

instead with evidence of excellent sleep efficiency on the contrary.

**Report of Cases:** A 76-year-old male with a past medical history of anxiety and a recent diagnosis of early Parkinson's disease presented to the Sleep medicine clinic with two years of insomnia which started after his retirement. The patient felt difficulty with falling asleep every night. He underwent a sleep study and was found to have sleep-disordered breathing, which responded well to Bilevel positive airway pressure (BiPAP) therapy. However, insomnia symptoms persisted and were resistant to multiple medications, including Mirtazapine, Melatonin, and Suvorexant. He was referred for Cognitive Behavioral Therapy with minimal to no improvement in his symptoms. Conversely, a one-week Actigraphy recording on Bipap therapy surprisingly revealed an excellent sleep efficiency with near-continuous seven to eight hours of sleep every night. The etiology of chronic insomnia is poorly understood but is typically multifactorial, as described in the second edition of ICSD. In this case, paradoxical insomnia played a significant role in the patient's clinical presentation. Paradoxical insomnia is defined as thoughts or perceptions of time asleep as wakefulness, with objective measures documenting normative amounts of sleep. Previous work suggests that alterations in the sleep/arousal system may contribute to this apparent mismatch between conventional objective sleep measures and subjective reports.

**Conclusion:** This case demonstrates the challenge of effectively diagnosing and managing chronic insomnia. While the new classification guidelines from the ICSD appropriately remove insomnia subtypes from the diagnostic paradigm, familiarity with these previously described subtypes may aid clinical decisions. Crucial to this discussion is that previously described "secondary" or "subtypes" of primary insomnia may develop an independent clinical course that may require further attention.

**Support (If Any):** ICSD 2nd,3rd editions.

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### SEVERE CENTRAL SLEEP APNEA

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**Introduction:** Central sleep apnea (CSA) is a rare form of sleep disordered breathing with repeated apneic episodes with absence of associated respiratory effort. CSA due to medication is well described in literature with opiate therapy. Baclofen which is a gamma-aminobutyric acid-B agonist with muscle relaxant properties has been implicated in CSA. We present a rare case of CSA likely due to chronic baclofen use. Patient underwent a polysomnogram (PSG) while on baclofen therapy which revealed severe central sleep apnea. Patient was weaned off baclofen therapy completely and a subsequent PSG was performed which revealed resolution of the CSA.

**Methods:** 28 year old male with cerebral palsy and neurogenic bladder who presented for evaluation of snoring, chronic insomnia and non-refreshing sleep. Overnight PSG was performed for further evaluation of his sleep related complaints while on chronic baclofen therapy, which revealed severe central sleep apnea. Trial of positive airway pressure therapy for treatment of CSA and supplemental oxygen therapy were attempted during the PSG but had to be terminated due to intolerance. Echocardiography and magnetic resonance imaging of the brain were performed to rule out congestive heart failure and Chiari malformation respectively, which revealed no underlying pathology to explaining the CSA. CSA in this patient was thought to be associated with chronic

baclofen therapy. Patient was weaned off baclofen with repeat PSG revealing resolution of the CSA.

**Results:** 1st diagnostic PSG - on Baclofen: 139 central apneas, 6 obstructive apneas, 3 mixed apnea, and 38 hypopneas. This study showed severe central sleep apnea. The apnea-hypopnea index (AHI) was 51.5, REM index 21.8 and supine index 51.5. Central apnea index 39.5. Respiratory events were associated with moderate oxygen desaturations. The mean oxygen saturation during the study was 92.8%, with a minimum oxygen saturation of 81%. The patient spent 2.9 minutes with an oxygen saturation equal to or less than 88% for the entire study. CPAP titration was attempted and aborted, due to patient having difficulty tolerating CPAP. Supplemental oxygen was briefly added at 0.5 LPM, which was also discontinued due to patient complaining of burning sensation in the nose. Head of the bed was elevated at several levels (20 degrees, 30 degrees and 45 degrees) which did not attenuate the respiratory events. 2<sup>nd</sup> Diagnostic PSG - patient weaned off baclofen for study - Sleep efficiency reduced at 59.4%. Sleep onset latency 7.5 minutes. REM latency 163 minutes. 100% of total sleep time in supine position Moderate snoring. The apnea-hypopnea index (AHI) was 4.2, REM index 36.5 and supine index 4.2. Respiratory events were mainly noted using REM sleep. Respiratory events were associated with moderate oxygen desaturations. The mean oxygen saturation during the study was 93.9%, with a minimum oxygen saturation of 83%. The patient spent 1.2 minutes with an oxygen saturation equal to or less than 88% for the entire study. Labs and imaging - Workup for severe central sleep apnea after first diagnostic sleep study - Echo and MRI brain, which revealed no underlying pathology explaining his central sleep apnea. Therefore, thought to be due to baclofen.

**Conclusion:** 28 year old male, concurrent and past medical history of cerebral palsy, neurogenic bladder. Presented, initially to sleep medicine clinic for complaints of insomnia, snoring, and non-refreshing sleep. Wheelchair bound. Has muscle spasticity, was on baclofen. Underwent initial sleep study, for snoring and insomnia. The initial PSG was on baclofen doses. His initial PSG - showed apnea-hypopnea index (AHI) of 51.5, REM index 21.8 and supine index 51.5, Central apnea index 39.5. Oxygen nadir - 81%. Patient had 139 central sleep apnea events. Patient had MRI and echo, which revealed no pathology to explain his severe central sleep apnea. Baclofen on his medicine list - was the concern for the driving force behind his central sleep apnea. As a result, baclofen was weaned and stopped. Repeat PSG - showed moderate snoring, overall AHI greatly improved from first study to 4.2. Respiratory events were associated with moderate oxygen desaturations. The mean oxygen saturation during the study was 93.9%, with a minimum oxygen saturation of 83%. The patient spent 1.2 minutes with an oxygen saturation equal to or less than 88% for the entire study. In closing - due to the side effect profile of baclofen leading to central sleep apnea in this case, recommend alternative therapy in place of baclofen due to severe central sleep apnea with baclofen use.

**Support (If Any):** 1. Ghanavatian S, Derian A. Baclofen. In: StatPearls. Treasure Island (FL): StatPearls Publishing; May 15, 2021.2. Locatelli F, Formica F, Galbiati S, et al. Polysomnographic Analysis of a Pediatric Case of Baclofen-Induced Central Sleep Apnea. *J Clin Sleep Med*. 2019;15(2):351-354. Published 2019 Feb 15. doi:10.5664/jcsm.76443. Olivier PY, Joyeux-Faure M, Gentina T, et al. Severe Central Sleep Apnea Associated With Chronic Baclofen Therapy: A Case Series. *Chest*. 2016;149(5):e127-e131. doi:10.1016/j.chest.2015.10.001