Lower Level Mechanical Ventilation Linked With Better Outcomes

CHICAGO –Among patients without acute respiratory distress syndrome, protective mechanical ventilation with use of lower tidal volumes (the volume of air inhaled and exhaled during each breath) was associated with better outcomes including less lung injury, lower mortality, fewer pulmonary infections and a shorter hospital length of stay, according to a meta-analysis of previous studies, reported in the October 24/31 issue of *JAMA*.

"Mechanical ventilation is a life-saving strategy in patients with acute respiratory failure. However, unequivocal evidence suggests that mechanical ventilation has the potential to aggravate and precipitate lung injury. In acute respiratory distress syndrome (ARDS), and in a milder form of ARDS formerly known as acute lung injury (ALI), mechanical ventilation can cause ventilator-associated lung injury," according to background information in the article. "Lung-protective mechanical ventilation with the use of lower tidal volumes has been found to improve outcomes of patients with ARDS. It has been suggested that use of lower tidal volumes also benefits patients who do not have ARDS."

Ary Serpa Neto, M.D., M.Sc., of ABC Medical School, Santo Andre, Sao Paulo, Brazil and colleagues conducted a meta-analysis to determine whether conventional (higher) or protective (lower) tidal volumes would be associated with lung injury, mortality, and pulmonary infection in patients without lung injury at the onset of mechanical ventilation. After a search of the medical literature, the researchers identified 20 articles (2,822 participants) that met criteria for inclusion in the study.

Analysis of the data indicated a 67 percent decreased risk of lung injury development and 36 percent decrease in the risk of death in patients receiving ventilation with lower tidal volumes. The results of lung injury development were similar when stratified by the type of study (randomized vs. nonrandomized) and were significant only in randomized trials for pulmonary infection and only in nonrandomized trials for mortality. Analysis also showed, in protective ventilation groups, a lower incidence of pulmonary infection and lower average hospital length of stay (approximately 7 vs. 9 days, respectively).

"In conclusion, our meta-analysis suggests that among patients without lung injury, protective ventilation with use of lower tidal volumes at onset of mechanical ventilation may be associated with better clinical outcomes. We believe that clinical trials are needed to compare higher vs. lower tidal volumes in a heterogeneous group of patients receiving mechanical ventilation for longer periods," the authors write.

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