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Analysis of clinical features and early warning signs in patients with severe COVID-19: a retrospective cohort study

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ABSTRACT

The Coronavirus disease 2019 (COVID-19) was first identified in Wuhan, China during December of 2019. Previous studies have described clinical aspects of the COVID-19 illness; however, insufficient literature currently exists regarding detecting severe conditions in patients during the early diagnosis stage. Patients admitted to a designated hospital in the Henan Province of China with outcomes of either discharge or death before February 15, 2020 were enrolled retrospectively as a cohort study population. Patients who underwent at least one of the following treatments were considered a severe group: continuous renal replacement therapy (CRRT), high-flow oxygen absorption, noninvasive and invasive mechanical ventilation, or extracorporeal membrane oxygenation (ECMO); while the remaining patients were considered a non-severe group. Data regarding basic information, initial symptoms, and first visit examination results were collected from electronic medical records (EMR) and compared between the severe and non-severe groups. Multivariate logistic regression analysis was performed to determine predictors. A receiver operating characteristic (ROC) curve was applied to find threshold for each predictor. Altogether, 104 patients were enrolled to our study with 30 and 74 patients in the severe and non-severe groups, respectively. A majority of older patients were in the severe group. In addition, patients in the severe group had higher direct bilirubin, lactate dehydrogenase, C-reactive protein (CRP), and procalcitonin along with a lower absolute lymphocyte value. Multivariate logistic analysis indicated that patients aged ≥ 63 -years (odds ratio 41.0, 95% CI 2.8~592.4) with an absolute lymphocyte value $\leq 1.02 \times 10^9/L$ (odds ratio 6.1, 95% CI 1.5~25.2), CRP $\geq 65.08 \text{ mg/L}$ (odds ratio 8.9, 95% CI 1.0~74.2) had more risk being diagnosed as severe condition.

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