A Retropharyngeal Lipoma Causing Obstructive Sleep Apnea in a Child

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Background: Lipomas are common benign tumors, but they rarely occur in the retropharyngeal space and even more rarely occur in children.

Case report: We report the case of an 11-year-old girl with a 5-year history of progressively worsening nasal obstruction, snoring, and excessive daytime sleepiness. Physical examination revealed a child with a body mass index of 16.9 kg/m². Otolaryngologic examination and imaging studies showed a large retropharyngeal mass. Polysomnography indicated an apnea-hypopnea index of 13.9 events per hour of sleep and a minimum oxygen saturation of 84%, with 20 episodes of desaturation to less than 90%. After complete excision of the mass, the patient’s snoring, apnea, and daytime sleepiness resolved.

Conclusions: Although lipomas in the retropharyngeal space are rare, clinicians should be alert to the possibility of this condition occurring in children who have symptoms of obstructed breathing during sleep but a normal body mass index and no other risk factors for obstructive sleep apnea.

Keywords: Lipoma, obstructive sleep apnea, polysomnography


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Imaging Studies
A lateral cephalometric radiograph and a computed tomography (CT) scan revealed a retropharyngeal mass extending from the nasopharyngeal roof down to the level of the fourth cervical vertebra, measuring 8 cm × 4 cm × 2 cm, and narrowing the upper airway. The CT showed a homogeneous, low-attenuation, well-defined mass with multiple intrinsic septa, compatible with fat tissue. No invasion of the surrounding structures was noted (Figure 1). A preliminary diagnosis of lipoma in the retropharyngeal space was made, although aspiration biopsy was not performed.

Polysomnography
The child underwent overnight polysomnographic testing.
including electroencephalography, electromyography, electrooculography, electrocardiography, oronasal airflow, abdominal and chest-wall movement, body position, snoring sound, and arterial oxygen saturation (SaO₂). End-tidal CO₂ testing was not available. Following the diagnostic criteria of the International Classification of Sleep Disorders, an apnea was defined as a cessation of oronasal airflow for more than 10 seconds, and a hypopnea was defined as a decrease in airflow to less than 50% of the baseline amplitude.

Results of polysomnography showed that the time and percentages of time spent in sleep stages 1, 2, 3, 4, and rapid eye movement (REM) were 51 minutes (10.4%), 266.5 minutes (54.5%), 79 minutes (16.2%), 51 minutes (10.4%) and 41.5 minutes (8.5%), respectively. Four arousals occurred and lasted for a total of 15 minutes. The snoring index was 32.1. During sleep, the patient had 103 apneic events, lasting for a total of 38 minutes, with the longest apnea having a duration of 70 seconds. Fifty apneic events occurred in non-REM sleep, and the remaining 53 occurred during REM sleep. An additional 11 hypopneic episodes, totally 4.4 minutes in duration, occurred, with 8 in non-REM and 3 in REM sleep. The apnea and hypopnea indexes were 12.6 per hour and 1.3 per hour, respectively. All apneas and hypopneas were obstructive, and most occurred when the patient was in the supine position. The lowest SaO₂ was 82%, and the oxygen desaturation index below 90% was 2.5, with a total of 20 episodes of desaturation. No cardiac arrhythmia or abnormal blood pressure was detected. Thus, a diagnosis of OSA was determined by polysomnography.

Treatment

In anticipation of a potentially difficult orotracheal intubation, a tracheotomy was performed, and general anesthesia was delivered through the tracheal tube. The retropharyngeal mass was excised transorally and sent for pathologic examination, with subsequent histologic confirmation of the preoperative diagnosis of lipoma. The patient was extubated on the day after surgery and began taking food orally. One week after surgery, the patient left the hospital after an uncomplicated postoperative course. The preoperative symptoms of snoring, apneic episodes, and daytime somnolence had completely resolved. A follow-up visit at 6 months showed a well-nourished 11-year-old, with a weight of 46.5 kg, a height of 157 cm, and a body mass index of 18.9 kg/m². Time somnolence had completely resolved. A follow-up visit at 6 months showed a well-nourished 11-year-old, with a weight of 46.5 kg, a height of 157 cm, and a body mass index of 18.9 kg/m². Follow-up polysomnography could not be performed because of cost constraints.

**DISCUSSION**

Lipomas, which are slow-growing mesenchymal tumors, are common in adults but are not often seen in children. Lipomas in the retropharyngeal area are rare and usually become quite large before producing symptoms of airway obstruction. Management is typically via surgical excision.

CT scans are helpful in the preoperative assessment of the patient prior to definitive pathology examination of a lipoma. On CT, lipomas have characteristic homogeneous fatty attenuation (-50 to -150 Hounsfield values), with variable margins and thin fibrous septa of low signal intensity on T1- and T2-weighted images. CT cannot definitively distinguish a lipoma from a liposarcoma; therefore, liposarcoma should be considered in the differential diagnosis.

OSA is a common condition in children, with a prevalence of about 1% to 3%. Polysomnography is currently the gold standard for the detection and assessment of the severity of OSA, but adult criteria for OSA are not applicable to children. Therefore, OSA in children has been defined as an obstructive apnea index of 1 or more events per hour of sleep, with severity criteria being defined as mild (1-4/hour), moderate (5-9/hour), and severe (≥10/hour). In the case presented here, the patient would have severe OSA according to these criteria.

In children, the most common cause of upper-airway obstruction and, therefore, OSA is adenotonsillar enlargement. Severe upper-airway obstruction in children may result in the delay of growth and development. As was found in the case of our patient, when the apnea is adequately treated, affected children typically have an improvement in both weight and height. However, not all airway obstruction in children is due to adenotonsillar enlargement. In this case, our patient had a history strongly suggestive of OSA but no evidence of adenotonsillar enlargement. Although retropharyngeal lipoma is a very rare cause of OSA in children, this case of an 11-year-old girl with OSA caused by a lipoma in the retropharyngeal space should alert clinicians to consider the possibility of a retropharyngeal lipoma in the differential diagnosis in children with OSA.

**REFERENCES**