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Diagnostic Value of Cancer Ratio Plus Obtained by Dividing Cancer Ratio to Pleural Fluid Lymphocyte in Differentiation Malign Pleural Effusion from Tubercular Pleural Effusion

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Objectives: Among the causes of pleural fluids (PF) in exudate clinical applications, malignancies, tuberculosis (TB) and parapneumonic fluids are the most common diseases. In countries where tuberculosis is prevalent, fluids associated with tuberculosis are usually reflected in the clinic, similar to liquids associated with other diseases, and fluid parameters are similar. In such cases, the differential diagnosis of malignant PF from TB fluids is difficult and inconvenient. Our aim is to determine the diagnostic value of the parameter (cancer ratio plus) obtained by dividing the rate of cancer (Serum LDH/ pleural fluid ADA) which is effective in the differentiation of malignant fluids with the PF lymphocyte ratio.

Methods: The data of the patients who underwent thoracentesis and pleural fluid analysis between 2008 and 2018 January were analyzed. The ratio of cancer ratio to the percentage of differential pleural lymphocyte count: this was called "cancer ratio plus." Patient groups were compared according to this ratio and cut-off value was calculated for the diagnosis of malignant pleural fluid. The results were compared using the Wilcoxon two-sample test or Fisher's full test. $P<0.05$ was considered statistically significant. ROC analysis was done.

Results: A total of 155 patients with malignant PF and tuberculous pleurisy were included in the study. Of these, 104 were malignant PF and 51 were tuberculous pleurisy. The median age of the patients with malignant PF was 66.5 (21.25) and the median age of the patients with TB pleurisy was 34 (29).The median cancer rate in patients with malignant PF was 27.04 (30.6), the cancer ratıo plus was 67 (209), the cancer rate was 7.10 (5.23), the cancer ratıo plus was 10 (17) in TB patients and the difference was statistically significant. When the cut off value for cancer was higher than 12.1, the sensitivity was 87.5% and the specificity was 82.5%. On the other hand, when the cut off value for cancer plus was higher than 36.9, sensitivity, specificity, negative predictive value, positive predictive value were 72.8%, 90.2%, 62.2%, 93.7%, respectively.

Conclusion: The cancer ratio plus rate the ratio of cancer ratioto the percentage of differential pleural lymphocyte count increased the specificity of the cancer rate in separating the malignant pleural effusion from the tuberculosis effusion. In addition, without any additional costs, tests, waste of time, the cancer ratio plus formulation may be more active and helpful in selecting patients with malignancy when compared to " wait and see" approach or empirically started TB treatment strategy.

Keywords: Tubercular pleural effusion, malign effusion, cancer ratio plus