EFFECT OF HME ON AEROSOL DRUG DELIVERY AND AIRWAY RESISTANCE IN SIMULATED VENTILATOR DEPENDENT ADULTS USING JET AND MESH NEBULIZERS

Arzu Ari, PhD, RRT, FAARC, Abdulrahman Alkhathami RRT, Rowaida Qoutah, RRT, Ahmad Almmary, RRT, James Fink, PhD, RRT, FAARC
Georgia State University, Department of Respiratory Therapy, Atlanta, GA, USA.

**Methods**

**Data Collection:** For treatment conditions, an HME (ThermoFlo™ 6070, ARC Medical) was placed between the ventilator circuit at the ETT and allowed to acclimate to the exhaled heat and humidity for 30 min prior to aerosol administration.

The values on airway resistance (cmH2O/l/s) was taken from the display on the ventilator monitor (Hamilton Galileo) at 0, 10, 20 and 30 min after HME placement and after each of 4 treatments. Albuterol sulfate (2.5 mg/ 3mL) was administered with jet (MistyMax10, Airlife) and mesh (Aerogen Solo, Aerogen) nebulizers positioned in the inspiratory limb 6 in from the Y adaptor and at the Y, respectively. Control consisted of nebulization with no HME. Drug was eluted from filter at the end of the trachea and measured using spectrophotometry.

**Results**

After placement of the HME for 30 min, there was a small but significant increase in Raw that was similar with jet (p=0.023 ) and mesh (p=0.024 ) nebulizers test groups. However, Raw did not increase with individual aerosol treatments or cumulative with all 4 treatments with either jet (p=0.99) or mesh (p=0.25).

**Conclusion**

The ThermoFlo™ HME effectively passed the majority of aerosol on to the airway. Increases in Raw would likely not be outside of a tolerable range in ventilated patients. Further research with other HMEs and materials is warranted.

**Disclosures:** This study was funded by an unrestricted research grant from ARC Medical. Dr. Ari has relationships with Bayer, Nektar, Aerogen and ARC Medical. Dr. Fink is CSO of Aerogen Pharma Corp.