

Adaptive Support Ventilation: Evidence-based benefits

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Introduction

Adaptive support ventilation (ASV) is a fully automatic system of ventilation, able to maintain a predetermined rate of minute ventilation, at an optimal respiration-rate/tidal-volume combination, within prescribed safety limits. Although first described (Laubscher, IEEE 1994¹), and investigated in patients (Linton, CHEST, 1994²), some years ago, the evidence for the role of ASV in mechanically-ventilated patients is yet to be fully determined.

Methods

Medline and several major medical journals were used to find the last three years' publications on the subject of ASV. Only original clinical trials in English-language publications were considered.

Results

Four major studies were selected.

The first (Sulzer, Anesthesiology 2001³) was a prospective randomized controlled study in patients recovering from cardiac surgery, which found that patients receiving ASV required a shorter time of mechanical ventilation than patients receiving Pressure Support-Synchronized Intermittent Mechanical Ventilation (PS-SIMV).

The second (Tasseaux, Crit Care Med 2002⁴), helps us to understand why: this was a crossover prospective study in a mixed group of mechanically-ventilated patients, which found that at a similar level of minute ventilation, patients receiving ASV had a lower level of respiratory drive (P0.1) and lower work of breathing (based on EMG respiratory muscle activity) than with PS-SIMV.

The third study (Cassina J., of Cardiothoracic Vasc Anesth, 2003⁵), was a prospective observational study of a cohort of 155 patients, which confirmed the safety aspects of ASV: namely, all patients were safely ventilated and weaned with ASV, and none required reintubation.

The fourth study (Petter, Anesth Analg 2003⁶), confirmed the possibility of saving resources with ASV. This prospective randomized controlled study found that patients receiving ASV required significantly fewer ventilatory setting manipulations, and endured fewer high-inspiratory-pressure alarms.

Conclusion

Evidence-based analysis strongly suggests that ASV offers a major advance in the management of patients receiving mechanical ventilation by shortening the duration of ventilation, and by economizing on human medical resources without compromising patient safety.



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References

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