

SIGNIFICANT REDUCTION IN MINUTE VENTILATION AND PEAK INSPIRATORY PRESSURES WITH ARTERIOVENOUS CO₂ REMOVAL DURING SEVERE RESPIRATORY FAILURE

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CRIT CARE MED 1997;25(4):689-95

CE1-28

Objective

Quantify extracorporeal CO₂ removal with a pumpless extracorporeal gas exchange device and its effects on the reduction of ventilatory volumes and airway pressures.

Study Design

Prospective experimental study.

Study Population

5 adult female sheep.

Methods

Cotton smoke inhalation injury (LD 50).

Measurement of ABG, CO₂ removal performance, mechanical ventilation settings.

Results

Maximum CO₂ removal performance amounted to 102 ml/min (96% of total CO₂ production) allowing to reduce minute ventilation from 10.5 to 0.5 l/min and peak inspiratory pressures from 40.8 to 19.7 mmHg, extracorporeal blood flow ranged from 1154 to 1277 ml/min. PaO₂ was maintained > 13.3 kPa at maximally reduced ventilator support. MAP and cardiac output did not change significantly.

