

Summary of Publication

Emergency Care • Bacterial Infections

Key words:

Bacterial Infection | Viral Infection | NLRC | Marker

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Neutrophil to lymphocyte count ratio as a biomarker of bacterial infections.

Michal Holub et al. Neutrophil to lymphocyte count ratio as a biomarker of bacterial infections. Central European Journal of Medicine, 2012; 7(2); 258-261.

Neutrophilia and lymphocytopenia are well-established markers of severe bacterial infections. The neutrophil to lymphocyte count ratio (NLRC) is an easily obtainable parameter that does not require any special equipment and has been proven to be useful in predicting bacteremia in emergency care settings. The aim of this study was to assess the sensitivity and specificity of NLRC for the diagnosis and community-acquired bacterial infections in patients who were hospitalized with febrile illness. The medians of NLRC were determined and found significantly higher in patients with bacterial infections (11.73) compared to those with viral infections (2.86) and a control group (1.86). A cut-off value of 6.2 for NLRC demonstrated high sensitivity and specificity for bacterial infections, suggesting its potential utility in clinical practice.

Conclusion

The changes of WBC populations have rapid kinetics, reflecting the role of neutrophils in the early stage of the inflammatory response. Neutrophilia is usually accompanied with lymphocytopenia, which has also been suggested as a good predictor of bacteremia. Lymphocytopenia probably develops because of the need to suppress the adaptive immune response in favor of innate immunity. The result from this study suggest diagnostic potential of NLRC. In conclusion, the NLRC may serve as a simple marker for discrimination between severe bacterial and viral infections. Direct availability, low cost, and high reliability of the NLRC support its incorporation into routine diagnostic panels.

What do we know about the Neutrophil-Lymphocyte Count Ratio (NLRC)?

- NLRC conjugates two faces of the immune system: the innate immune response (neutrophils), and adaptive immunity (lymphocytes).¹ Recently, NLRC has been "rediscovered" as a promising marker that is increasingly used in several clinical circumstances.²
- Initially, NLRC was studied as an infection marker in ICU patients and was found to correlate well with disease severity and outcome. The NLRC has proved to be an even better marker in predicting bacteremia than routine parameters, like white blood cell (WBC) count and C-reactive protein (CRP) level, in infectious emergency admissions.²
- Other areas of interest include clinical conditions like appendicitis or using the NLRC as a dependent predictor of survival in patients with various conditions ranging from oncological to cardiovascular diseases.²

1. Buonacera et al., Neutrophil to lymphocyte count ratio: An Emerging Marker of the Relationships between the Immune System and Diseases. International Journal of Molecular Science 2022; 23; 3636.
2. De Jager et al., The Neutrophil-Lymphocyte Count Ratio in Patients with Community-Acquired Pneumonia. Plos One 2012; Vol 7(10).