



Neutrophil-to-lymphocyte ratio: A novel and simple prognostic marker for infective endocarditis[☆]



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ARTICLE INFO

Keywords:

Neutrophil-to-lymphocyte ratio
Infective endocarditis
In-hospital
Mortality

ABSTRACT

Infective endocarditis is a life-threatening infectious disease characterized by high morbidity and mortality. Leukocytes play a main role in infectious diseases. Neutrophils and lymphocytes are subgroup of leukocytes, and they are routinely measured as a part of automated complete blood count test. The neutrophil-to-lymphocyte ratio is an independent predictor of unfavorable clinical outcomes in infectious and cardiovascular diseases.

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Infective endocarditis (IE) is a life-threatening infectious disease characterized by high morbidity and mortality [1,2]. Leukocytes play a main role in infectious diseases. Neutrophils and lymphocytes are subgroup of leukocytes, and they are routinely measured as a part of automated complete blood count test. The neutrophil-to-lymphocyte ratio (NLR) is an independent predictor of unfavorable clinical outcomes in infectious and cardiovascular diseases [3-5]. Infectious conditions are characterized with secretion of cortisol and catecholamines, which are stimulate stem cells, demargination of neutrophils, and margination and redistribution of lymphocytes to lymphatic organs that result in neutrophilia and lymphopenia. Lymphopenia and neutrophilia are correlated with the severity of infectious disease and tissue damage [6-8].

To our knowledge, the relationship between admission NLR and IE was evaluated in only 2 studies. Turak et al [9] showed that admission NLR was associated with in-hospital mortality and central nervous system events in IE. A total of 121 patients were evaluated in this study, and investigators reported that NLR cut-off value of 7.1 predicts in-hospital mortality and unfavorable outcomes.

We reported firstly the impact of admission NLR and in-hospital, long-term clinical outcomes in patients with IE [10]. The study population was divided into tertiles according to their admission NLR values. The high NLR group ($n = 76$) was defined as having an NLR value in the third tertile (>5.46) and the low-NLR group ($n = 95$) as having a value in the lower 2 tertiles (≤ 5.46). In-hospital heart failure, hemodialysis, ventricular arrhythmia, septic shock, and inotropic drug usage were more frequent in the high NLR group. Patients in the high NLR group had a higher incidence of in-hospital mortality (39.4% vs 18.9%, $P = .003$). Furthermore, the high NLR value was an independent predictor of in-hospital mortality (hazard ratio, 2.53; 95% confidence interval,

1.19-5.3, $P = .01$). The mean follow-up time was 25.5 months. Long-term all-cause mortality, rehospitalization for heart failure, hemorrhagic or ischemic stroke, reinfection, and relapses were similar in both groups (11.8% vs 10.5%, $P = .33$). In summary, NLR is simple, inexpensive, and widely available parameter for predicting in-hospital clinical outcomes in IE. However, during long-term follow-up, NLR cannot be a useful prognostic marker.

The authors of this manuscript approves that they comply with the principles of ethical publishing in the *Journal of Critical Care*.

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[☆] Conflict of interest: There are no conflicts of interest issues. We have no grant support.

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