

Comparative evaluation of semi-quantitative CT-severity scoring versus serum lactate dehydrogenase as prognostic biomarkers for disease severity and clinical outcome of COVID-19 patients

Abstract

Background: Coronavirus disease 2019 pandemic causes significant strain on healthcare infrastructure and medical resources. So, it becomes crucial to identify reliable predictor biomarkers for COVID-19 disease severity and short term mortality. Many biomarkers are currently investigated for their prognostic role in COVID-19 patients. Our study is retrospective and aims to evaluate role of semi-quantitative CT-severity scoring versus LDH as prognostic biomarkers for COVID-19 disease severity and short-term clinical outcome.

Results: Two hundred sixty-six patients between April 2020 and November 2020 with positive RT-PCR results underwent non-enhanced CT scan chest in our hospital and were retrospectively evaluated for CT severity scoring and serum LDH level measurement. Data were correlated with clinical disease severity. CT severity score and LDH were significantly higher in severe and critical cases compared to mild cases (P value < 0.001). High predictive significance of CT severity score for COVID-19 disease course noted, with cut-off value ≥ 13 highly predictive of severe disease (96.96% accuracy); cut-off value ≥ 16 highly predictive of critical disease (94.21% accuracy); and cut-off value ≥ 19 highly predictive of short-term mortality (92.56% accuracy). CT severity score has higher sensitivity, specificity, positive, and negative predictive values as well as overall accuracy compared to LDH level in predicting severe, critical cases, and short-term mortality.

Conclusion: Semi-quantitative CT severity scoring has high predictive significance for COVID-19 disease severity and short-term mortality with higher sensitivity, specificity, and overall accuracy compared to LDH. Our study strongly supports the use of CT severity scoring as a powerful prognostic biomarker for COVID-19 disease severity and short-term clinical outcome to allow triage of need for hospital admission, earlier medical interference, and to effectively prioritize medical resources for cases with high mortality risk for better decision making and clinical outcome.

Keywords: Coronavirus disease 2019 (COVID-19), Prognostic biomarker, CT severity scoring, LDH