Retroperitoneal hematoma during pediatric peripheral venous ECMO cannulation: Identification, initial management, and bleeding control

Authors and Affiliations

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Background: Retroperitoneal hemorrhage induced by percutaneous femoral cannulation for extracorporeal membrane oxygenation (ECMO) is a known and life-threatening adverse event in which rapid identification and intervention are essential for survival.

Objective: To report the case of a pediatric patient who developed retroperitoneal hemorrhage during venous ECMO cannulation and had a favorable outcome.

Methods: Retrospective case report.

Results: We describe the case of a previously healthy 6-year-old girl who developed septic shock of pulmonary origin and severe acute respiratory distress syndrome requiring venous ECMO support. During the cannulation procedure, there was difficulty advancing the guidewire through the right femoral vein; therefore, cannulation was performed through the left femoral vein and the right internal jugular vein. Seconds after ECMO initiation, the patient developed sudden arterial hypotension and a significant drop in hemoglobin levels, which stabilized after aggressive fluid resuscitation, massive transfusion of blood products, reversal of anticoagulation, and bleeding control following placement of an endovascular stent at the site of the injured vessel (right external iliac vein). The patient remained on venous ECMO for 5 days with a good therapeutic response and no major neurological injuries secondary to the event.

Conclusions: Retroperitoneal hemorrhage during ECMO cannulation is a known and possible adverse event; however, rapid identification and appropriate management are essential to increase survival and reduce morbidity in these patients.

References:

1. Ranney D, Hatch S, Bonadonna D, Daneshmand M. ECMO flow as a sign of intraabdominal hemorrhage after prolonged CPR. ASAIO J. 2018;65(1):1-3. doi:10.1097/MAT.0000000000000927

2. Sugiura G, Bunya N, Yamaoka A, Okuda H, Saito M, Mizuno H, Inoue H, Narimatsu E. Delayed retroperitoneal hemorrhage during veno-venous extracorporeal membrane oxygenation: a case report. Acute Med Surg. 2019;6:180–184. doi:10.1002/ams2.385

3. Zhang JC, Li T. Delayed retroperitoneal hemorrhage during extracorporeal membrane oxygenation in COVID-19 patients: a case report and literature review. World J Clin Cases. 2021;9(19):5203–5210. doi:10.12998/wjcc.v9.i19.5203