Two articles and an accompanying editorial, the latter co-authored by none less than the editor, appeared in the New England Journal of Medicine this week. These all dealt with the use of high-frequency oscillatory ventilation (HFOV) in the adult respiratory distress syndrome (ARDS). As the editorial points out, HFOV should prove to be advantageous in ARDS. Conventional mechanical ventilation can perpetuate lung injury in ARDS by at least two mechanisms:

1. Excessive tidal volumes can stretch the lung, leading to overdistention and further lung injury.
2. Inadequate positive end-expiratory pressure (PEEP) can promote repetitive alveolar collapse followed by reopening, which may be injurious to the lung (an injury known as atelectrauma).

Theoretically, HFOV should lessen both types of injury since it vibrates gas in the airway resulting in alveolar ventilation.

However, the results of two major, multicenter, randomized trials found no clinical advantage of HFOV. In fact, in one of the trials, the Oscillation for Acute Respiratory Distress Syndrome Treated Early (OSCILLATE) trial, patients treated with HFOV had more deaths than conventional mechanical-ventilation. In the other trial, the OSCAR trial, no difference in 30-day mortality was observed.

The mechanism underlying the failure of HFOV to improve outcomes is unknown although a number of possibilities are discussed in the editorial. Also pointed out is that since ARDS is a heterogenous lung disease from differing causes, some patient subgroups might be helped while others are harmed by HFOV.

Regardless, for now clinicians should be cautious about applying HFOV routinely in patients with ARDS.

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