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Pulmonary congestion assessed by lung ultrasound predicts in-hospital mortality in acute heart failure

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Topic(s):
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Citation:
Introduction: Lung ultrasound (LUS) B-lines predict adverse outcomes in heart failure (HF) outpatients. However, the prognostic significance of LUS in patients admitted with acute HF is unclear.

Methods: Our study population was derived from a cohort of patients admitted to a tertiary health care center in Mexico City with acute HF. An 8-site LUS protocol was performed during the first 24 hours of hospitalization. ROC curve analysis was used to estimate diagnostic accuracy and optimal B-lines cutoff value. A Cox univariate regression model was performed to assess the association of B-lines with in-hospital mortality. Kaplan-Meier curves were used to graphically display the results.

Results: a total of 62 patients were recruited, 30.6% women (mean age= 56.4 ±16.1 years). Ischemic (32.7%) and valvular (25.8%) were the most common causes of HF. The median left ventricular ejection fraction was 25% (IQR 33-20%). ROC curve analysis identified an optimal value of 19 B-lines, with a sensitivity (58.3%), specificity (86.0%), LR+ (4.16), LR- (0.48) and AUC of 0.78 (95% CI: 0.66-0.91). In a univariate Cox-regression model, =19 B-lines were associated with a higher mortality (HR: 4.38; 95% CI: 1.37-13.95, p=0.01) (figure 1). After a multivariate analysis, only =19 B-lines on LUS and systolic blood pressure <90 mmHg on admission remained predictive of in-hospital mortality.

Conclusions: assessment of LUS B-lines on admission may predict in-hospital mortality in patients admitted with acute heart failure.
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