The Effect of External Nebulization on Delivered Volume and Pressure While Using the LTV 1000 Ventilating an Electronic Lung Simulator

Background:
Nebulizers are frequently used to administer medication to mechanically ventilated patients. However, the effect of nebulizer flow on delivered volume and pressure is not well understood.

Methods:
The LTV 1000 was connected to a Hans Rudolph Series 1101 Breathing Simulator (HR 1101). HR 1101 settings: rate 8/minute, resistance 15 cm H2O, PEEP 5 cm H2O, and flow cycle percent set at 25%. Nebulizer flows were 0, 4, 6, 8, and 10 LPM.

Results:
As nebulizer liter flow increased during Volume-targeted AC, pressure increased from 220.2 to 282.4 cm H2O, but tidal volume decreased from 636.3 to 448.6 mL. During Pressure-targeted AC, tidal volume increased from 579.5 to 752.6 mL. During CPAP with PSV, pressure remained constant at 14.9 cm H2O, but tidal volume increased from 219.4 to 269.6 mL.

Conclusion:
The effects of external nebulization on delivered volume and pressure while using the LTV 1000 were evaluated. The results suggest that increased nebulizer flow can have a significant impact on delivered volume and pressure. Further studies are needed to determine the clinical implications of these findings.

See graphs and table for results.