



High-frequency percussive ventilation improves oxygenation in patients with ARDS.

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STUDY OBJECTIVES: To evaluate changes in respiratory and hemodynamic function of patients with ARDS and requiring high-frequency percussive ventilation (HFPV) after failure of conventional ventilation (CV).

DESIGN: Retrospective case series.

SETTING: Surgical ICU (SICU) and medical ICU (MICU) of an academic county facility.

MEASUREMENTS AND RESULTS: Thirty-two consecutive patients with ARDS (20 from SICU, 12 from MICU) who were unresponsive to at least 48 h of CV and were switched to HFPV were studied. Data on respiratory and hemodynamic parameters were collected during the 48 h preceding and the 48 h after institution of HFPV and compared. Between the period of CV and the period of HFPV, the ratio of PaO₂ to the fraction of inspired oxygen (FiO₂) increased ([mean+/-SE] 130+/-8 vs. 172+/-17; p = 0.027), peak inspiratory pressure (PIP) decreased (39.5+/-1.7 vs. 32.5+/-1.9 mm Hg; p = 0.002), and mean airway pressure (MAP) increased (19.2+/-1.2 vs. 27.5+/-1.4 mm Hg; p<0.001). The rate of change of PaO₂/FiO₂ per hour was also significantly improved between the two periods. The same changes in PaO₂/FiO₂, PIP, and MAP were observed when the last value recorded while the patients were on CV was compared with the first value recorded after 1 h of HFPV. This improvement was sustained but not amplified during the hours of HFPV. The patterns of improvement in these three parameters were similar in SICU and MICU patients as well as in volume-control and pressure-control patients. There were no changes in hemodynamic parameters.

CONCLUSION: The HFPV improves oxygenation by increasing MAP and decreasing PIP. This improvement is achieved soon after institution of HFPV and is maintained without affecting hemodynamics.

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