Methods: Thirty-six consecutive patients with moderate to severe OSAS underwent Alianza barbed pharyngoplasty. Preoperatively all patients presented with palatal hypertrophy, concentric collapse and retropalatal flatter during drug induced sleep endoscopy (DISE) and did not tolerate CPAP and/or MAD therapies. All patients underwent clinical examination, polysomnography, and subjective evaluation of snoring with visual analogue scale (VAS) and Epworth Sleepiness Scale (ESS) both pre-operatively (T0) and at 6 months postoperatively (T1).
Results: There was a significant reduction of AHI at T1, from 32.49 ± 14.55 to 12.1 ± 12.16 ($p< 0.05$) of AHI. Mean AHI gain was of 20.39 ± 11.58, in particular 13.34 ± 5.48 in moderate OSAS patients and 30.18 ± 9.34 in severe OSAS patients. There was also a significant ODI reduction, from 27.57 ± 15.68 to 12.97 ± 13.25 ($p< 0.05$). There was a significant reduction of ESS, from 8.75 ± 4.51 to 4.05 ± 2.39 ($p< 0.05$) and a significant reduction of snoring VAS from 7.85 ± 1.23 to 3.2 ± 1.7 ($p< 0.05$).
Conclusion: Alianza barbed pharyngoplasty led to significant improvement both in objective parameters measured with polysomnography (AHI and ODI), and in subjective parameters (ESS and snoring VAS) in moderate to severe OSAS patients.
Support (if any):

461

HYPOGLOSSAL NERVE STIMULATION: EFFECTIVENESS OF THERAPY FOR TREATMENT OF POSITIONAL OBSTRUCTIVE SLEEP APNEA

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Introduction: Hypoglossal nerve stimulation (HGNS) therapy is highly effective treatment for patients with moderate-severe obstructive sleep apnea (OSA). Positional OSA is considered when the apnea-hypopnea index (AHI) is at least twice as high in supine position compared with non-supine position. There are few studies in the literature investigating response to HGNS in patients with positional OSA.
Methods: Pre- and post-implant polysomnography (PSG) data was retrospectively reviewed in 46 patients who underwent HGNS at a large tertiary care center from November 2017 to March 2020. Supine and non-supine AHI were used to diagnose positional OSA on pre- and post-implant PSG. Pre-implant AHI was recorded from both in-lab PSG as well as home sleep tests, while post-implant AHI was based on in-lab hypoglossal nerve stimulator titration performed three months after device activation. Overall AHI pre- and post-implantation and absolute AHI reduction (pre-implant AHI – post-implant AHI) were evaluated. Basic demographic information including age, sex and BMI were also recorded.
Results: 25/46 patients (54%) were diagnosed with positional OSA on pre-implant PSG. Patients with positional OSA had lower pre-implant overall AHI than patients without positional OSA (AHI 29.6 and 38.9, respectively, $p<0.05$) and lower absolute AHI reduction than patients without positional OSA (18.2 and 26.7, respectively, $p<0.05$). There were no statistically significant differences in BMI and post-implant overall AHI between these groups. 19/25 patients (76%) with pre-implant positional OSA had persistent positional OSA on post-implant PSG.
Conclusion: Patients with positional OSA prior to HGNS had lower pre-implant overall AHI and absolute AHI reduction than patients without positional OSA. However, post-implant overall AHI was comparable, suggesting similar benefit in HGNS therapy regardless of positional OSA diagnosis. HGNS does not appear to resolve positional OSA, given that 76% of patients with positional OSA pre-implantation had persistent positional OSA post-implantation. Positional OSA after HGNS should be recognized in patients with persistent symptoms or inability to tolerate higher device amplitudes, and treatment with combination therapy with positional device can be considered.
Support (if any):

462

REDEFINING POSITIVE AIRWAY PRESSURE ADHERENCE PHENOTYPES UTILIZING DEEP NEURAL NETWORKS AND UNSUPERVISED CLUSTERING

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Introduction: Improving positive airway pressure (PAP) adherence is crucial to obstructive sleep apnea (OSA) treatment success. We have previously shown the potential of utilizing Deep Neural Network (DNN) models to accurately predict future PAP usage, based on predefined compliance phenotypes, to enable early patient outreach and interventions. These phenotypes were limited, based solely on usage patterns. We propose an unsupervised learning methodology for redefining these adherence phenotypes in order to assist with the creation of more precise and personalized patient categorization.
Methods: We trained a DNN model to predict PAP compliance based on daily usage patterns, where compliance was defined as the requirement for 4 hours of PAP usage a night on over 70% of the recorded nights. The DNN model was trained on N=14,000 patients with 455 days of daily PAP usage data. The latent dimension of the trained DNN model was used as a feature vector containing rich usage pattern information content associated with overall PAP compliance. Along with the 455 days of daily PAP usage data, our dataset included additional patient demographics such as age, sex, apnea-hypopnea index, and BMI. These parameters, along with the extracted usage patterns, were applied together as inputs to an unsupervised clustering algorithm. The clusters that emerged from the algorithm were then used as indicators for new PAP compliance phenotypes.
Results: Two main clusters emerged: highly compliant and highly non-compliant. Furthermore, in the transition between the two main clusters, a sparse cluster of struggling patients emerged. This method allows for the continuous monitoring of patients as they transition from one cluster to the other.
Conclusion: In this research, we have shown that by utilizing historical PAP usage patterns along with additional patient information we can identify PAP specific adherence phenotypes. Clinically, this allows focus of PAP adherence program resources to be targeted early on to patients susceptible to treatment non-adherence. Furthermore, the transition between the two main phenotypes can also indicate when personalized intervention is necessary to maximize treatment success and outcomes. Lastly, providers can transition patients in the highly non-compliant group more quickly to alternative therapies.
Support (if any):

463

THE EFFECT OF INTERVENTION OF MEDICAL STAFF ON THE ADHERENCE OF CPAP AND HEART RATE IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA.

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