

LETTER TO THE EDITOR

Neutrophil to Lymphocyte Ratio May Predict Mortality in Breast Cancer Patients

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We read with great interest the article 'Usefulness of pretreatment neutrophil to lymphocyte ratio in predicting disease-specific survival in breast cancer patients' by Noh et al. [1]. In the study, they aimed to investigate the prognostic impact of pretreatment neutrophil to lymphocyte (N/L) ratio on breast cancer in view of disease-specific survival and the intrinsic subtype. They concluded that patients with an elevated pretreatment N/L ratio showed poorer disease-specific survival than patients without an elevated N/L ratio, particularly in luminal A subtype.

Breast cancer is the most common cancer in women and rates increase with advancing age. Inflammation can enhance tumor growth, invasion, angiogenesis and eventually metastasis [2]. Elevated inflammatory markers, such as C-reactive protein (CRP), interleukin-6, have been related to reduced survival among breast cancer patients. A complete blood count is an easy examination technique that provides us with information regarding the patient's blood contents; red and white cells, platelets, count and dimensions of subgroups of cells, and parameters like red cell distribution width, platelet cell distribution width, and mean platelet volume [3] as routine and easy inflammatory markers. White blood cell (WBC) count is one of the most useful inflammatory biomarkers in clinical practice. Although WBC is in normal range, subtypes of WBC like the N/L ratio may predict all-cause mortality. The N/L ratio as an independent predictor of breast cancer mortality [4]. N/L ratio is an independent predictor of short- and long-term mortality in breast cancer patients with N/L ratio > 3.3 [5]. N/L ratio is significantly associated with age,

gender, tumor type, and depth of invasion. The prognosis of younger or female patients is better than that of older or male patients. Tumor type and preoperatively high N/L ratio were significantly associated with poor prognosis after bone metastasis in the surgery group [6].

The N/L ratio is also an easily measurable laboratory marker used to evaluate systemic inflammation [7]. The N/L ratio has received increased attention due to its role as an independent prognostic factor for coronary artery disease, hypertension, chronic kidney disease, diabetes, heart failure, cerebrovascular disease, and peripheral arterial disease [8]. It can also be affected by atherosclerotic risk factors, such as smoking, alcohol consumption, hypercholesterolemia, metabolic syndrome [9], abnormal thyroid function tests, and old age. It would be better if the authors provided information about these factors.

Furthermore, sometimes acute conditions like bacterial or viral infections or drug treatments using some medications such as antihypertensive therapy including angiotensin-converting enzyme inhibitors, angiotensin receptor blocker, statins used may influence N/L ratio [10] might affect neutrophil and lymphocyte counts; thus, the ratio of these two parameters might be changed. The acute disease situation may overlap the chronic ongoing inflammation. It would be useful and the results might be different if the authors described these factors.

In conclusion, not only the N/L ratio but also the mean platelet volume, red cell distribution width [11], platelet distribution width, CRP, uric acid [12], and γ -glutamyl transferase are easy markers to evaluate the predictive of breast cancer patients. Finally, the N/L ratio itself alone without other inflammatory markers may not give information to clinicians regarding the chronic endothelial inflammatory condition of the patient. Hence, we believe that it should be evaluated together with other serum inflammatory markers. Further validation work and feasibility study are required before the re-

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sults of this study can be considered for clinical use. Special thanks go to the authors for their contribution.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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