



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



NLR, d-NLR and PLR can be affected by many factors

Cihan Bedel^{a,*}, Mustafa Korkut^a, Hamit Hakan Armağan^b

^a Department of Emergency Medicine, Health Science University Antalya Training and Research Hospital, Antalya, Turkey

^b Department of Emergency Medicine, Suleyman Demirel University Faculty of Medicine, Isparta, Turkey

ARTICLE INFO

Keywords:

COVID-19
Neutrophil-to-lymphocyte ratio
Platelet-to-lymphocyte ratio
Lymphocyteto-monocyte ratio

ABSTRACT

We have read the article by Yang et al, entitled “The diagnostic and predictive role of NLR, d-NLR and PLR in COVID-19 patients” with great interest. The authors emphasized that the NLR (Neutrophil to lymphocyte ratio) is an independent prognostic biomarker for COVID-19 patients. First of all, we congratulate the authors for their valuable contribution to the literature in these difficult conditions. However, we would like to add on a few cases that need more attention.

We have read the article by Yang et al. [1], entitled “The diagnostic and predictive role of NLR, d-NLR and PLR in COVID-19 patients” with great interest. The authors emphasized that the NLR (Neutrophil to lymphocyte ratio) is an independent prognostic biomarker for COVID-19 patients. First of all, we congratulate the authors for their valuable contribution to the literature in these difficult conditions. However, we would like to add on a few cases that need more attention.

The effects of drugs on hematological parameters are known. It is well known that glucocorticoids, the most known of these, can cause leukocytosis and a decrease in other circulating cells such as monocytes and lymphocytes [2]. This is an indication that it will affect NLR, lymphocyte-to-monocyte (LMR) ratio, platelet-to-lymphocyte ratio (PLR). Therefore, the authors were required to indicate at the time of admission how many patients were using drugs that could affect laboratory parameters. In addition, it has been shown that NLR, PLR and LMR can be affected in patients with hematological disorders, cardiovascular disease, chronic organ failure, and malignancy [3,4]. Therefore, other medical treatments and additional diseases that may affect blood parameters should be stated more clearly or excluded.

Plasma inflammatory biomarkers such as white blood cell count, NLR, PLR, LMR and C-reactive protein are time-sensitive variables and these parameters are the dynamic process that accompanies the course

of the disease [5]. Accordingly, the time elapsed since the onset of symptoms may also affect NLR, PLR and LMR values and it is important that this time be included in the study protocol. As a result, NLR, PLR and LMR can be affected by many factors; The routine clinical use of these parameters is not yet reasonable. Prospective, multi-center studies with large patient populations are needed to access clearer information.

References

- [1] A.P. Yang, J.P. Liu, W.Q. Tao, H.M. Li, The diagnostic and predictive role of NLR, d-NLR and PLR in COVID-19 patients, *Int. Immunopharmacol.* 84 (2020), 106504, <https://doi.org/10.1016/j.intimp.2020.106504>.
- [2] A. Frenkel, E. Kachko, V. Novack, M. Klein, E. Brotfain, L. Koyfman, et al., The association of glucocorticosteroid treatment with WBC count in patients with COPD exacerbation, *J. Clin. Med.* 8 (2019) 1697.
- [3] C. Bedel, F. Selvi, Association of platelet to lymphocyte and neutrophil to lymphocyte ratios with in-hospital mortality in patients with type A acute aortic dissection, *Braz. J. Cardiovasc. Surg.* 34 (6) (2020) 694–698, <https://doi.org/10.21470/1678-9741-2018-0343>.
- [4] C. Bedel, M. Korkut, Evaluation of the neutrophil-lymphocyte ratio, platelet-lymphocyte ratio and monocyte lymphocyte ratio for diagnosis of testicular torsion, *J. Acute Dis.* 9 (2020) 213–217.
- [5] M. Mouchli, S. Reddy, M. Gerrard, L. Boardman, M. Rubio, Usefulness of neutrophil-to-lymphocyte ratio (NLR) as a prognostic predictor after treatment of hepatocellular carcinoma. Review article, *Ann. Hepatol.* 5 (20) (2020) 30164–30172, <https://doi.org/10.1016/j.aohep.2020.08.067>.

* Correspondence to: Health Science University Antalya Training And Research Hospital, Kazım Karabekir Street postal zip code: 07100, Muratpaşa, Antalya, Turkey.

E-mail address: cihanbedel@hotmail.com (C. Bedel).

<https://doi.org/10.1016/j.intimp.2020.107154>

Received 14 October 2020; Accepted 26 October 2020

Available online 21 November 2020

1567-5769/© 2020 Elsevier B.V. All rights reserved.