FEASIBILITY OF A PUMPLESS EXTRACORPOREAL RESPIRATORY ASSIST DEVICE

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Objective
Evaluate feasibility and efficacy of pumpless extracorporeal respiratory assist with a prototype membrane lung (Cobe Cardiovascular, Denver, CO).

Study Design
Animal trial, short term (20 min treatment period).

Study Population
5 pigs.

Methods
Measurement of pressure drop across membrane lung, ABG, hemodynamics, carbon dioxide removal capacity at various arterial blood pressures (baseline, baseline - 20 % and - 40 %, baseline + 20 % and + 40 %) obtained by administration of sodium nitroprusside or phenylephrine.

Results
A linear relationship between mean arterial pressure and AV shunt flow (14–25 % of cardiac output) was observed. The carbon dioxide removal capacity ranged from 41 to 104 ml CO_2/l/min depending on $paCO_2$ (40–100mmHg).

Commentary
This short term animal trial with a prototype gas exchanger showed feasibility and efficacy in the absence of major complications. However, the authors note that the microporous membrane used would necessitate device exchange due to plasma leak in long term use.