

Abstract

Background: Neutrophil-to-lymphocyte ratio (NLR) has been reported as a prognostic biomarker in non-small cell lung cancer (NSCLC); however, the underlying biological rationale remains unclear. The present study aimed to explore the potential utility of NLR as a surrogate biomarker for immune response to cancer and to elucidate the underlying mechanism.

Methods: This retrospective study included the medical records of 120 patients with NSCLC who underwent surgery at the study institution in 2012. NLR in peripheral blood was determined from blood test within 30 days before surgery. Tumor immune status was evaluated using immunohistochemical staining to identify CD3+, CD8+, and FOXP3+ tumor-infiltrating lymphocytes (TILs), and the relationship of NLR, with clinicopathologic characteristics including 5-year overall survival (OS), and tumor immune status was investigated. The median values of NLR and TIL count were used as cutoff points.

Results: The 5-year OS was significantly better in patients with low NLR (<2.2) than in those with high NLR (≥ 2.2) (70.1% vs. 56.8%, $p = 0.042$) and in patients with high CD3+ TIL count (≥ 242) than in those with low CD3+ TIL count (<242) (70% vs. 56.8%, $p = 0.019$). Additionally, CD3+ TIL count was negatively

19 correlated with preoperative NLR ($p = 0.005$).

20 **Conclusion:** NLR might potentially reflect the immune status of tumor
21 microenvironment, explaining its impact on prognosis of patients with NSCLC.

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