Additionally, female adolescents had positive correlations between AHI scores and several affective disorder variables from the CBCL, while male adolescents had negative correlations between AHI levels and several CBCL scores that are typically associated with ADHD and Anxiety disorders.

Conclusion: This study suggests a relationship between OSA severity and psychiatric conditions. However, this relationship can vary depending on age, gender and AHI severity. More research is required to understand this relationship.

Support: Chervin, R.D. How many children with ADHD have sleep apnea or periodic leg movements on polysomnography? Sleep. 2005: 28(9): 1041-1042.

Sedky K, Bennett DS, Carvalho KS. Attention deficit hyperactivity disorder and sleep disordered breathing in pediatric populations: A meta-analysis. Sleep Medicine Reviews. 2014; 18: 349-356

0901

ROLE OF NASOPHARYNX RADIOGRAPHY IN DIAGNOSIS OF SLEEP DISORDERED BREATHING IN CHILDREN

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Introduction: Sleep disordered breathing (SDB) in children comprises a wide spectrum of presentation ranging from primary snoring (prevalence 6-12%) to obstructive sleep apnea (OSA; prevalence 1-3%). In younger children, SDB is often secondary to adenotonsillar hypertrophy. Polysomnography is the gold standard test for evaluation of sleep disordered breathing. Yet, many providers order ancillary tests such as Radiography of Nasopharynx (NPX-ray) to assess for adenoidal hypertrophy. Previous studies evaluating efficacy of NPX-rays to diagnose airway obstruction have shown mixed results.

Methods: Retrospective chart review of 65 consecutive normally developed children who have had diagnostic polysomnography and NPX-rays over the past 3 years was performed. Data on age, sex, Obstructive Apnea Hypopnea Index (OAHI) and NPX-ray findings were collected. Our cohort mostly had the following diagnosis such as GERD, Asthma, Allergic rhinitis, ADHD and Obesity. Our cohort did not have neurological disorders or medications that could affect tone of upper airway. Standard pediatric AHI criteria was applied to categorize mild, moderate and severe OSA.

Results: Our cohort's age ranged from 3-18 years (median age 10 years); 43 were males. Of the 24 children with normal sized adenoids with no obstruction; 6 had severe OSA and 4 had moderate OSA. 3 had hypertrophied adenoids on X-ray with occlusion of nasopharynx but only had mild OSA. Of the 15 children with prominent adenoids with some narrowing but no occlusion; 9 had severe OSA. Of the 9 children that had hypertrophied adenoids with no occlusion; 3 had moderate OSA and 3 had severe OSA. Of the 12 with mild enlargement, 4 had severe OSA. None of the 19 children with severe OSA showed airway occlusion by adenoids.

Conclusion: In our study, the size of the adenoids on X-ray of the Nasopharynx did not correlate with severity of SDB in children. Airway obstruction in OSA is dynamic and can occur at multiple sites affected by anatomical factors and upper airway collapsibility. As use of Nasopharyngeal radiography involves exposure to radiation, it should be used judiciously in diagnosis of SDB in children. Polysomnography is the gold standard test for evaluation of SBD in children.

Support: None.

0902

THE USE OF AUTO-TITRATING CONTINUOUS POSITIVE AIRWAY PRESSURE (AUTO CPAP) FOR OBSTRUCTIVE SLEEP APNEA IN CHILDREN WITH NEUROLOGICAL DISORDER

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Introduction: Multiple studies have demonstrated the effectiveness of auto-titrating continuous positive airway pressure (auto CPAP) in the adult population, but there is limited literature on the use of auto CPAP in the pediatric population. Specifically, the use of auto CPAP in children with neurological disorder(s) has not been established. Thus, we conducted a study to review the use of auto CPAP in children ages 18 years old and younger with Obstructive Sleep Apnea Syndrome (OSAS) and associated neurological disorder to document its effectiveness, adverse events and outcomes of its use.

Methods: A retrospective chart review was performed on patients 18 yo and younger diagnosed with OSAS and associated neurological disorder(s) who have good compliance with auto CPAP use. Good compliance was defined as >4 hours/night and >20/30 days of auto CPAP use. Compliance from the most recent 30 days was downloaded.

Results: 5 children met our criteria for inclusion, with a mean age of 11 years (6-18 years old). All had initial baseline sleep studies performed without PAP titration polysomnography. Associated neurological disorders were cerebral palsy, Arnold Chiari Malformation, seizure disorder and intellectual disability. The average length of use of auto CPAP was 4 months. Auto CPAP was used on average of 24/30 nights, with a mean of 7.35 hours/night. The mean baseline obstructive apnea-hypopnea (OAHI) index was 42 (8.2-94.4). The mean AHI on a 30 day download report showed a mean decrease in AHI to 2.9 (0.5-5.2) while on auto CPAP. Review of patient charts did not reveal any adverse outcomes associated with the use of auto CPAP in these patients.

Conclusion: This study showed that auto CPAP significantly improved the AHI in pediatric patients treated for OSA with associated neurological disorder. There were no reported adverse outcomes. Further research is needed to establish the effectiveness and safety of auto CPAP use in the pediatric population, specifically those with neurological disorder. The use of auto CPAP will help decrease the wait time for treatment in children with OSA. These patients can use auto CPAP while waiting for a titration study and for long term use.

Support: none

0903

SCREENING OF PEDIATRIC OBSTRUCTIVE SLEEP APNEA USING VIDEO MONITORING

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Introduction: In Japan, the many of the patients are not able to access the specialized sleep medical facilities for overnight polysomnography(PSG) due to less availability and cost issues. Purpose of the study is to examine whether combination of video monitoring and other clinical examinations can reliably predict the severity of pediatric OSA compared with PSG.

Methods: Between April 1, 2012 and March 31, 2019, total of 175 children (3-12 years of age, boy 122, girl 53) with SDB were enrolled in this individual prospective-cohort study. In-laboratory based PSG were performed for all patients and sleep stages and respiratory events were manually scored. Video monitoring was performed during PSG. Modified video-recording test scoring system (based on Sivan et al 1996), were scored by laboratory technicians. Other clinical examinations were extracted from each PSG with ENT examinations, cephalogram, and rhinomanometry for all patient

Results: Multiple linear regression analyses was performed with a forward stepwise approach in which independent predictors that were significantly related to severity of OSA (AHI: 5/hr and 10/hr). Applying the multiple logistic regression analysis, the independent predictors for AHI 5/hr were ODI 3% >3/hr, rhinomanometry (NR>0.5 Pa/cm3/sec), enlargement of tonsils (Brodsky classification more than 2), two video monitoring items and total score, with an accuracy of predictive statistic model was 88.0% (sensitivity 78.3%, and specificity 93.0%). For the severity above AHI 10/hr, the independent predictors were Cephalogram parameter (Fx>84°), Oximetry (ODI 3% >5/hr) and BMI<15 with the video monitoring parameters of whole night inspiratory noise (loud) and chest retraction contribute to predict with the sensitivity 91.5%, the specificity 82.6% and the accuracy 88.0%.

Conclusion: Video monitor scoring parameters contributed to predict both AHI 5/hr and 10/hr with good overall sensitivity, specificity and overall accuracy compare with the combination of objective results alone. Instead of PSG, the combination of video scoring system and multiple clinical examinations could potentially provide reliable diagnostic approach for pediatric OSA with high accuracy. These results will support to establish more efficient diagnostic strategy for both patients and physicians

Support: N/A

0904

RAPID EYE MOVEMENT RELATED OBSTRUCTIVE SLEEP APNEA IN THE PEDIATRIC POPULATION: CASE SERIES AND CONSIDERATIONS

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Introduction: Rapid Eye Movement (REM) related Obstructive Sleep Apnea (OSA) can impact sleep quality and result in negative clinical consequences. There are limited pediatric studies evaluating potential consequences, looking at optimal decision making, and discussing best treatment options. Aims: 1: Describe clinical impact and potential negative consequences; 2: Discuss treatment management of REM related OSA; 3: Evaluate clinical effectiveness of treatment.

Methods: Case series: Retrospective review of 22 pediatric patients with REM related OSA at a tertiary care center. Clinical analysis of implemented treatment modality vs. observation was reviewed. Symptomatic response to treatment modality vs. observation including alteration of quality of life was examined.

Results: REM related OSA lead to negative clinical daytime symptoms which warranted consideration and implementation of further treatment.

Conclusion: Treatment considerations for REM related OSA include tonsillectomy and adenoidectomy, positive airway pressure, medical management, and watchful waiting. Further research is necessary to increase knowledge of clinical impact of REM related OSA and treatment.

Support: N/A

0905

OBSTRUCTIVE SLEEP APNEA IN PEDIATRIC PATIENTS WITH EARLY ONSET SCOLIOSIS

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Introduction: Early onset scoliosis (EOS), defined as curvature of the spine >10 degrees with onset before 10 years of age, is associated with increased rates of restrictive lung disease, pain, and other factors that increase risk of poor sleep. We compared the polysomnographic findings of children with EOS to those of children without EOS. We postulated that children with EOS would have a higher rate of OSA than patients without EOS, and differences in sleep stage distribution, arousals, and limb movements.

Methods: Single-center retrospective chart review performed on 58 subjects with EOS (ages 1-17yr) who underwent PSG from 2003-2019; comparison group of 58 subjects without scoliosis who underwent diagnostic PSG was chosen consecutively (ages 1-18yr). Polysomnographic parameters compared include: sleep stage distribution, arousal index (AI), obstructive/central AHI, mean and nadir oxygen saturation in REM/NREM, and periodic leg movement index. All p-values were adjusted for multiple comparisons.

Results: There was no difference in age or sex distribution between the two groups, though subjects with EOS had lower BMI than those without EOS (median 16.3 (IQR 14.7-19.3) vs. 17.5 (IQR 16.2-21.6), p=0.019). 84% of subjects with EOS had OSA, compared to 66% without EOS. Subjects with EOS and OSA had higher obstructive AHI than the OSA group without EOS, and longer duration of hypopneas. There was no significant difference in sleep stage distribution, AI, or PLMI.

Conclusion: Of pediatric patients referred for polysomnography at our institution, those with EOS had a higher rate of OSA, more severe OSA where present, and lower BMI. We advocate for routine polysomnography for children with EOS due to the high risk of OSA amongst those tested, and further study to better understand the pathophysiology of sleep disordered breathing in this population.

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0906

IDENTIFICATION OF PHYSICAL EXAM FINDINGS WITH HIGH PREDICTIVE VALUE FOR MODERATE TO SEVERE PEDIATRIC OBSTRUCTIVE SLEEP APNEA(OSA) IN OVERWEIGHT/OBESE CHILDREN

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