Heliox for Treatment of Intubated Patients with COPD

Heliox is increasingly being used for treatment of severe asthma, but less is known about its efficacy in patients with chronic obstructive pulmonary disease. Investigators in Switzerland prospectively studied 23 mechanically ventilated intensive care unit patients with severe COPD. All patients were sedated and paralyzed and were enrolled within 36 hours after intubation. Measurements were taken at baseline, 45 minutes after heliox administration, and 45 minutes after return to oxygen. Results were compared with those from a test lung model used with the same ventilator settings.

In patients and the test lung model, trapped lung volume and intrinsic positive end-expiratory pressure (PEEPi) decreased with heliox (from 215(+125) to 99(+115) and from 9(+2.5) to 5(+2.7), respectively) and returned to baseline with standard oxygen. Blood pressure, pulse, and blood gases were unaffected. In 12 patients, arterial lines were in place, and they revealed no changes in pulmonary artery pressures, ventricular filling pressures, cardiac outputs, or systemic vascular resistances. The researchers conclude that heliox can markedly reduce trapped lung volume, PEEPi, and peak and mean airway pressures in mechanically ventilated COPD patients without affecting hemodynamic parameters or blood gases.

Comment: In mechanically ventilated patients with COPD, heliox may reduce the risk of barotrauma. However, a simpler and less expensive method for lowering PEEPi is to reduce minute ventilation. Heliox may be a useful adjunct in the ED when trying to avoid intubating asthma or COPD patients or when ventilation remains difficult following emergency intubation. An editorialist cautions that the value of heliox remains unclear despite the results of this small study.

— KL Koenig

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