Commentary: Patient selection is key to improving postcardiotomy extracorporeal membrane oxygenation outcomes

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Postcardiotomy cardiogenic shock (PCS) is associated with significant morbidity and mortality. For refractory PCS, venoarterial extracorporeal membrane oxygenation (VA-ECMO) has rapidly become an accepted bridging strategy toward either patient recovery or an alternative therapeutic option. Between 2008 and 2014, the use of VA-ECMO for PCS increased by almost 350% in US hospitals and is the leading cardiac indication for ECMO among all patients. Despite this increasing volume, reported outcomes for postcardiotomy VA-ECMO have varied significantly between studies, with survival to discharge ranging from 5.3% to 67%. This heterogeneity highlights the importance of patient selection to optimize outcomes and guide appropriate use of limited health care resources.

In this issue of the Journal, Biancari and colleagues present a large, multicenter, retrospective cohort analysis of outcomes in 781 consecutive patients treated with postcardiotomy VA-ECMO. Overall survival was 35.6% at hospital discharge and 32.8% at 1 year. The PC-ECMO risk score was developed using independent predictors of in-hospital mortality and showed better discrimination than the EuroSCORE II for this patient population. Further analysis demonstrated that greater-volume centers, with 50 or more cases of postcardiotomy VA-ECMO, had a 27% lower relative risk of in-hospital mortality compared with lower-volume centers.

This is a large, robust analysis of patients with PCS requiring VA-ECMO support. The major lesson here is that despite improving perioperative care, patient outcomes remain poor in this population and have not improved compared with pooled historical data. A recently published analysis of the Extracorporeal Life Support Organization registry showed that survival to hospital discharge of patients requiring postcardiotomy VA-ECMO has decreased over the past 20 years. At the heart of the problem is a lack of any uniform criteria for the institution, management, and weaning of postcardiotomy VA-ECMO. Appropriate patient selection has been shown repeatedly to be the most important predictor of outcomes in this patient population. In the present study, the authors attempt to address this problem through the PC-ECMO score. The risk factors identified are similar to those reported previously in other studies, including advanced age, high pre-ECMO lactate, and greater case complexity. The score still needs to be externally validated before widespread clinical use; however, it is a good initial step toward uncovering the key to better patient outcomes in this challenging population.

A limitation of this study is the lack of data on the overall incidence of PCS and outcomes with or without VA-ECMO. This information would shed light on the reasons behind the center volume-outcome relationship demonstrated in this study. Is this relationship due to increased experience leading to better results or lower-volume centers being extremely selective and using VA-ECMO for only salvage cases where the prognosis is extremely poor? Of note, the results of this study contradict previous findings that ECMO outcomes are not directly related to the total number of cases performed. In addition, this study failed to
report on the effect of iatrogenic, intraoperative complications on the outcomes of ECMO. Issues such as surgical misadventure or suboptimal myocardial protection can be significant drivers of mortality, and ECMO therapy often cannot salvage the situation. Future collection of this information will be critical in helping surgeons choose the most appropriate patients for rescue VA-ECMO therapy.

References