Efficacy and safety of intrapulmonary percussive ventilation superimposed on conventional ventilation in obese patients with compression atelectasis.

Tsuruta R, Kasaoka S, Okabayashi K, Maekawa T.

Advanced Medical Emergency and Critical Care Center, Yamaguchi University Hospital, Ube, Yamaguchi, JAPAN

PURPOSE: To investigate the efficacy and safety of intrapulmonary percussive ventilation (IPV) in obese patients, we assessed their respiratory and hemodynamic functions during IPV superimposed on conventional ventilation.

MATERIALS AND METHODS: Ten obese patients with acute respiratory failure due to compression atelectasis who had not improved by conventional ventilation were treated with IPV. Hemodynamic parameters, ventilator settings, and intracranial pressure (n = 1) were recorded every hour. Arterial blood gas was analyzed every 3 hours. The efficacy and safety of IPV was assessed at the start of weaning.

RESULTS: Before IPV, PaO_2/FiO_2 ratio remained low (189 +/- 63 mmHg), which significantly increased to 243 +/- 67 mmHg at 3 hours from the initiation of IPV ($P < .01$). Furthermore, it continuously increased to 280 +/- 50 mmHg at 24 hours ($P < .01$). Intrapulmonary percussive ventilation induced significant increase in dynamic compliance from control value of 30 +/- 8 mL/CmH_2O at 0 hours to 35 +/- 9 mL/CmH_2O at 12 hours ($P < .05$) and to 38 +/- 8 mL/CmH_2O at 24 hours ($P < .01$). Heart rate and mean arterial pressure were not significantly changed during IPV. Improvement of compression atelectasis was confirmed by their chest computed tomographic scans. Adverse effects such as pneumothorax and intracranial hypertension were not seen.

CONCLUSIONS: These results demonstrated that IPV was effective and safe in improving compression atelectasis without adverse effects in obese patients.

PMID: 17175419 [PubMed - in process]

J Crit Care - **2006 Dec; 21(4):328-32.**