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Early ECMO Improves Survival in Trauma Patients with Acute Respiratory Distress Syndrome

Calvin A. Brown, III, MD, FAAEM

In this retrospective cohort study, extracorporeal membrane oxygenation improved survival in trauma patients with severe ARDS.

Acute respiratory distress syndrome (ARDS) can complicate major trauma and is associated with high mortality. Case reports and small case series have reported improved survival when extracorporeal membrane oxygenation (ECMO) is used in trauma patients with severe ARDS.

These investigators conducted a retrospective cohort study of trauma patients with severe ARDS who were intubated during 1 year before and 1 year after the initiation of an ECMO program at a single level 1 trauma center. Severe ARDS was defined as a PaO_2/FIO_2 ratio <100 along with bilateral pulmonary infiltrates. Patients in the pre-ECMO group had ventilator management guided by the ARDSnet protocol. Patients in the intervention group were treated with ECMO if they had persistent hypoxemia despite maximal ventilator settings.

The analysis included 14 historical controls and 15 patients treated with ECMO. The two groups were similar with respect to age, injury severity, lung injury, head injury, admission lactate, base deficit, transfusion requirement, SOFA score, and ventilator-associated pneumonia rate. Mortality was significantly lower in the ECMO group (13% vs. 64%). There were no significant differences in secondary endpoints, including hospital length of stay, intensive care unit–free days, and ventilator-free days. Hemorrhagic and thrombotic complications were more common in the ECMO group but had no effect on survival.

Comment: ECMO is an expensive and labor-intensive therapy. This study is limited by its retrospective design, small sample size, and lack of discharge neurologic status as an endpoint. A multicenter controlled trial is needed to confirm these findings. Nonetheless, ECMO is one of the only treatment options available for ARDS patients with refractory critical hypoxemia.

Citation(s):
Borsage PL et al. Early initiation of extracorporeal membrane oxygenation improves survival in adult trauma patients with severe adult respiratory distress syndrome. *J Trauma Acute Care Surg* 2016 Aug; 81:236.
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