Prevalence and Characteristics of Positional Obstructive Sleep Apnea in a Cohort of CPAP-intolerant Patients: A Retrospective Analysis

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Overview of the Project

Positional obstructive sleep apnea (pOSA) is present in patients with a significantly lower apnea-hypopnea index (AHI) while lying on their side compared to lying supine.

- **Prevalence:** pOSA is found in 30-50% of patients with OSA.
- **Problem**: Many patients are intolerant to CPAP with subsequent low compliance.
- **Intervention**: Positional therapy involves less invasive treatments to keep patients sleeping on their side.
- **What is the limitation?** There is limited data on whether positional therapy could be a suitable treatment modality in these PAP-intolerant patients.
- **Next steps:** Identifying these factors could help expedite the initiation of positional therapy and enhance disease risk mitigation in this vulnerable population.
- **Objective: E**valuate the prevalence and characteristics of pOSA in patients who are intolerant to PAP therapy.

Defining pOSA

There are several accepted ways to differentiate pOSA from non-positional sleep apnea (NpOSA),

The Amsterdam Positional OSA Classification (APOC) offers 3 classifications for pOSA, all of which patients must spend at least 10% of total sleep time (TST) in both worst sleep position (WSP) and best sleep position (BSP)

- APOC I – AHI < 5 in BSP
- APOC II – OSA in lower severity category in BSP than overall OSA category
- APOC III – overall AHI > 40 & AHI in BSP > 25% reduced compared to overall AHI

Cartwright – supine AHI > 2x non-supine AHI

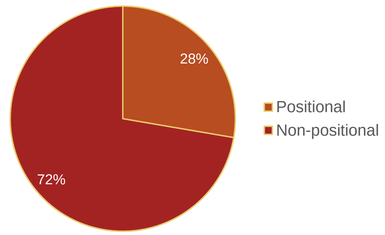
Mador – supine AHI > 2x non-supine AHI + non-supine AHI < 5

Overall/ Non-Supine Definition – overall AHI > 1.4x the non-supine AHI

We defined pOSA as overall AHI ≥1.5x the non-supine AHI and a non-supine AHI less than five.

Participants

We retrospectively analyzed charts and baseline sleep studies of 177 patients diagnosed with OSA who were non-compliant with PAP therapy between January 2023 to December 2025.



Methods

We evaluated demographic characteristics and parameters from baseline sleep studies, comparing pOSA and NpOSA groups.

Demographic Characteristics	Sleep-specific parameters
- Age - Sex - Race - Comorbidities* - Weight - BMI	- Score on Epworth Sleepiness Scale - Type of sleep study** - OSA severity - Overall AHI - Supine AHI - T90 - T88 - T85 - Average baseline SpO_2 - Average SpO_2 nadir

*** -** Comorbities measured included asthma, COPD, interstitial lung disease, hypertension, hyperlipidemia, coronary artery disease, congestive heart failure, atrial fibrillation, history of stroke, and diabetes

** - Types of Sleep Studies included Home Sleep Test, Baseline Polysomnogram, Split-night Polysomnogram

Data Analysis

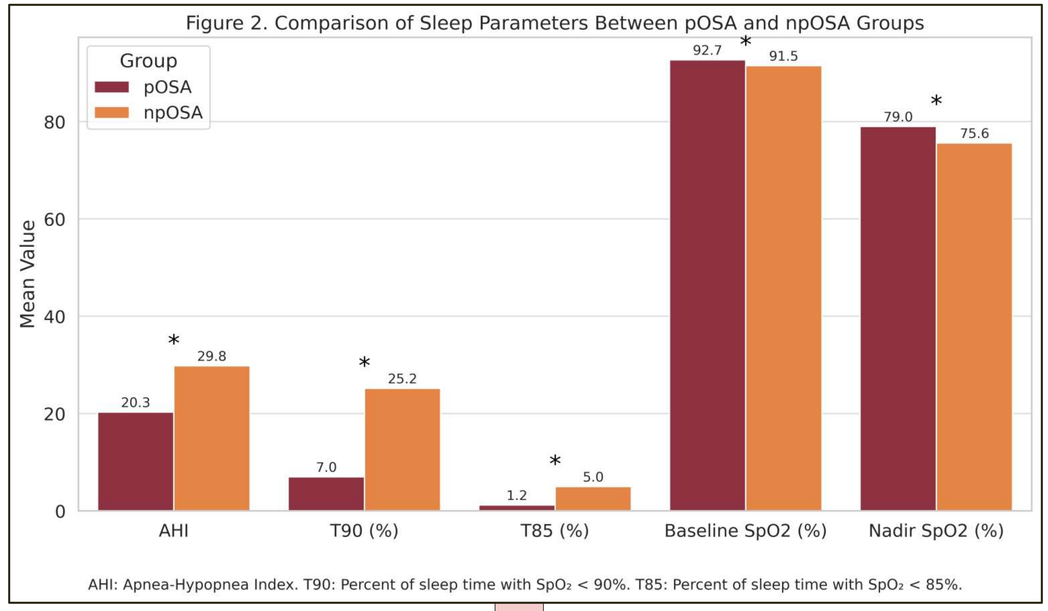
Unpaired two-tailed T tests were used for means and Chi-squared test was used for categorical variables.

Results

Figure 1. Baseline Demographics of pOSA vs npOSA Patients

Variable	pOSA (n=49)	npOSA (n=128)	p-value
Total (n=177)	49	128	
Age (years)	55.5 ± 12.2	58.8 ± 14.0	> 0.05
Male	25 (51%)	78 (60.9%)	> 0.05
Female	24 (49%)	50 (39.1%)	> 0.05
BMI (kg/m²)	36.1 ± 10.7	36.6 ± 9.9	> 0.05

Figure 2. Comparison of Sleep Parameters Between pOSA and npOSA Groups



AHI: Apnea-Hypopnea Index. T90: Percent of sleep time with SpO_2 < 90%. T85: Percent of sleep time with SpO_2 < 85%.

Discussion

- **pOSA is highly prevalent** among PAP-intolerant patients
- There are **distinct differences** in apnea severity and oxygen desaturation in pOSA patients compared to NpOSA patients
- **Early identification** and initiation of positional therapy in these patients could enhance risk reduction and provide a treatment option for an already vulnerable population.
- **Further investigation** is warranted to evaluate the **effectiveness of positional therapy alone and in combination with other OSA treatments** in this population.

References

(1) Srijithesh PR, Aghoram R, Goel A, Dhanya J. Positional therapy for obstructive sleep apnoea. Cochrane Database Syst Rev. 2019 May 1;5(5)

(2) Oweidat KA, Toubasi A, AL-Iede M, Hasuneh M, Al-Sayegh TN. Comparing the diagnostic value of the positional obstructive sleep apnea definitions. Respiratory Medicine. 2023 June; 212.

(3) Ravesloot, MJ, Frank, MH, van Maanen, JP, Verhagen EA, de Lange J, de Vris N. Positional OSA part 2: retrospective cohort analysis with a new classification system (APOC). Sleep Breath. 2015 Jun 18; 20:881-888.