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Biomarkers predicting outcomes in Asthma exacerbation

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Purpose: There is a growing research interest aimed at predicting the prognosis of patients with simple blood tests associated with systemic inflammation. Neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) are recently defined novel inflammatory markers, which are readily available, and they have been studied in a number of inflammatory conditions. We aimed to investigate the role of NLR and PLR in predicting outcomes in patients admitted with asthma exacerbation.

Method: Retrospectively we reviewed the clinical and demographical characteristics of 162 patients who were admitted for asthma exacerbation in a community hospital from Jan 2016 to December 2018. These patients were divided into 3 equal tertiles based on their admission NLR and PLR ratio. We also reviewed the charts of 70 stable asthma patients who were seen in the office for routine follow up visits.

Result: The first, second and third NLR tertiles were NLR<2.5, 2.6 ≤ NLR ≤ 6, and NLR > 6, respectively. The first, second and third PLR tertiles were PLR < 120, 121 ≤ PLR ≤ 188, and PLR > 188, respectively. Among the NLR group, compared to the patients in the first tertile, patients in 3rd tertile had higher average length of stay (7 days vs 3 days, p<0.006), need for mechanical ventilation (16.5% vs 2.5%, p<0.001) and 30 day readmission rate (17% vs 4%, p<0.03).

Conclusion: The results of this study showed that NLR and PLR obtained at the time of admission are very useful in predicting the clinical outcomes in patients admitted with asthma exacerbation. Patients with NLR ratio above 6 and PLR ratio above 188 at the time of hospital admission had higher average length of stay, need for mechanical ventilation and higher 30-day readmission rate. NLR and PLR are increased in stable asthmatic patients compared to normal subjects. Further studies are required to better elucidate the roles of these novel inflammatory markers in asthma.

Biography

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