Nasal Expiratory Positive Airway Pressure (EPAP) Device to Treat Obstructive Sleep Apnea in Medicare Age Patients (age ≥ 65)

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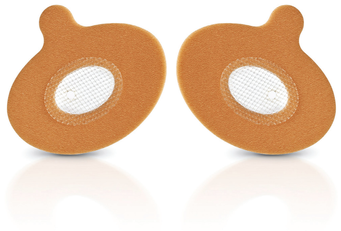


Introduction

Prior published studies have reported that a nasal expiratory positive airway pressure (EPAP) device (Provent® Therapy, Ventus Medical) significantly reduced the apnea-hypopnea index (AHI) and improved oxygenation and subjective daytime sleepiness (1-7). A retrospective analysis conducted to evaluate real-world patient acceptance and outcomes of nasal EPAP among patients in a private practice clinical setting (Sleep Medicine Specialists, Sarasota FL) reported similar results (8). This study analyzed the results of a subgroup of Medicare age patients (age ≥ 65) from the retrospective study of patients using nasal EPAP to evaluate real-world acceptance and outcomes.

Methods

Patients with a diagnosis of obstructive sleep apnea (AHI > 10/hour or AHI>5 with excessive daytime sleepiness or other comorbidities) were offered a trial of nasal EPAP. Patients received a prescription for 10 nights of nasal EPAP for in-home trial. Patients that self-reported successful acclimation were asked to return for efficacy confirmation using standard in-lab polysomnography (PSG). During the PSG, adjunctive therapy (e.g. chin straps, positional therapy) was employed, when necessary, to achieve optimal efficacy. Patients with demonstrated efficacy were prescribed nasal EPAP for ongoing usage. Analysis was completed on the subgroup of patients of age ≥ 65 at time of the efficacy confirmation. Results of the subjects with paired data from the baseline and efficacy confirmation PSG are reported. For positional AHI, results of patients with paired data including >20 minutes in supine or non-supine sleep position during each study are reported.

Results

At a single center, 91 patients ≥ 65 years of age, trialed nasal EPAP of which 73/91 (80.2%) acclimated to the device within 10 nights of use. Data from baseline and follow-up PSGs was available for 72 patients [Table 1]. Median AHI was reduced from 26.3 to 4.7 (p<0.001). Due to use of positional therapy concomitantly with nasal EPAP in 36% of patients, the percent of sleep time in the supine position was significantly reduced in the efficacy confirmation PSG. However, both supine AHI and non-supine AHI were significantly reduced [Figure 1]. Oxygenation and arousal index were significantly improved with no significant change in total sleep time or sleep efficiency. There were statistically significant reductions in median AHI across all OSA severities as follows: mild from 11.5 to 5.5 (p<0.001); moderate from 22.6 to 4.1 (p<0.001); severe from 52.5 to 5.6 (p<0.001) [Figure 2]. Significant reductions in AHI were seen in patients who used nasal EPAP therapy alone (54.2% of patients) as well as in patients who concomitantly used a chin strap and/or positional therapy [Figure 3]. AHI was reduced to <10 in 82.6% of patients (90.2% in mild/moderate OSA patients). AHI was reduced to <5 in 54.2% of patients (59.1% in mild/moderate OSA patients) [Figure 4].

Conclusion

The nasal EPAP device provided a statistically significant and clinically meaningful reduction in AHI in a group of clinical practice patients ≥ 65 years of age. Acceptance of the therapy was excellent.

	Sample Size	Baseline	Provent Therapy	p-value
Overall AHI	72	26.3 (15.5, 46.3)	4.7 (2.2, 8.2)	p<0.001
Supine AHI	33	35.5 (26.9, 44.7)	9.6 (4.9, 29.4)	p<0.001
Non-supine AHI	51	15.6 (7.1, 28.3)	1.6 (0.7, 3.7)	p<0.001
Arousal Index	63	31.9 (22.0, 44.5)	17.6 (11.7, 26.8)	p<0.001
%TST <90% SaO2	56	1.9% (0.4%, 14.4%)	0.4% (0.1%, 2.1%)	p=0.012
Total Sleep Time	70	291.5 (229.9, 327.4)	295.5 (238.9, 327.6)	p=0.35
Sleep Efficiency	70	77.1% (64.9%, 87.9%)	79.1% (66.7%, 89.8%)	p=0.20
%TST Supine	61	35.3% (12.5%, 63.8%)	18.5% (4.0%, 41.5%)	p<0.001

Figure 1. Median AHI - Overall and Positional

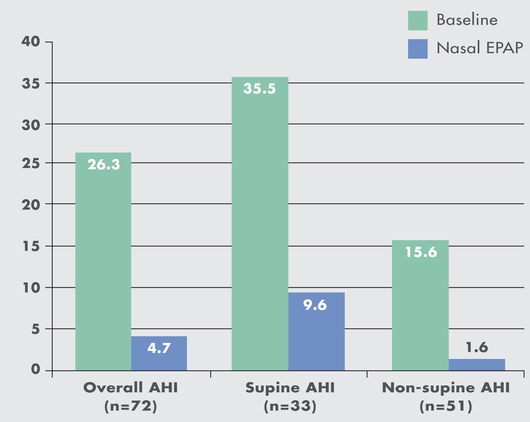


Figure 2. Median AHI - by OSA Severity

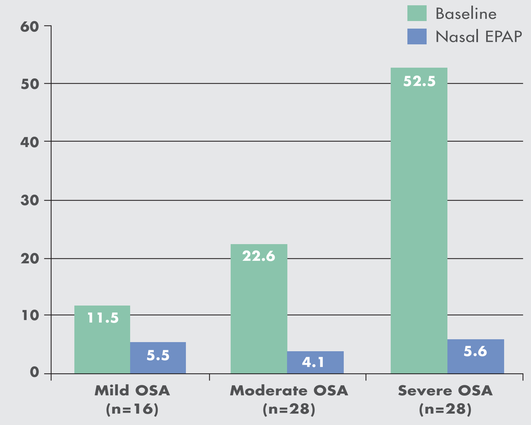


Figure 3. Median AHI - Concomitant Therapy Subgroups

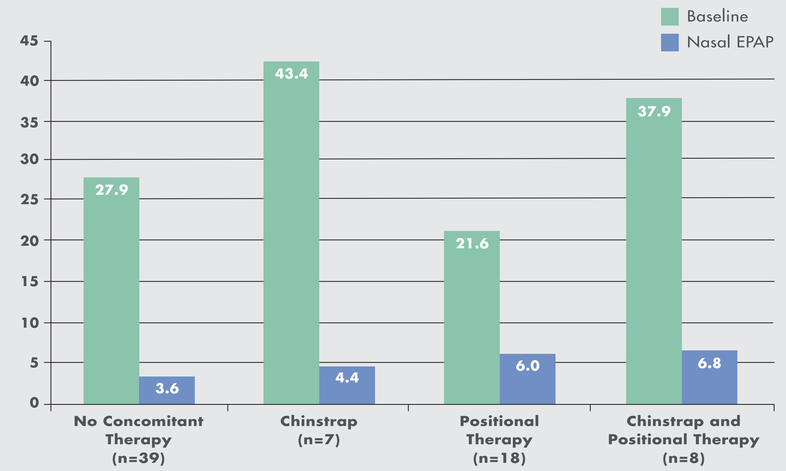


Figure 4. Percent of Patients Achieving AHI Threshold

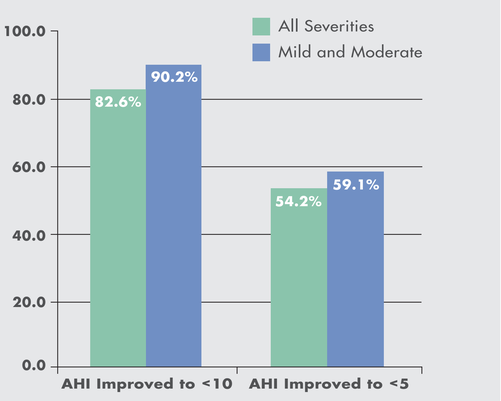
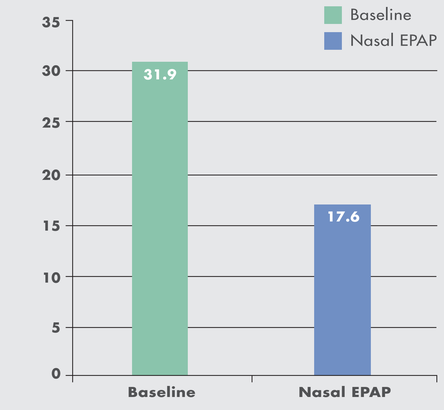


Figure 5. Median Arousal Index (n=63)



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