

REDUCED VENTILATOR PRESSURE AND IMPROVED P/F RATIO DURING PERCUTANEOUS ARTERIOVENOUS CARBON DIOXIDE REMOVAL FOR SEVERE RESPIRATORY FAILURE

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Objective

Identify the effects of extrapulmonary CO₂ removal on ventilator pressures and P/F in a large animal model of severe acute lung injury created by smoke inhalation and cutaneous flame burn injury.

Study Design

Experimental study in a large animal model.

Study Population

9 adult sheep.

Methods

Animals were placed on extrapulmonary lung assist with an experimental device within 40 to 48 hours of injury.

Results

AV shunt flow was 10–15 % of cardiac output, equivalent to 800 to 900 ml/min. This allows to achieve removal of 95% of CO₂ production. While maintaining normocapnia. This allows the reduction of both tidal volume and pressure to achieve lung protective ventilation.

Commentary

This paper is relevant for burn patients because smoke inhalation is the most frequent cause of death in these patients. Due to the significant fall in lung compliance in smoke injury a means of extrapulmonary CO₂ removal can give the lung time to heal because compliance may gradually return.

The paper discusses the disadvantages of ECMO in this scenario and concludes that extra pulmonary CO₂ removal can be an effective treatment modality in smoke inhalation and burn injury based on both the present experimental and initial clinical data (5 patients).

