0708

STAGE-DEPENDENT DIFFERENCES IN CENTRAL SLEEP APNEA (CSA) PREDOMINATE IN REMEDĒ SYSTEM PIVOTAL TRIAL PARTICIPANTS

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Introduction: Differences in neuroventilatory control can impact the type and severity of sleep disordered breathing between non-REM and REM sleep. We examined the distribution of central apneic episodes in polysomnograms from subjects with predominantly central sleep apnea, who received phrenic nerve stimulation.
Methods: Baseline in-lab polysomnograms from patients enrolled in the remedē System Pivotal Trial were scored by a central core laboratory (n=151). Participants with predominantly CSA were enrolled if the apnea-hypopnea index (AHI)≥20/hr, the central apnea index (CAI) exceeded the obstructive apnea index (OAI), and the OAI did not exceed 20% of the total AHI. This post-hoc analysis compared sleep apnea indices in REM and non-REM sleep in those with ≥5 minutes REM sleep (n=131). Within-patient median non-REM - REM differences were calculated and compared.
Results: REM sleep time was 40 [Q1=28, Q3=64] minutes, and non-REM sleep time was 301 [Q1=269,Q3=344] minutes. AHI in REM sleep was 22/hr [Q1=9,Q3=44] and was 46/hr (Q1=33,Q3=60) in non-REM sleep, yielding a within-patient difference between non-REM and REM sleep of 22/hr ([Q1=6, Q3=34], p<.001). CAI in REM was only 4/hr (Q1=0, Q3=11), but in non-REM was 25/hr [Q1=16,Q3=43] with all patients having a CAI≥5/hr during non-REM. In REM, 70% had a CAI>0/hr and 46% had a CAI ≥5/hr. The CAI difference between non-REM and REM sleep was 18/hr [Q1=10, Q3=30; p<.001]. The OAI and mixed apnea index (MAI) differed by <1/hr (p=0.235 and <.001, respectively). Of note, the hypopnea index [HI] did not differ between REM and non-REM sleep (12/hr [Q1=2,Q3=22] vs. 11/hr [Q1=4, Q3=20], respectively, p=0.273), yet hypopneas constituted a greater proportion of total AHI during REM compared to non-REM sleep.
Conclusion: Among subjects with predominantly CSA, the prevalence and severity of CSA was greater in non-REM than REM sleep, yet low-level CSA persisted in REM sleep. Stage-related differences in CAI but not OAI, MAI or HI can be attributed to alterations in ventilatory rather than upper airway control in this CSA cohort. These differences in the type and severity of sleep disordered breathing episodes comprise a key diagnostic signature, for which specific CSA therapeutic strategies are indicated.
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0709

THE EFFICACY OF HOME SLEEP APNEA TESTS ALONE IN DETERMINING OPTIMAL TREATMENT MODALITY FOR SLEEP DISORDERED BREATHING DURING THE HEIGHT OF THE COVID-19 PANDEMIC

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Introduction: Home sleep studies have shown strong accuracy and reliability in diagnosing obstructive sleep apnea compared to PSG. Recent studies have suggested they can accurately detect central sleep apnea as well. The combination of better technology, stricter insurance requirements for in lab polysomnograms, and a rise in telemedicine has seen their utilization rapidly increase. Specifically, at the height of the COVID pandemic many sleep practices had to shut down their labs and rely on HSATs alone to evaluate patients with potential sleep disordered breathing.
Methods: The Albuquerque VA Sleep Center was one of these, which provided an opportunity to reflect on the effectiveness of this diagnostic modality over that timeframe. A total of 780 patients with suspected sleep disordered breathing were studied using ResMed ApneaLink II Machines from 3/16/21 to 7/1/21 while in lab PSGs were unable to be completed due to health and safety guidelines.
Results: Of these 780 patients, only 34 were determined to need further evaluation with an in lab titration study once the lab reopened. Given how few of these patients ended up with titration studies, no additional criteria were used to categorize them other than a provider deciding they needed the study. The charts of these patients were reviewed in detail to identify any common characteristics that could have contributed to them needing a more detailed evaluation with an in lab polysomnogram. This provided further information about the accuracy and reliability of HSATs, as well as traits of patients who would have been ideally studied with an in lab PSG instead.
Conclusion: Overall such a small percentage of patients, only 4%, needing further titration speaks to both the reliability of HSATs as diagnostic studies, and the effectiveness of remote titration through cloud based monitoring systems like AirView.
Support (If Any):

0710

VALIDATION OF THE PREDICTIVE UTILITY OF THE MULTIVARIABLE APNEA INDEX FOR OBSTRUCTIVE SLEEP APNEA IN WOMEN

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Introduction: The Multivariable Apnea Prediction (MAP) index is a commonly used screening tool for obstructive sleep apnea (OSA). Previous analyses have demonstrated higher sensitivity of the MAP in predicting OSA in men versus women and in post-menopausal versus pre-menopausal women with type 2 diabetes (T2DM) and an apnea-hypopnea index (AHI) ≥10. The purpose of this secondary analysis was to validate previous findings by comparing women with and without T2DM across all categories of OSA severity including mild (AHI ≥5).
Methods: The sample (N=386) was comprised of participants from the Diabetes Sleep Treatment Trial who were recruited because of risk for OSA with T2DM (n=279), and the EMPOWER study which examined triggers for lapses or relapse after intentional weight loss in overweight but otherwise healthy participants (n=115). AHI was assessed by in-home sleep study, ApneaLink Plus®. Descriptive statistics and binomial logistic regression and receiver operating characteristic analyses were conducted to evaluate classification of OSA diagnosis, defined as AHI ≥5 or ≥10, by MAP between sexes and by menopause status.
Results: Participants were middle aged (mean 54.09 years + 10.63), obese (mean BMI of 34.79 + 6.52 kg/m2), primarily female (67%), and white (64%). Compared to men, women were younger (52.99 years + 10.15 vs. 56.26 years + 11.25, p=0.004) and had a lower AHI (9.10 + 18.94 vs. 17.25 + 18.94, p<0.001). No significant differences, except for age, were noted between pre- and post-menopausal women. Sensitivity of MAP on OSA diagnosis was higher for men than women (AHI ≥5: 94.7% vs. 76%; AHI ≥10: 84.2% vs 29.6%). Sensitivity of MAP on OSA diagnosis was lower for pre-menopausal than post-menopausal women using AHI ≥5 (74.0% vs. 98.8%) and AHI ≥10 (19.0% vs. 32.1%).
Conclusion: This validation study corroborates previous findings that the MAP index was better at identifying OSA in men than

women, and in post- versus pre-menopausal women using AHI values across all categories of OSA severity. Improved screening methods are needed to detect women at high risk for OSA.

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0711

DO POSTMENOPAUSAL WOMEN WITH INSOMNIA AND OBSTRUCTIVE SLEEP APNEA HAVE DETERIORATION IN SEXUAL FUNCTION?

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Introduction: Sleep problems and sexual dissatisfaction are among the most common complaints during and after the menopause transition. The prevalence of insomnia and obstructive sleep apnea (OSA) reach 31% and 44% of postmenopausal women, respectively. The sexual dissatisfaction is frequently caused by a decline in hormonal levels and urogenital atrophy, resulting in inadequate lubrication and pain during intercourse, with orgasm difficulties and low sexual. Both behaviors – sleep and sexual function - play an important part in women's wellness. The objective of this study was to investigate whether insomnia in association with OSA would increase climacteric and sexual symptoms compared with women with only insomnia or OSA.

Methods: Our sample comprised 47 postmenopausal women distributed into 3 groups: 1) insomnia, 2) OSA, and 3) OSA+insomnia. All participants completed the questionnaires: Insomnia Severity Index, Female Sexual Function Index, and Blatt-Kupperman menopausal index. Of the 47 participants, 34 women undergone polysomnography. The 3 groups were compared in respect of climacteric symptoms, sexual function score, and sleep.

Results: Our results showed that 85.1% of the postmenopausal women were classified with insomnia, 46.8% were diagnosed with OSA, and 82.9% had low sexual function. All groups had sleep efficiency of <80%, wake after sleep onset of >65 min, and a total sleep time of <6h, indicating poor sleep quality. There were no statistically significant differences among the groups in all sexual domains. The group of OSA+insomnia reported more climacteric symptoms (27.1±9.7) when compared to OSA group (15.7±9.6, P=0.03).

Conclusion: In our sample, the presence of insomnia and OSA associated with postmenopause revealed a low score for sexual function. Climacteric symptoms were higher in the groups with insomnia, and the association with low sexual function can lead to worsening of clinical condition.

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0712

CLUSTER ANALYSIS FOR THE ASSOCIATION BETWEEN OBSTRUCTIVE SLEEP APNEA PHENOTYPES: A POPULATION-BASED LONGITUDINAL STUDY

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Introduction: The identification of subgroups of obstructive sleep apnea (OSA) is critical to understand disease causality and ultimately develop optimal care strategies customized for each subgroup. In this sense, we aimed to perform a cluster analysis to identify subgroups of individuals with OSA based on clinical parameters. Furthermore, we aimed to analyze whether subgroups remain after 8 years.

Methods: We used data derived from the São Paulo Epidemiologic Sleep Study (EPISONO) cohort, which was followed over 8 years. All individuals underwent polysomnography, answered questionnaires and had their blood collected for biochemical exams. OSA was defined according to AHI≥ 15 events/hour. Cluster analysis was performed using latent class analysis (LCA).

Results: Of the 1,042 individuals in the EPISONO cohort, 68.3% accepted to participate in the follow-up study (n=712). We were able to replicate the OSA 3-cluster solution observed in previous studies: disturbed sleep, minimally symptomatic and excessively sleepy in both baseline (35.5%, 45.4% and 19.1%, respectively) and follow-up studies (41.9%, 43.3% and 14.8%, respectively). 44.8% of the participants migrated clusters between the two evaluations and the factor associated with this was a greater delta-AHI (B=-0.033, df=1, p=0.003). The optimal cluster solution for our sample based on Bayesian information criterion (BIC) was 2 cluster for baseline (disturbed sleep and excessively sleepy) and 3 clusters for follow-up (disturbed sleep, minimally symptomatic and excessively sleepy).

Conclusion: The results found replicate and confirm previously identified clinical clusters in OSA even in a longitudinal analysis.

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0713

LONGITUDINAL SLEEP POSITION PATTERNS AND BREATHING PARAMETERS IN PREGNANCY

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Introduction: Supine sleep position during pregnancy has been linked to increased risk of stillbirth in retrospective studies. However, existing literature is largely cross-sectional and limited by recall bias and self-reporting of sleep position. This study aims to use objectively-measured sleep position to quantify sleep position change between trimesters and its influence on maternal respiratory health.

Methods: This study is a secondary analysis of data from a study investigating maternal sleep, among women with singleton pregnancies and overweight or obesity. Each participant underwent level III sleep apnea monitoring using Noxturnal T3 devices (Nox Medical, Georgia, US), in the first (0-12 weeks) and third (29-40 weeks) trimester of pregnancy. Using accelerometry, the software differentiated 5 positions including supine, right lateral, left lateral, prone, and upright. The studies were scored using AASM 2012 recommended criteria. The first non-upright position was recorded as going-to-bed position. The number of sleep position changes was calculated using only positions that lasted ≥30 seconds.

Results: A total of 126 women were included. Mean BMI was 34.00±5.14 and mean age was 30.46±5.40 years. Mean number of position changes was similar in early (14.19±7.82) vs. late (14.58±8.25) pregnancy. There was a significant correlation between sleep onset position and predominant sleep position in both early (p=0.001) and late (p<0.01) pregnancy. However, supine going-to-bed position predicted predominant supine sleep in only 47% of women. There was a significant change in sleep