Hematological Features and Risk Factors of Hospitalized COVID-19 Patients: A Retrospective Analysis

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Abstract

Background: Coronavirus disease 2019 (COVID-19) has become pandemic in 2020 and recently mutated coronavirus has emerged in many countries. This study firstly identified the clinical characteristics and risk factors for COVID-19 patients in Zhengzhou for clinical prevention and management. Methods: A total of 70 patients hospitalized with COVID-19 were enrolled between 21th January and 29th February 2020, in Zhengzhou, China. Clinical characteristics, hematological findings, neutrophil lymphocyte ratio (NLR), platelet lymphocyte ratio (PLR) and inflammatory index on admission were selected from medical records and the comparison between COVID-19 patients with different outcomes were evaluated. Results : The median age was 55 years. Forty-three (43%) patients were classified as severe or critical cases. Eighteen (12.8%) patients died in hospital and the remaining fifty-two were discharged. Patients who died tend to old aged, expectoration, with chronic obstructive pulmonary disease. Compared to survivor, non-survivor has significantly higher leucocytes, neutrophils, NLR, AST, GGT, TBIL, DBIL, LDH, PT, D-dimer, CRP, and decreased platelet, lymphocyte, UA, ALB, CHE, PTA. Multiple logistic regression analysis identified leucocytes, platelet, PLR, NLR, AST, and ALB as independent factors for poor outcomes. The AUC of combination of leucocyte, PLR, NLR, and AST have the largest area under curve at 0.87, with the sensitivity of 0.83 and specificity of 0.81. Conclusion : Our results identified the risk factors among COVID-19 patients in-hospital fatality. Leucocyte, PLR, NLR, and AST could have important reference value for prognostic prediction and early intervention.

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Conclusion : Our results identified the risk factors among COVID-19 patients in-hospital fatality. Leucocyte, PLR, NLR, and AST could have important reference value for prognostic prediction and early intervention.

Keywords: COVID-19; SARS-CoV-2; neutrophil lymphocyte ratio; prognosis

What's known

- Most published data of COVID19 were reporting from the high incidence locations, such as Hubei, Jiangsu province, no clinical data from Henan province were published.
- High leucocytes were the risk factors associated with mortality among COVID-19 patients with laboratory-confirmed coronavirus.
- Laboratory parameter is convenient and helpful for diagnosis and evaluating the prognosis of COVID-19 patients.

What's new

Our study firstly identified the hematological characteristics and risk factors for COVID-19 patients in Zhengzhou, China.

The AUC of combination of PLR, NLR, and AST could have important reference value for prognostic prediction and early intervention.

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