

Support (if any): None

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PAP THERAPY IN A PANDEMIC: MANAGEMENT OF SEVERE MIXED APNEA PREDOMINANT OSA & CSA DURING THE COVID-19 PANDEMIC

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Introduction: Introduction/Background: A new protocol and standard of care was created amidst the COVID-19 Pandemic that began in 2020. Traditional split night studies fell out of favor and were replaced by solely diagnostic studies with placement on Auto-PAP therapy if treatment of sleep disordered breathing was required. Some patients, however, required a more tailored approach if diagnostic polysomnogram (PSG) was particularly concerning. Our case report describes the treatment of a patient with severe Mixed Apnea Predominant Obstructive Sleep Apnea (OSA) with accompanying Central Sleep Apnea (CSA) using COVID-19 Precautions.

Report of case(s): Case Description: A 48 year old AAM patient with a PMH of HTN, pre-diabetes, GERD, obesity and tobacco abuse initially presented to Sleep Medicine in late January 2020 with complaints of snoring, witnessed apneas, waking up gasping, excessive daytime sleepiness, fatigue, and non-restorative sleep for many years with ESS 24 and FSS 48 on initial evaluation. Diagnostic PSG showed AHI 76.9 with O₂ desaturation to 59% and demonstrated the presence of severe Mixed Apnea predominant OSA and CSA with worsening during REM sleep. Because of the severity, he underwent a PAP titration in August 2020 using the AASM COVID-19 sleep study precautions which included use of a negative pressure room. Optimal control of snoring, apneic respiratory events and oxygen desaturations was achieved at 14 cm H₂O in the supine body position during REM sleep. Follow up with Sleep Medicine in October and December 2020 showed objective compliance over a 30 day period not completely at goal due to issues with mask desensitization and sleep hygiene, however the patient subjectively reported that he noticed great improvement in snoring, excessive daytime sleepiness and fatigue.

Conclusion: Discussion/Conclusion: With a diagnosis of Severe Mixed Apnea Predominant OSA as well as CSA noted during the study, the differential diagnosis included CHF, Chiari malformation, opioid abuse and idiopathic CSA as the cause. Despite a dangerous pandemic, appropriate therapy for certain patients must still be attained. Special protocols developed during the COVID-19 Pandemic allowed for our patient to receive adequate treatment, while ensuring the safety of all involved.

Support (if any): References COVID 19: FAQs for Sleep Clinicians. AASM official website. <https://aasm.org/covid-19-resources/covid-19-faq/>

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PARADOXICAL WAKING HYPOXEMIA THAT IMPROVES WITH SLEEP

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Introduction: We present a case of paradoxically worsened hypoxia during wake phase of polysomnography while undergoing a CPAP titration study. Nighttime hypoxemia is a common feature in obstructive sleep apnea, due to obstructive events that manifest while sleeping. Excluding OSA, there remains an extensive differential for disease

processes that cause hypoxemia while asleep; however, none of these processes can explain waking hypoxemia that improves upon sleeping. Report of case(s): A 70 year old male with severe OSA diagnosed by home sleep test (REI 46.5, nadir O₂=76%) underwent polysomnography with PAP titration and demonstrated several hours of interrupted sleep without hypoxia and minimal obstructive events on CPAP 9–13 cmH₂O. During the study, while awake at CPAP of 14 cmH₂O, he developed hypoxia to mid-high 80s and supplemental oxygen bleed in was added starting at 3L and increased to 5L during a prolonged period of wakefulness. On CPAP 15 cmH₂O with 5L bleed-in, the patient fell asleep and oxygen saturation again increased to low 90s. He underwent an extensive workup for other cardiopulmonary causes of hypoxemia, with pulmonary function testing showing moderate obstructive ventilatory defect and mild DLCO impairment. An echocardiogram with saline contrast bubble study was relatively unremarkable, without evidence of right to left shunting. He underwent a chest CTA which was negative for pulmonary embolism, though it did reveal an enlarged pulmonary artery consistent with pulmonary hypertension. His chronic hypoxemia was treated with 2L supplemental oxygen during the day and bleed-in with CPAP at night.

Conclusion: Though nocturnal hypoxemia is common with OSA, polysomnography with paradoxical hypoxemia during wake phase has not been reported. Notably, the patient was without prolonged hypoxia during his sleep phase while on CPAP treatment with minimal apneic/hypopneic events. Pulmonary hypertension can also present as nocturnal hypoxemia, but it should worsen with sleep, rather than improve. There are case reports of right to left shunting worsened by PAP, though his hypoxemia persisted despite PAP. His paradoxical worsening hypoxemia with wakefulness is still unexplained.

Support (if any):

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PEDIATRIC VAGUS NERVE STIMULATOR-INDUCED OBSTRUCTIVE SLEEP APNEA

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Introduction: Vagus nerve stimulation (VNS) is an adjunct treatment for seizures refractory to medications. VNS in children with epilepsy can reduce seizures by up to 90%. VNS settings include stimulation on-time, off-time, frequency and output current. Complications of VNS include sleep-disordered breathing due to laryngopharyngeal dysfunction, which can also cause voice alteration, hoarseness, and cough. Both obstructive apneas (more common) and central apneas can be seen in those patients who have VNS-induced sleep-disordered breathing.

Report of case(s): A 14-year-old male with Lennox-Gastaut syndrome treated with multiple antiepileptic drugs and VNS was admitted to the PICU with worsening seizures. He developed acute respiratory failure due to status epilepticus, requiring intubation. After extubation, he was observed to have repetitive respiratory obstruction at regular intervals, occurring throughout the day and night, and associated with mild oxygen desaturations. Polysomnography showed cyclical obstructive respiratory events lasting 30 seconds followed by approximately 2-minute intervals of regular breathing. Interrogation of his VNS device revealed the following settings: output current of 1.75 mA, 30 seconds on, and 1.8 minutes off. CPAP therapy improved his oxygen saturations, but he continued to clinically exhibit the repetitive obstructive apneas even on positive pressure. However, after his VNS device settings were decreased, repeat polysomnography showed resolution of his obstructive breathing.