The Impact of Charlson Comorbidity Index on mortality from SARS-CoV-2 virus infection and A novel COVID 19 mortality index: CoLACD

YELDA VAROL[1], Burcin Hakoglu[2], Ali Kadri Cirak[2], Gulru Polat[2], Berna Komurcuoglu[2], Berrin Akkol[2], Cagri Atasoy[2], Eda Bayramic[2], Gunseli Balci[2], Sena Ataman[2], Sinem Ermin[2], and Enver Yalniz[2]

[1]Affiliation not available
[2]University of Health Sciences Dr. Suat Seren Chest Diseases and Surgery Education and Training Hospital, Izmir, Turkey

October 5, 2020

Abstract

Objective: The aim of this study is to find out the potential risk factors including Charlson Comorbidity index (CCI) score associated with death in COVID-19 cases hospitalized due to pneumonia and try to find a novel COVID-19 mortality score for daily use. Methods: All patients diagnosed as confirmed or probable COVID-19 pneumonia whom hospitalized in our Chest Diseases Education and Research Hospital between March 11, 2020 and May 15,2020 were enrolled. The optimal cut-off values, sensitivity and specificity values and odds ratios to be used in mortality prediction of the novel scoring system created from these parameters were calculated by ROC analysis according to the area under the curve and Youden index. Results: Over 383 patients (n:33 deceased, n:350 survivors) univariate and multivariate regression analysis showed that CCI and lymphocyte ratio were prognostic factors for COVID-19 related mortality. Using this analysis, a novel scoring model CoLACD (CoVID-19 Lymphocyte ratio, Age, CCI score, Dyspnea) was established. The cut-off value of this scoring system, which determines the mortality risk in patients, was 2.5 points with 82% sensitivity and 73% specificity (AUC = 0.802, 95% CI 0.777-0.886, p <0.001). The risk of mortality was 11.8 times higher in patients with a CoLACD mortality score higher than 2.5 points than patients with a score lower than 2.5 (OR = 11.8 95% CI 4.7-29.3 p <0.001). Conclusion: This study showed that by using the CoLACD mortality score, clinicians may achieve a prediction of mortality in COVID-19 patients hospitalized for pneumonia.

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