REMEMBER score predicts mortality in patients receiving VA-ECMO after CABG

Prediction scoring systems for coronary artery bypass grafting (CABG) patients on veno-arterial extracorporeal membrane oxygenation (VA-ECMO) have not yet been reported. To help clinicians select patients that would benefit from VA-ECMO after CABG, a team of international researchers devised a mortality risk score – REMEMBER score – comprising six pre-ECMO variables.

The REMEMBER (pRedicting mortality in patients undergoing veno-arterial Extracorporeal MEMBrane oxygenation after coronary artEry bypass gRafting) score exhibited good performance, and is focused on patients with postcardiotomy cardiogenic shock (PCS) following CABG, as compared to previous scores, according to a paper published in the journal Critical Care.

Although ECMO devices and intensive care management have undergone notable advances over the past two decades, short-term mortality associated with PCS remains unacceptably high at 45–75 percent. Older age, female sex, obesity, diabetes, renal insufficiency, pre-ECMO blood lactate, elevated creatine kinase-MB (CK-MB) levels, low serum albumin level, low platelet count, poor cardiac systolic function, and logistic EuroSCORE more than 20 percent were independently associated with in-hospital death in PCS patients undergoing ECMO after cardiac-related procedures. However, there is a paucity of data on patients receiving VA-ECMO after isolated CABG.

In the present study, researchers retrospectively evaluated consecutive patients who received VA-ECMO (n = 166) between February 2004 and March 2017 at the Beijing Anzhen Hospital. The primary outcome was in-hospital mortality, defined as death from any cause occurring in patients who were treated by VA-ECMO for PCS post CABG. Secondary outcomes included ECMO duration, length of intensive care unit (ICU) stay, length of hospital stay, survival to ECMO weaning, continuous renal replacement therapy (CRRT), systemic infection, bleeding requiring thoracotomy, major neurological complications, and major ECMO-related complications.

According to the researchers, 106 patients (64%) could be weaned from VA-ECMO, and 74 patients (45%) survived to hospital discharge. On the basis of multivariable logistic regression analyses, the REMEMBER score was created with six pre-ECMO parameters: older age, left main coronary artery disease, inotropic score > 75, CK-MB > 130 IU/L, serum creatinine > 150 umol/L, and platelet count < 100 × 109/L. Four risk classes, namely class I (REMEMBER score 0–13), class II (14–19), class III (20–25), and class IV (> 25) with their corresponding mortality (13%, 55%, 70%, and 94%, respectively), were identified. The area under the receiver operating characteristic curve 0.85(95% CI 0.79–0.91) for the REMEMBER score was better than those for the SOFA, SAVE, EuroSCORE, and ENCOURAGE scores in this population.

Over the past few years, the survival after VA-ECMO (SAVE) and the prEdictioN of Cardiogenic shock OUtcome foR Acute myocardial infarction patients salvaGed by VA-ECMO (ENCOURAGE) scores have been developed to predict survival of patients receiving ECMO for refractory cardiogenic shock. The EuroSCORE and SOFA scores are widely used in the fields of cardiac surgery and critical care, respectively.

"Importantly, the REMEMBER score had better discrimination than these previously published scores in our cohort," notes the research team. "The REMEMBER score might help clinicians at bedside to predict in-hospital mortality for patients receiving VA-ECMO after CABG for refractory cardiogenic shock."

However, the researchers say they performed only an internal validation of the REMEMBER score. Prospective studies are needed to externally validate the scoring system before it can be widely applied.

Source: Critical Care
Image Credit: iStock

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