



Improved ventilatory function in burn patients using volumetric diffusive respiration.

Rodeberg DA, Housinger TA, Greenhalgh DG, Maschinot NE, Warden GD.

Shriners Burns Institute, Cincinnati, OH -USA

BACKGROUND: Volumetric diffusive respiration (VDR) offers theoretical advantages over conventional mechanical ventilation (CV) by using lower airway pressures, recruiting alveoli, and mobilizing secretions.

STUDY DESIGN: Forty-eight thermally injured pediatric patients with failing respiratory status were changed from CV to VDR. Data were obtained just before transition for CV and after stabilization on VDR, within six hours of transition.

RESULTS: Both ventilation and oxygenation were significantly improved with PaCO₂ decreasing from 47 +/- 3 to 39 +/- 11 mmHg and PaO₂ increasing from 105 +/- 8 to 171 +/- 12 mmHg after transition to VDR. Treatment with the VDR ventilator also resulted in a significant decrease in peak inspiratory pressures (PIP) from 52 +/- 2 to 38 +/- 2 CmH₂O. The PaO₂ to FiO₂ ratio increased from 189 +/- 16 using CV, to 329 +/- 21 using VDR, suggesting an improvement in the ventilation and perfusion matching. Ventilatory efficiency, measured by the PaO₂/FiO₂/PIP ratio, greatly improved after transition from CV to VDR with fraction of inspired oxygen increasing from 3.9 +/- 0.4 to 10.3 +/- 1.0. Hemodynamic function (blood pressure and pulse rate) were not adversely affected by VDR.

CONCLUSIONS: The VDR ventilator is more effective than conventional ventilation for maintaining optimal gas exchange at lower airway pressures in thermally injured pediatric patients.

PMID: 7952452 [PubMed - indexed for MEDLINE]

J Am Coll Surg - 1994 Nov; 179(5):518-22



**PERCUSSIONAIRE®
CORPORATION**

130 McChee Road, Suite 109, Sandpoint ID 83864

percussionaire.com

208.263.2549