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Point-of-care lung ultrasound assessment for risk stratification and therapy guiding in COVID-19 patients: a prospective noninterventional study

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Lung injury caused by coronavirus disease 2019 (COVID-19) can be measured through lung ultrasound. Lung ultrasound identifies COVID-19 patients at a higher risk of complications, and could support clinical-decision making in COVID-19 patients. http://bit.ly/3cQiz6K

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Abstract

Background Lung ultrasound is feasible for assessing lung injury caused by coronavirus disease 2019 (COVID-19). However, the prognostic meaning and time-line changes of lung injury assessed by lung ultrasound in COVID-19 hospitalised patients are unknown.

Methods Prospective cohort study designed to analyse prognostic value of lung ultrasound in COVID-19 patients by using a quantitative scale (lung ultrasound Zaragoza (LUZ)-score) during the first 72 h after admission. The primary end-point was in-hospital death and/or admission to the intensive care unit. Total length of hospital stay, increase of oxygen flow and escalation of medical treatment during the first 72 h were secondary end-points.

Results 130 patients were included in the final analysis; mean±SD age was 56.7±13.5 years. Median (interquartile range) time from the beginning of symptoms to admission was 6 (4–9) days. Lung injury assessed by LUZ-score did not differ during the first 72 h (21 (16–26) points at admission *versus* 20 (16–27) points at 72 h; p=0.183). In univariable logistic regression analysis, estimated arterial oxygen tension/inspiratory oxygen fraction ratio (PAFI) (hazard ratio 0.99, 95% CI 0.98–0.99; p=0.027) and LUZ-score >22 points (5.45, 1.42–20.90; p=0.013) were predictors for the primary end-point.

Conclusions LUZ-score is an easy, simple and fast point-of-care ultrasound tool to identify patients with severe lung injury due to COVID-19, upon admission. Baseline score is predictive of severity along the whole period of hospitalisation. The score facilitates early implementation or intensification of treatment for COVID-19 infection. LUZ-score may be combined with clinical variables (as estimated by PAFI) to further refine risk stratification.

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