

SEVENTY-TWO HOUR GAS EXCHANGE PERFORMANCE AND HEMODYNAMIC PROPERTIES OF NOVALUNG iLA AS A GAS EXCHANGER FOR ARTERIOVENOUS CARBON DIOXIDE REMOVAL

ZHOU X, LORAN DB, WANG D, HYDE BR, LICK SD, ZWISCHENBERGER JB.
PERFUSION. 2005;20(6):303-8.

CE1-42

Objective

to evaluate the device for short-term CO₂ removal performance and hemodynamic response.

Study Design

Prospective study.

Study Population

Six adult sheep.

Methods

Six adult sheep received pumpless iLA. The iLA circuit was placed on the sheep for 72 hours. Hemodynamics and PaCO₂ were measured; CO₂ removal was calculated while varying sweep gas flow rates (Q_g), device blood flow rates (Q_b), and PaCO₂.

Results

Hemodynamic variables remained normal throughout the study. CO₂ removal increased with increases in sweep gas flow rate or blood flow rate. Mean CO₂ removal was 119.3 ml/min for blood flow 1 L/min, sweep gas flow 5 L/min, and PaCO₂ 40-50 mmHg. PaCO₂ was proportional to CO₂ clearance.

Commentary

This reference is of importance because it demonstrates that Novalung® iLA can provide near total CO₂ removal with limited blood flow rate or gas flow rate. It also shows that through CO₂ removal PaCO₂ is controlled. It also demonstrates the very low resistance to blood flow. The measured performance characteristics were stable through the study period. The duration of the study period is about half the typical duration of use in patients.

