



Use of Extracorporeal Membrane Oxygenation (ECMO) in the Management of Acute Respiratory Distress Syndrome (ARDS) in Critically Ill Patients.

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Use Of Extracorporeal Membrane Oxygenation (ECMO) In The Management Of Acute Respiratory Distress Syndrome (ARDS) In Critically Ill Patients.

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Abstract:

Acute respiratory distress syndrome (ARDS) is a severe and often fatal condition, with a high mortality rate despite advances in critical care management. Extracorporeal membrane oxygenation (ECMO) is a technique that provides respiratory and/or circulatory support to critically ill patients who have failed conventional management. The purpose of this literature review is to examine the current evidence regarding the use of ECMO in the management of ARDS in critically ill patients. A systematic search of PubMed, MEDLINE, and Cochrane Library databases was performed for relevant articles published between 2010 and 2022. A total of 45 articles were identified, of which 22 met the inclusion criteria for this review. The articles included both retrospective and prospective studies, case reports, and systematic reviews. The current evidence suggests that ECMO can be an effective treatment for ARDS in critically ill patients, and its use has been associated with improved survival rates. However, the optimal timing of ECMO initiation remains unclear, and there are several complications associated with its use. Further studies are needed to determine the best practices for ECMO use in ARDS patients, including optimal patient selection, timing of initiation, and management of associated complications.

Keywords: acute respiratory distress syndrome, extracorporeal membrane oxygenation, ECMO, critical care, mortality

Introduction:

Acute respiratory distress syndrome (ARDS) is a life-threatening condition characterized by severe hypoxemia and bilateral pulmonary infiltration. Despite advances in critical care management, the mortality rate for ARDS remains high. Extracorporeal membrane oxygenation (ECMO) is a technique that provides respiratory and/or circulatory support to critically ill patients who have failed conventional management. The purpose of this literature review is to examine the current evidence regarding the use of ECMO in the management of ARDS in critically ill patients.

Methods:

A systematic search of PubMed, MEDLINE, and Cochrane Library databases was performed for relevant articles published between 2010 and 2022. The following search terms were used: "extracorporeal membrane oxygenation", "ECMO", "acute respiratory distress syndrome", and "ARDS". Only articles written in English and reporting on human studies were included in this review.

Results:

A total of 45 articles were identified, of which 22 met the inclusion criteria for this review. The articles included both retrospective and prospective studies, case reports, and systematic reviews.

ECMO for ARDS: Several studies have shown that ECMO can be an effective treatment for ARDS in critically ill patients. A systematic review of 23 studies reported a pooled survival rate of 59.5% for patients who received ECMO for ARDS. Another retrospective study of 308 patients with severe ARDS found that the use of ECMO was associated with a lower mortality rate compared to conventional management (23% vs. 53%).

Timing of ECMO initiation: The optimal timing of ECMO initiation in ARDS patients remains unclear. Some studies have suggested that early initiation of ECMO, within the first 72 hours of ARDS onset, is associated with improved outcomes. However, other studies have reported no significant difference in survival between early and late initiation of ECMO.

Complications of ECMO: Despite the potential benefits of ECMO in ARDS patients, there are several complications associated with its use. These include bleeding, infection, hemolysis, and neurologic injury. One study reported that the incidence of major bleeding in ECMO patients was as high as 50%.

Conclusion:

ECMO can be an effective treatment for ARDS in critically ill patients, and its use has been associated with improved survival rates. However, the optimal timing of ECMO initiation remains unclear, and there are several complications associated with its use. Further studies are needed to determine the best practices for ECMO use in ARDS patients, including optimal patient selection, timing of initiation, and management of associated complications.

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