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Single-center experience with pediatric patients on ECMO who received recombinant factor VIIa for refractory bleeding

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Introduction: Bleeding is the most frequent complication in patients receiving veno-arterial or veno-venous extracorporeal membrane oxygenation (ECMO).[1,2] Recombinant activated factor VII (rFVIIa) has been used in these patients with conflicting results. We describe our experience in pediatric patients on ECMO who received rFVIIa for refractory bleeding in whom conventional management was not successful. This conventional management to stop the bleeding included adjustment of anticoagulation medications, substitution of clotting factors and platelets, and exclusion of surgical cause of bleeding.[3–6]

Methods: We reviewed the medical records of all the patients who underwent ECMO in our PICU from January 1999 to July 2014 and received rFVIIa for refractory bleeding. Clinical characteristics, demographics, type of congenital heart disease, surgical correction, bleeding, thrombotic compli-cations, mortality, and rFVIIa dose were documented. Being based on retrospective hospital data, this study is exempt from IRB approval.

Results: A total of 123 patients underwent ECMO in our unit since 1999, and five of them received rFVIIa for persistent refractory bleeding during veno-arterial ECMO. All of them had corrective cardiac surgery for congenital defects before installation of ECMO. Bleeding dramatically decreased in four patients (Figure 1), without a major thrombotic event. In one patient, bleeding remained significant and he developed left pulmonary artery thrombosis confirmed by cardiac catheterization, and this patient died. Four patients survived at 48-h after withdrawal from ECMO.

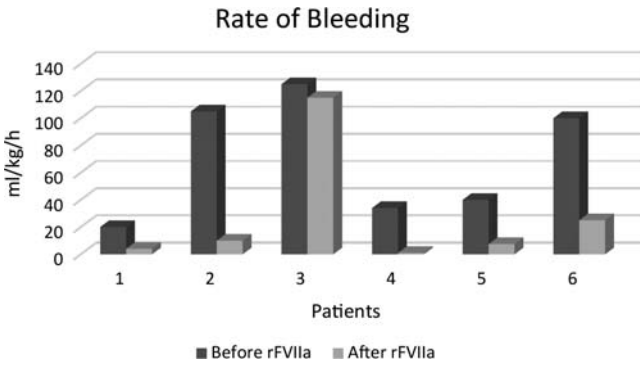

Figure 1. Rate of bleeding in the 3 h prior to the dose of rFVIIa and the 3 h after the dose of rFVIIa.

Conclusions: rFVIIa use for refractory bleeding in patients on ECMO was efficacious in four out of five patients in stopping bleeding without major thrombotic events. While the use of rFVIIa seems effective, indications for its use, modalities of administration, and precautions to be taken need to be better defined.

Keywords: bleeding, rFVIIa, ECMO

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