

JOURNAL CLUB

Lung-protective mechanical ventilation may be associated with a long-term survival benefit for patients with acute lung injury

Volume and pressure-limited ('lung-protective') mechanical ventilation decreases short-term mortality in patients with acute lung injury (ALI). This multicentre prospective cohort study from the USA evaluated the association of lung-protective mechanical ventilation with a 2-year survival period in patients with ALI.

The study included 485 mechanically ventilated patients with ALI diagnosed according to the American-European Consensus criteria. After onset of ALI, twice-daily records of ventilator settings were measured yielding 6240 settings for evaluation. Those with tidal volumes ≤ 6.5 ml/kg and a plateau pressure ≤ 30 cm H₂O were deemed 'adherent' to lung-protective ventilation. In total, only 41% of ventilator settings recorded were adherent. Four hundred and seventeen patients (86%) received 50% or less of their ventilator-settings adherent, and 180 (37%) never received any settings adherent.

Overall, 311 patients (64%) died during the 2 years after onset of ALI. Survival was independently associated with several covariates, including age, co-morbidity and organ failure scores. After adjustment for total duration of mechanical ventilation and covariates for each additional adherent ventilator setting, the risk of mortality over 2 years decreased by 3% (HR 0.97, 95% CI 0.95 to 0.99, $p=0.002$). Statistical modelling estimated an absolute risk reduction in 2-year mortality of 4% (95% CI 0.8% to 7.2%, $p=0.012$) for 50% ventilator adherence and 7.8% (95% CI 1.6% to 14%, $p=0.011$) for 100% adherence.

Lung-protective ventilation still appears to be under-utilised in clinical practice. Although in this prospective study we cannot be certain that all possible confounding variables were accounted for, there may also be an association between non-adherence to lung-protective ventilation and 2-year mortality.

► Needham DM, Colantuoni E, Mendez-Tellez PA, *et al.* Lung protective mechanical ventilation and two year survival in patients with acute lung injury: prospective cohort study. *BMJ* 2012;344:e2124.

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