Conclusion: This data represents the first big-data reporting of UAS therapy usage in general clinical practice including nightly data. It demonstrates high nightly usage with minimal pauses and marked improvement in symptoms. It demonstrates the potential that CPAP intolerant patients with can be fully adherent with alternative therapy.
Support (If Any): Statistical support provided by Inspire Medical systems.

0769

COMPARISON OF EXPIRATORY PRESSURES GENERATED BY ULTEPAP, PROVENT, BONGO RX, AND THERAVENT EPAP DEVICES: A LABORATORY BENCH TESTING

Geoffrey Sleeper[1], Majid Rashidi[2], Kingman Strohl[3], Neda Najimi[4], Rawad El Ghoul[5], Ambrose Chiang[5]
BRYGGS Medical [1] Case Western Reserve University [2] Case Western Reserve University / University Hospitals Cleveland Medical Center [3] Case Western Reserve / University Hospitals Cleveland Medical Center [4] Louis Stokes Cleveland VA Medical Center [5]

Introduction: Expiratory positive airway pressure (EPAP) has been a treatment option for patients with obstructive sleep apnea (OSA). Among devices like Provent, Theravent, and Bongo, ULTepap is a new FDA-cleared EPAP device that seals around the nares with a nasal pillow interface. Comparisons among the expiratory pressures that these devices might generate are not available. Research Question: Are expiratory threshold therapy devices equivalent in generating backpressure in an expiratory direction?
Methods: A test rig was designed and fabricated to test the pressures generated by ULTepap, Provent, Theravent, and Bongo Rx. Airflow was generated by a linear actuator-driven piston in a syringe, and a range of flow rates was provided by varying the voltage input to the actuator. The resulting pressures were measured in an expiratory and inspiratory direction.
Results: The backpressures produced by ULTepap and Provent were comparable at flow rates of 99/142/212 ml/sec (average 3.5/7.5/13.8 cmH2O for ULTepap vs 4.5/8.5/14.5 cmH2O for Provent, p=0.7918). Bongo Rx and Theravent devices produced substantially lower backpressures than ULTepap devices (average 0.8/1.8/3.5 cmH2O for Bongo Rx and 0.9/2.2/5.3 cmH2O for Theravent at flow rates of 99/142/212 ml/sec, p=0.0138 and 0.0404, respectively). In comparison, all four devices presented very low inspiratory flow resistance, with all generating 0.5 cmH2O or less at all flow rates.
Conclusion: Not all FDA-cleared EPAP devices produce similar expiratory pressure profiles. ULTepap generated backpressures closest to that of Provent. Clinical trials comparing the efficacy, tolerance, and role of these EPAP devices in patients with OSA are warranted.
Support (If Any):

0770

THE EFFECT, COMPLIANCE, AND SIDE EFFECT OF ACETAZOLAMIDE IN OBSTRUCTIVE SLEEP APNEA PATIENTS WITH HIGH LOOP GAIN: A RETROSPECTIVE STUDY

Yuenan Ni[1], Robert Thomas[2]
West China Hospital, Sichuan University [1] Beth Israel Deaconess Medical Center [2]

Introduction: Acetazolamide (AZT) has beneficial effects on central, high altitude sleep apnea, or residual apnea on CPAP, high loop gain obstructive sleep apnea (HLGSA is general). Data on intermediate and long-term real world effectiveness of AZT is lacking.
Methods: Patients with HLGSA (mostly HLG OSA) and using AZT were included. The auto-machine estimated (aREIFLOW) and manually scored respiratory events(mREIFLOW), compliance to PAP, and excessive sleepiness scale were compared prior to, and after 3 months of AZT.
Results: The total study sample size of Diamox users was 325 patients; 43 stopped AZT in one month. Automated and/or manual efficacy parameters were available in 109 for before-after comparison, but not available in the rest of them due lack of waveforms (manufacturer limitation) or not using PAP before AZT (i.e., started simultaneously). AZT reduced aREIFLOW (2.60 [1.70-5.35] vs. 5.10[2.90-10.25], p<0.001). and the percentage of patients whose aREI-FLOW >5 times/hour (50.5% vs. 27.5%, p<0.001). AZT did not influence mean daily usage of PAP (372.53 [295.26-444.22] vs. 368.50 [273.00-438.87] minutes, p=0.275) or the percentage of the day using the machine >4 hours (87.50[75.00-100.00] vs. 87.50 [62.50-100.00], p=0. 999). In the 75 patients with manually scored waveform data, AZT reduced the mREIFLOW (21.11[15.07-28.14] vs. 28.55[21.92-35.45], p<0.001), and the percentage of patients whose mREIFLOW >20 times/hour (78.7% % vs. 52.0%, p<0.001). AZT decreased the Epworth sleepiness scale (5[4-8] vs. 6.5[4-12], p=0.009). Among 282 patients who used AZT long term, 60 reported side effects. The most common side effect was paresthesia (7.09%). .
Conclusion: Chronic use of AZT can reduce the REIFLOW in HLG sleep apnea (HLGSA, predominantly obstructive) treated by PAP. Adherence to AZT was good, and the most common side effect even at low doses was distal paresthesia.
Support (If Any): This study was supported by American Academy of Sleep Medicine Foundation, category-I award to RJT

0771

ARTIFICIAL INTELLIGENCE BASED MASK FIT ALGORITHM APPLICATION IN THE PITTSBURGH VETERAN POPULATION

Megan Chan[1], Isabella Soreca[2], Mazen El Ali[2], Sangeeta Chakravorty[2], Aaron Gulla[2], Brian Shroyer[2], Charles Atwood[2]
VA Pittsburgh Heathcare System [1] VA Pittsburgh Healthcare System [2]

Introduction: Positive airway pressure (PAP) therapy has been used for obstructive sleep apnea (OSA) since 1980 and remains the treatment of choice for moderate to severe OSA. Proper mask fitting for patient comfort is essential to continued success on PAP therapy, as early adherence rates are strong predictors of future use. Mask selection continues to be challenging given the significant heterogeneity in craniofacial phenotypes and the rapidly growing mask options. Artificial intelligence software has combined survey data and digital photography to algorithmically predict PAP masks for best fit. This study aimed to describe mask failure rates in the Pittsburgh Veteran population with OSA following mask selection utilizing this specialized software.
Methods: Retrospective chart review was performed on 124 patients who underwent mask fitting with AI software May through November 2021. The primary outcome was to determine the rate of mask success within 1-3 months of fitting as defined by absence of mask switching. Mask switch was identified when patients underwent re-evaluation for new mask selection either by the AI software or had evidence of new mask selection from supply orders.