VASOACTIVE-VENTILATION-RENAL SCORE AND IN-HOSPITAL MORTALITY IN ADULT PATIENTS UNDERGOING EXTRACORPOREAL MEMBRANE OXYGENATION: A RETROSPECTIVE COHORT STUDY

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ABSTRACT

Background: Despite the increasing use of extracorporeal membrane oxygenation (ECMO), in-hospital mortality remains high. The vasoactive-ventilation-renal (VVR) score, which integrates hemodynamic, ventilatory, and renal parameters, has been proposed as a promising prognostic marker in critically ill patients; however, its prognostic value in adults undergoing ECMO remains poorly investigated.

Objective: To evaluate whether the vasoactive-ventilation-renal (VVR) score independently predicts in-hospital mortality in adult patients receiving ECMO.

Methods: This retrospective cohort study was conducted in the intensive care unit of a tertiary referral hospital in São Paulo, Brazil, recognized as an Extracorporeal Life Support Organization (ELSO) Center of Excellence. The VVR score was calculated immediately before ECMO initiation by combining the vasoactive-inotropic score (VIS), ventilation index, and a renal component derived from changes in serum creatinine. Univariate logistic regression was initially performed to identify variables associated with in-hospital mortality. Variables with $p \leq 0.20$ and those considered clinically relevant were entered into the multivariable logistic regression model. Statistical significance was set at $p<0.05$.

Results: A total of 154 patients were included, of whom 123 (79.3%) died during hospitalization. Non-survivors presented significantly higher VVR scores than survivors (400.8±389.0 vs. 192.8±263.6). In the multivariable analysis, the Sepsis-related Organ Failure Assessment (SOFA) score (OR=1.21; 95% CI: 1.07–1.36; p=0.001), age (OR=1.02; 95% CI: 1.00–1.05; p=0.041), and VVR score (OR=1.01; 95% CI: 1.01–1.03; p=0.010) were independently associated with in-hospital mortality. The final model demonstrated good calibration (Hosmer–Lemeshow test, p=0.889) and good discriminative performance (AUC=0.788). Conclusions: The VVR score was an independent predictor of in-hospital mortality in adults undergoing ECMO. By integrating cardiovascular, ventilatory, and renal information into a single composite score, the VVR may improve early prognostic assessment and risk stratification in this population. Prospective multicenter studies are warranted to externally validate these findings.

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CON EL RESPALDO