PUMPLESS EXTRACORPOREAL LUNG ASSIST FOR PROTECTIVE MECHANICAL VENTILATION IN EXPERIMENTAL LUNG INJURY

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Objective
To test the hypothesis that ventilation with 3ml/kg tidal volume (Vt) combined with iLA reduces ventilator-associated organ injury in experimental acute lung injury (ALI) when compared to ventilation with 6ml/kg tidal volume without iLA.

Study Design
Prospective, randomized, controlled trial.

Study Population
14 pigs.

Methods
ALI was induced by repeated saline lung lavages. All animals were ventilated in a volume-controlled mode with FiO_2 1.0 and PEEP of 5 cm H2O with Vt of 3ml/kg plus iLA (interventional group) or with Vt of 6 ml/kg (control group). Organ function in vivo was determined by laboratory analyses, including calculations of pulmonary ventilation/perfusion distribution. Histologic assessment of organ injury was performed post mortem after 24 hrs.

Results
In both groups gas exchange improved significantly in the course of the study. Animals in the interventional group had severe ventilation / perfusion mismatch, as indicated by increased perfusion to lung areas with a low ventilation / perfusion ratio ($p<.05$).Other variables did not reveal any statistical difference between the groups.

Commentary
Obviously, ventilation with Vt <6ml/kg may cause pulmonary de-recruitment when PEEP is not adequately increased. The low PEEP level used in both groups may not allow clinical conclusions.