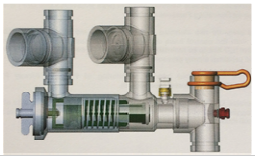

Effects of mechanical load on flow, volume and pressure delivered by high-frequency percussive ventilation.

Lucangelo U, Antonaglia V, Zin WA, Fontanesi L, Peratoner A, Bird FM, Gullo A.

Department of Perioperative Medicine, Intensive Care and Emergency, Cattinara Hospital, Trieste University School of Medicine, Trieste – ITALY.

High-frequency percussive ventilation (HFPV) has proved its unique efficacy in the treatment of acute respiratory distress, when conventional mechanical ventilation (CMV) has demonstrated a limited response. We analysed flow (V_{dot}), volume (V) and airway pressure (P_{aw}) during ventilation of a single-compartment mechanical lung simulator, in which resistance (R) and elastance (E) values were modified, while maintaining the selected ventilatory settings of the HFPV device. These signals reveal the physical effect of the imposed loads on the output of the ventilatory device, secondary to constant (millisecond by millisecond) alterations in pulmonary dynamics. V_{dot} , V and P_{aw} values depended fundamentally on the value of R, but their shapes were modified by R and E. Although peak P_{aw} increased 70.3% in relation to control value, mean P_{aw} augmented solely 36.5% under the same circumstances (maximum of 9.4 CmH_2O). Finally, a mechanism for washing gas out of the lung was suggested.

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