A 12-Year-Old Boy with Sleep-Related Epilepsy and Laryngeal Lymphoid Hyperplasia: A Case Report

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INTRODUCTION

Awakenings from sleep accompanied by a feeling of choking can be symptoms of both nocturnal seizure and obstructive sleep apnea syndrome [1]. Many characteristics overlap between nocturnal seizure and obstructive sleep apnea (OSA), such as arousal from sleep, confusion, amnestic behavior, and excessive daytime sleepiness, making differentiation between the two conditions difficult [1]. The diagnosis of sleep-related epilepsy is suspected when symptoms are stereotypical or when postictal features such as tongue biting or incontinence are present, or when accompanying ictal electroencephalography (EEG) abnormalities are captured.

We present the case of an overweight 12-year-old boy referred to us with nocturnal choking accompanied by abnormal behavior. This boy was diagnosed with sleep-related epilepsy and comorbid OSA, which was found to be caused by laryngeal lymphoid hyperplasia.

CASE REPORT

A 12-year-old boy visited Soonchunhyang University Cheonan Hospital with a choking sensation during sleep, accompanied by confusional arousal and abnormal behavior. According to his father, the patient exhibited abnormal movements during sleep, including eyeball deviation, lip and tongue movements, and occasional tongue protrusion.

The patient complained of poor sleep quality, waking up almost twice during the night with a choking sensation. Additionally, he reported symptoms of snoring, nasal stuffiness, and chronic cough. He had no history of febrile seizures and no family history of epilepsy.

On his physical examination, the boy’s height was 161 cm (75th–90th percentile) and his body weight was 70 kg (>97th percentile). His body mass index was 27.0 kg/m² (95th–97th percentile). The oropharyngeal examination revealed hypertrophy of the tonsils and adenoid hypertrophy, classified as modified Mallampati class III.

Since he has overlapping symptoms with seizure-like movements and OSA, he underwent polysomnography (PSG) with electrographic lead extension (19-channel). His brain magnetic resonance imaging and paranasal sinus x-ray showed hypertrophy of the tonsils and adenoids (Fig. 1).

The first PSG findings revealed 1–2 episodes of gasping per hour.
Seizure events were described during PSG monitoring; the patients experienced awakening from sleep with choking and tongue protrusion, which was not associated with desaturation. EEG changes were also noted: during non-rapid eye movement (NREM) sleep, background activities shifted from the right frontal area to evolving alpha wave discharges in the right frontal area, then changed to generalized delta waves (Fig. 2). The arousal index was 13.6 per hour, and the total apnea-hypopnea index (AHI) was 7.1 per hour.

He was treated with anti-seizure medication for the suspected seizure disorders. Additionally, he was evaluated by otolaryngology for OSA and underwent tonsillectomy with adenoidectomy to address the OSA.

The second PSG was done to evaluate treatment efficacy and titrate continuous positive airway pressure (CPAP). Since he had nine episodes of gasping and arousal without EEG changes, CPAP was applied to him, and the pressure was titrated up to 6 cmH₂O. Then, the apnea-hypopnea index decreased to 0 per hour from baseline (1.3 per hour), and the arousal index decreased to 1.7 per hour from baseline (7.3 per hour).

To investigate whether the patient’s remaining arousal events were related to OSA due to laryngospasm, we planned to evaluate laryngopharyngeal reflux disease and gastroesophageal reflux disease, which can cause laryngospasm. During the laryngoscopy evaluation, multiple cystic nodules were noticed on the right arytenoid (Fig. 3), and the biopsy results confirmed that it was lymphoid hyperplasia. Gastroscopy and manometry revealed normal findings.

The patient’s caregiver provided written informed consent for...
Pediatric Sleep-Related Epilepsy and Laryngeal Lymphoid Hyperplasia • Kim A, et al.

Soonchunhyang Medical Science 30(1):39-42

Fig. 3. During laryngoscopy, multiple cystic nodules on the right arytenoid were found.

the publication of clinical details and images.

DISCUSSION

We report a patient who presented with nocturnal choking, was diagnosed with comorbid sleep-related epilepsy and OSA due to laryngeal lymphoid hyperplasia.

Nocturnal choking is rarely reported in patients with sleep-related seizures, and it has overlapping symptoms with OSA. There were some case reports of patients who were misdiagnosed with nocturnal frontal lobe epilepsy and were comorbid with OSA in adult patients [1,2]. Choking as a single manifestation of epilepsy has also been reported in pediatric cases [3,4].

Sleep related epilepsy presented as choking can be misconstrued as parasomnia and sleep disordered breathing. Especially nocturnal seizures accompanied by sudden arousal from sleep can be difficult to diagnose epilepsy. Nocturnal frontal lobe epilepsy is often characterized by high frequency, repetition, extrapyramidal features, and marked stereotypy of attacks during NREM sleep. Since it has normal inter-ictal EEG findings, it is difficult to diagnose and differentiated with sleep related behavior [4]. Similar to this phenomenon, OSA has clinical features such as the sudden awakenings with feeling of choking, the abnormal motor activity during sleep followed by the excessive daytime sleepiness [1].

Our patient was applied PSG with full extended EEG to evaluating his nocturnal symptoms. Since he had EEG correlation with his symptoms, he was treated with anti-seizure medication and was further work up for remaining OSA.

Laryngopharyngeal reflux can be accompanied with OSA patients nearly 50% of patients [5]. And it can cause sleep-related laryngospasm, which can lead to airway obstruction, leading to choking and arousal [6]. But in our case patient, laryngeal multiple cystic nodules on right arytenoid were noticed and it was proven to lymphoid hyperplasia. After resecting these pathologic lesions, patient was free from sudden arousal from sleep and choking without CPAP.

Although laryngeal lymphoid hyperplasia is rare in pediatric population [7], symptoms of laryngeal lymphoid hyperplasia are vary including a foreign body sensation in the throat, voice changes or hoarseness, stridor, and chronic cough [8-10]. In severe cases, airway obstruction can occur, leading to significant breathing difficulty. Our case report is noteworthy since it is the first case report who were comorbid with sleep-related epilepsy and laryngeal lymphoid hyperplasia in pediatric patient.

The differential diagnosis of nocturnal gasping/choking in an obese patient can be challenging. A detailed clinical history and video PSG, supported by EEG findings, are crucial for a prompt diagnosis. This case highlights that when the symptoms persist, another pathologic lesion should be assessed.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

AUTHOR CONTRIBUTIONS

Draft manuscript: AK. Review and editing: HNJ. Conceptualization, final approval of manuscript: SSK.

REFERENCES