Beyond the ratios: what influences neutrophil-to-lymphocyte and platelet-to-lymphocyte ratios in paediatric systemic lupus erythematosus?

Sir,

I read with great interest the report by Nath *et al*. (2024) on platelet and/or neutrophil to lymphocyte ratios in paediatric systemic lupus erythematosus (pSLE) (1). I agree with the authors on the significant role of high neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) to be biomarkers to predict disease progression of pSLE. However, since NLR and PLR could easily be affected even by the demographic features such as age, gender or other diseases and medications, I was not convinced whether those interveners were in account or not.

SLE is a chronic inflammatory disease associated with endothelial dysfunction and systemic inflammation. Several biomarkers such as interleukin-6, interleukin-1β, tumour necrosis factor-α, thrombomodulin, E-selectin, vascular endothelial growth factor, C-reactive protein, and total homocysteine have been identified as indicators of inflammation in SLE (2, 3). Moreover, recent studies show that white blood cell (WBC) counts and their subtypes, including NLR and PLR, are reliable indicators of systemic inflammation in diseases such as SLE and other autoimmune conditions. These markers are advantageous due to their simplicity and cost-effectiveness compared to traditional inflammatory biomarkers. Hence, NLR has been widely studied in the pathogenesis and prognosis of various diseases (4). Nonetheless, severe infections and inflammation can also lead to leukocytosis and neutrophilia, and neutrophils are rapidly mobilised from the marginal pool to the circulating pool during the acute phase of inflammation, that would change the NLR (5).

On the other hand, various factors such as age, gender, diabetes, obesity, hypertension, thyroid abnormalities, renal or hepatic dysfunction, metabolic syndromes, and especially the use of anti-inflammatory or immunosuppressive drugs (especially corticosteroids) can significantly alter haematologic parameters and thus affect NLR and PLR values (6). Though the study's findings for NLR and PLR are promising, an essential limitation of the study is that these confounding factors were not considered, especially subgroup analyses based on steroid or immunosuppressive use and age and gender distribution in active and inactive disease groups were missing.

Consequently, if the parts of the investigation could concern the intervening factors based upon those above-mentioned mainstays, much more satisfactory results of the study would be possible to be obtained.

F. DEMIRCIOĞLU, *MD*

Department of Paediatric Haematology and Oncology, Kavacık Medisate Hospital, Istanbul, Turkey.

Please address correspondence to:
Fatih Demircioğlu
Department of Paediatric Haematology and Oncology,
Kavacık Medisate Hospital,
34810 Istanbul, Turkey.
E-mail: drfatihsema@gmail.com
ORCID ID: 0000-0001-9582-8270

Competing interests: none declared.

References

1. NATH P, RAYCHAUDHURI D, KISKU HS *et al*.: Neutrophil-to-Lymphocyte Ratio and Platelet-to-Lymphocyte Ratio Predicts the Disease Activity in Patients with Paediatric Systemic Lupus Erythematosus: An Observational Cross-Sectional Study. *Mediterr J Rheumatol* 2024; 35(4): 634-38. https://doi.org/ 10.31138/mjr.040923.ntl
2. AVAR-AYDIN PÖ, BRUNNER HI: Revisiting Childhood-Onset Systemic Lupus Erythematosus. *Turk Arch Pediatr* 2024; 59(4): 336-44. https://doi.org/10.5152/TurkArchPediatr.2024.24097
3. THANOU A, JUPE E, PURUSHOTHAMAN M, NIEWOLD TB, MUNROE ME: Clinical disease activity and flare in SLE: Current concepts and novel biomarkers. *J Autoimmun* 2021; 119: 102615. https://doi.org/10.1016/j.jaut.2021.102615
4. TAHA SI, SAMAAN SF, IBRAHIM RA, MOUSTAFA NM, EL-SEHSAH EM, YOUSSEF MK: Can Complete Blood Count Picture Tell Us More About the Activity of Rheumatological Diseases? *Clin Med Insights Arthritis Musculoskelet Disord* 2022; 15 :11795441221089182. https://doi.org/10.1177/11795441221089182
5. RICE L, JUNG M: Neutrophilic leukocytosis, neutropenia, monocytosis, and monocytopenia. In HOFFMAN R (Ed): Hematology basic principles and practice. Elsevier, Philadelphia, 2013, 641.
6. ANGKANANARD T, ANOTHAISINTAWAEE T, MCEVOY M, ATTIA J, THAKKINSTIAN A: Neutrophil lymphocyte ratio and cardiovascular disease risk: a systematic review and meta-analysis. *Biomed Res Int* 2018; 2018: 2703518. https://doi.org/10.1155/2018/2703518