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Prognostic Effects of Neutrophil-Lymphocyte Rates in Serum and Pleural Fluids in Malignant Pleural Fluids

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Objectives: Several studies have reported that neutrophil-lymphocyte ratio in serum (sNLR) is a cost-effective and useful prognostic factor in patients with various types of cancer. However, single study reported the prognostic effect of NLR on malignant pleural effusion (MPE). Therefore, we investigated the clinical effect of NLR as a prognostic factor in MPE (mNLR) and the effect of NLRs on serum and MPE (smNLR score) on prognosis.

Methods: We retrospectively evaluated all patients with malignant cells in pleural fluid or tissue. Patients who were sent the hemogram parameter from the fluid analysis were included in the study. The effect of age, ECOG, histopathological type, serum albumin and LDH on survival were investigated. Cox regression analysis was performed.

Results: A total of 222 patients (162 male, 60 female) with a mean age of 65.7 ± 11.5 were included in the study. 185 patients were exitus and 37 patients were right. The relationship of mNLR and sNLR with survival was analyzed by ROC analysis and cut off value was ≥ 0.42 and ≥ 4.75 respectively. Patients with pleural fluid NLR value ≥ 0.42 and serum NLR value ≥ 4.75 had a shorter overall survival ($p: 0.000$). If any of the pleural fluid NLR and/or serum NLR values were high, the risk of death was 2.5 times higher (OR: 2.5; 95% confidence interval 1.57-4.04; $p: 0.000$) and it was found to be shorter survival in these patients ($p: 0.000$). In the Cox Regression analysis, NLR ($PS > 0.4286$ and/or $S > 4.75$), sLDH > 210 and age > 65 were found to be associated with a shorter overall survival ($p: 0.000$).

Conclusion: It is a useful and cost-effective prognostic factor in patients with MPE to evaluate both the serum NLR and pleural fluid NLR values or to assess only the pleural fluid NLR value. Because one of the two reflects the prognosis, the other may lead to prognosis when one is not looked at. Moreover, these results may be the cornerstone of further investigation of pleural fluid NLR in the future.

Keywords: Malignant pleural effusion, neutrophil-to-lymphocyte ratio, prognostic factor, serum