Predictive Value of Neutrophil to Lymphocyte Ratio in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease

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ABSTRACT

Objective: This study aimed to determine the predictive value of the neutrophil to lymphocyte ratio (NLR) in patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD).

Methods: A retrospective study was conducted from March 2012 to May 2016 in Fuxing Hospital, Capital University of Medical Science. We collected 906 cases (525 males, 381 females, mean age 81.86±9.75 years) diagnosed with AECOPD. The NLR was calculated from their white blood cell (WBC), neutrophil (NEU), and lymphocyte (LYM)counts, which were obtained at laboratory examination.

Result: After treatment, 698 patients with AECOPD improved. The NLR was higher at admission (6.89±6.82) than after treatment (4.19±5.11) (P=0.000). The area under the receiver operating characteristic curve (AUC) of the NLR for predicting the 28-day mortality rate was 0.737. Using 8.130 as the critical NLR value, the sensitivity was 60.5%, and the specificity was 74.8%. The AUC of the NLR for predicting the frequency of the need for invasive mechanical ventilation was 0.732. Using 10.345 as the critical NLR value, the sensitivity was 54.3%, and the specificity was 84.8%. The AUC of WBC, NEU and LYMfor predicting 28-day mortality and the need for invasive mechanical ventilation in these patients were all less than 0.7. An increased NLR was an independent risk factor for 28-day mortality (OR=1.067, P=0.000), intensive care unit occupancy (OR=1.046, P=0.000), and the need for invasive mechanical ventilation (OR=1.042, P=0.000). Compared with those patients without comorbidities, patients with renal dysfunction or upper gastrointestinal bleeding had an increased risk of death within 28 days (OR=3.102, OR=4.598, respectively), ICU admission (OR=2.228, OR=3.103, respectively), and the need for invasive mechanical ventilation (OR=3.572, OR=4.279, respectively).

Conclusion: In patients with AECOPD, the accuracy of the NLR for predicting the 28-day mortality rate and frequency of the need for mechanical ventilation was significantly higher than the accuracy of WBC, NEU and LYMcounts. AECOPD patients with an NLR≥8.130 had higher 28-day mortality rate, while those with an NLR ≥10.345 were more likely to need invasive mechanical ventilation.

EXTERNAL LINK

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