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HIGH NEUTROPHIL-TO-LYMPHOCYTE RATIO IS PROGNOSTIC FACTOR IN EARLY-STAGE BREAST CANCER PATIENTS

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Objectives: We aimed to explore the association of a readily available biomarker of systemic inflammation, the neutrophil-to-lymphocyte ratio (NLR), with breast cancer survival. **Methodology:** We undertook a single-centered retrospective study of patients with stages I–III breast cancer from 1999 to 2013. Clinicopathological data were collected before receiving any type of treatment. Survival analysis was performed using Cox regression models and Kaplan–Meier curves. **Results:** The cutoff value for NLR was set at 4.0 (NLRhigh ≥ 4 and NLRlow < 4). Of 1,700 patients included in this study, 121 (7%) had NLRhigh. Median for NLRhigh was 5.0 (4.0–34) and 1.9 (0.18–3.99) for NLRlow. Patients with NLRhigh were associated with more stage III at diagnosis (55% vs. 36%, p<0.01). Kaplan–Meier curves with log-rank tests at 10 years revealed a significant shorter disease-free survival (DFS) (p=0.02) and worse overall survival (OS) (p<0.001) for women with NLRhigh compared to those with NLRlow. Multivariate analysis revealed that NLR greater than 4 was independently correlated with shorter OS (HR 2.09, 95%CI 1.02–4.2, p=0.04). Furthermore, a subgroup of obese women with NLRhigh (classified as body mass index ≥30 kg/m^2) had the shortest DFS and the worst OS in the cohort (p<0.001). **Conclusion:** Pretreatment NLR greater than 4 was correlated with worse prognosis in breast cancer. Interestingly, a subgroup of obese patients with NLRhigh had the shortest survival, showing the state of chronic inflammation observed in obese women may influence immune system and the prognosis in breast cancer. Prospective studies are needed to define the best cutoff values and introduce this inflammatory biomarker in clinical use.

Keywords: Breast Cancer; Neutrophil-to-Lymphocyte Ratio; Inflammatory Blood Markers; Prognosis; Survival.