The CALL score for predicting outcomes
in patients with COVID-19

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Dear Editor,

defining prognosis of patients affected by coronavirus disease 2019 (COVID-19) due to SARS-Cov-2 infection is of utmost importance for planning appropriate setting of care and treatment. Therefore, we read with great interest the article by Ji D. et al. recently published in Your Journal (1). After exclusion of patients presenting with severe COVID-19 syndrome and by using data records of 208 patients suffering from COVID-19, with mean age ± DS 44.0 ± 16.3 years, the Authors derived and validated a novel score, named CALL, based on four variables (C=co-morbidity, A=age, L=lymphocyte count, L=lactate dehydrogenase, LDH) aimed at predicting progression toward clinical deterioration. The CALL score ranges from 4 (absence of co-morbidity, age under 60 years, lymphocyte count over 1.0×10^9/L, LDH under 250 U/L) to 13 (presence of co-morbidity, age over 60 years, lymphocyte count under 1.0×10^9/L, LDH over 500 U/L). The prognostic power for predicting progression toward clinical worsening, defined as respiratory rate ≥ 30 breaths/min, resting oxygen saturation ≤ 93%, paO2/FiO2 ratio ≤ 300 or requiring of mechanical ventilation, was excellent with an area under the receiver operating characteristic (ROC) curve (AUC) of 0.91 (95% CI 0.86 to 0.94). Using a cut-off value of 6 points, the Authors found positive and negative predictive values of 50.7% (38.9% - 62.4%) and 98.5% (94.7% - 99.8%), respectively. Therefore, after exclusion of patients requiring immediate intensive care unit (ICU) admission, we tested the predictive power of the CALL score in an Italian COVID-19 population admitted to hospital from March 12 to April 20,

2020, and consisting of 210 patients, 112 males (53.3%), with mean age 67.3 ± 16.8 years. Of them, 97 patients (46.2%) met criteria for progression to severe COVID-19 syndrome, and 37 patients (17.6%) died. Median CALL score was 10 (IQR 8-12). One hundred and fifty-four patients (73.3%) had co-morbidity, 144 (68.6%) were over 60 years, 100 (47.6%) had lymphocyte count under 1.0×10^9/L, and 54 (25.7%) had LDH over 500 U/L. Progression to severe COVID-19 syndrome increased from 27.2% in patients with CALL score ≤ 6 points to 53.0% in patients with CALL score ≥ 11 points. The predictive power of the CALL score for predicting progression to severe COVID-19 was low with an AUC of 0.622 (95% CI: 0.533-0.688) (Figure 1). Instead, the predictive power of the CALL score as prognosticator for in-hospital mortality was good (AUC 0.768, 95% CI: 0.705-0.823). In conclusion, in our COVID-19 population the CALL score seems to be a good prognosticator for in-hospital mortality, but not for progression to severe COVID-19. Other external validations are warranted.

REFERENCES

1)Ji D, Zhang D, Xu J et al. Prediction for Progression Risk in Patients With COVID-19 Pneumonia: The CALL Score. Clin Infect Dis 2020. doi: 10.1093/cid/ciaa414. Online ahead of print

Figure 1 Legend:

ROC curve showing the predictive power of the CALL score for predicting progression to severe COVID-19.

Figure 1

CALL_score

AUC = 0,622
P = 0,001

Sensitivity

100-Specificity