Pleural Fluid Ferritin in Exudative Pleural Effusion

ZarPhyu Win

1Registrar in Medicine, Yangon General Hospital, Yangon, Myanmar

Background: Pleural effusion is a common medical problem and to differentiate it into malignant and non-malignant one is an important step. Tumor markers play a role in cases of pleural effusion with diagnostic difficulties. This study is designed to measure pleural fluid ferritin level in exudative pleural effusion to distinguish into malignant and non-malignant pleural effusion.

Objective: The purpose of the study was 1) to measure pleural fluid ferritin level in patients with exudative pleural effusion, 2) to find out the proportion of malignant pleural effusion cases among exudative pleural effusion, 3) to compare pleural fluid ferritin level in malignant and non-malignant exudative pleural effusion, and 4) to determine the cut-off value of pleural fluid ferritin level between malignant and non-malignant exudative pleural effusion.

Methods: A hospital based cross-sectional analytical study was conducted in 85 patients with exudative pleural effusions who underwent diagnostic evaluation in General Medical Wards of YGH, NYGH, and Department of Respiratory medicine, YSH. All patients had to be undergone thoracocentesis and necessary investigations to get the diagnosis. The ferritin concentration was measured in pleural fluid samples from patients with exudative pleural effusions to distinguish malignant from non-malignant.

Results: Among 85 cases of exudative pleural effusions, the mean age of the studied population was 53.12 +/- 18.82 years. Most of the patients (70.6%) were above 40 years of age. There were 49 (57.7%) malignant pleural effusion cases and 36 (42.3%) non-malignant pleural effusion cases. Mean pleural fluid ferritin level in malignant pleural effusion (4382.83 +/- 5331.12 ng/ml) was significantly higher than that in non-malignant pleural effusion (1067.06 +/- 976.88 ng/ml) (p-value <0.001). Of these malignant pleural effusion cases, 43 cases were primary origin, while 6 cases were due to metastasis from CA breast, MOT and CA colon. Malignant pleural effusion from primary origin was found to have mean pleural fluid ferritin level of 4812.09 +/- 5550.43 ng/ml. Whereas, malignant pleural effusion due to metastatic origin had mean value of 1306.47 +/- 1057.25 ng/ml which was significant (p-value= 0.01). The optimum cut-off point of pleural fluid ferritin was 1437.7ng/ml with sensitivity of 75.5% and specificity of 77.8% for malignancy.

Discussion: This is the first study in Myanmar that has done on pleural fluid ferritin level in exudative pleural effusion to differentiate between malignant and non-malignant pleural effusion. This study proved that pleural fluid ferritin level is significantly higher in malignant than in non-malignant pleural effusion. This finding is consistent with the findings of the studies done by Chung et al (1987) and Alexandrakis et al (1997), but contradicts the findings of the study done by Semra et al (2001).

Conclusion: In patients with exudative pleural effusions, raised pleural fluid ferritin level above optimum cut-off value may be a good indicator to be considered for distinguishing malignant from non-malignant pleural effusion.

Keywords: Pleural Effusion, Exudative Pleural