PTB.

REFERENCES