Introduction:

Auto-adjusting CPAP (APAP) is well accepted as a treatment for obstructive sleep apnea. A novel algorithm has been developed using the same principles as the AutoSet (ResMed, San Diego CA), but which aims to address female-specific obstructive sleep apnea (OSA) characteristics, such as shorter events, predominantly REM-based OSA, and increased flow limitation. The new female-specific algorithm (fAPAP) has increased sensitivity to flow limitation, an adaptive minimum pressure, optimized response gain and is driven predominantly by flow limitation and snoring rather than apneas.

Methods:

A prospective, randomized, double-blind, cross-over, non-inferiority trial of the effect of fAPAP and standard APAP (S9 AutoSet) on respiratory events over 2 nights during attended polysomnography (PSG). Population: Female subjects with OSA (PSG-confirmed apnea/hypopnea index (AHI) >5) on therapy with positive airway pressure ≥ 1 month. Outcomes: AHI (AASM 2012 criteria), 4% oxygen desaturation index (ODI), sleep parameters, and subjective ratings. High resolution flow data were logged from both devices to a PSG system (Compumedics, Abbotsford Australia), and were then manually scored by a blinded scorer. A questionnaire (Likert scale) was used to assess breathing comfort, sleep latency, sleep disturbance, and feeling of refreshing sleep.

Results: (See table)

20 patients were studied with mean (SD) diagnostic AHI of 19.1±8.7 events/hr and body mass index of 38.5±7.5 kg/m2.

There were no statistical differences between the algorithms for AHI and ODI or number of Respiratory Effort Related Arousals (RERAs). The proportion of flow limited breaths was significantly lower with the fAPAP algorithm. Mean mask pressure tended to be less with the fAPAP algorithm, but this did not reach statistical significance. Sleep efficiency (84.2% vs 84.1%), % slow wave sleep (22.4% vs 21.5%), and % rapid eye movement (REM) sleep (16.6% vs 15.4%) were similar between fAPAP and AutoSet algorithms, respectively. All other sleep parameters, as well as subjective ratings, were equivalent between the two algorithms.

Conclusions:

The fAPAP and AutoSet algorithms demonstrated equivalent treatment of AHI and ODI in female OSA subjects over the course of a single night’s therapy. fAPAP significantly improved treatment of flow limitation in this population and tended to utilize lower pressures over the course of the night.

Funding for this study was provided by ResMed Ltd.

1. Ware et al. Sleep. 2000;23:165-70.


<table>
<thead>
<tr>
<th></th>
<th>AutoSet (n=20)</th>
<th>AfH (n=20)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHI, events/hr</td>
<td>1.9±2.2</td>
<td>1.5±1.4</td>
<td>0.51</td>
</tr>
<tr>
<td>4% ODI, events/hr</td>
<td>1.92±1.82</td>
<td>2.19±2.15</td>
<td>0.48</td>
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<tr>
<td>RERA index, events/hr</td>
<td>1.10±1.29</td>
<td>1.16±1.14</td>
<td>0.59</td>
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<tr>
<td>Flow limitation (% of breaths), %</td>
<td>0.2±0.13</td>
<td>0.14±0.09</td>
<td>0.003</td>
</tr>
<tr>
<td>Mean Mask Pressure, mm Hg</td>
<td>8.34± 2.23</td>
<td>7.89±1.67</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Session Info: Poster Discussion Session, [D30] NOVEL SCREENING APPROACHES AND THERAPIES FOR SLEEP DISORDERED BREATHING

Day/Date: Wednesday, May 21, 2014
Session Time: 8:15 AM - 10:45 AM
Poster Viewing: 8:15-9:15
Discussion: 9:15-10:45
Room: Indigo Ballroom A (Level 2)
Location: Hilton San Diego Bayfront