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Oncocytic Cysts of the Nasopharynx: A Case Report

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Abstract

Background: Nasopharyngeal oncocytic lesions are a spectrum of benign lesions that represent a reactive or hyperplastic response to chronic inflammation. Though oncocytic lesions are typically asymptomatic, unilateral, and benign, this article discusses a rare case of large, bilateral oncocytic cysts and downstream otologic sequelae with a focus on identifying and discussing similar disease processes.

Methods: Case report and literature review.

Case Presentation: A 67-year-old patient with 57 pack year smoking history presented for one year of left sided hearing loss and aural fullness. Clinic endoscopic exam demonstrated severe inflammatory and cystic changes lining the bilateral tori. Imaging and tissue sampling confirmed the cause was minor salivary gland cysts with papillary projections lined by oncocytic cells within bilateral tori tubarius. He was successfully treated with myringotomy with pressure equalizing tube, counseling on tobacco cessation, and surveillance with serial nasopharyngoscopy.

Conclusions: Chronic eustachian tube dysfunction is a possible rare presentation and sequelae of large oncocytic cysts of the nasopharynx. Oncocytic cysts should be considered on the differential diagnosis for nasopharyngeal masses causing such dysfunction.

Keywords

oncocytic cysts, oncocytic metaplasia, eustachian tube dysfunction, nasopharyngeal mass, tori tubarius

Introduction

Nasopharyngeal oncocytic lesions are a spectrum of benign lesions that represent a reactive or hyperplastic response to chronic inflammation such as tobacco use and age-related degeneration.[1] The lesions differ based on location, origin, and presence of cystic and inflammatory components. While these oncocytic lesions are frequently asymptomatic, in rare instances larger lesions in the nasopharynx can result in significant downstream otologic sequelae such as eustachian tube dysfunction or chronic ear disease.[1] Furthermore, it is important to distinguish these benign lesions from possible malignant lesions of the nasopharynx, given potential common risk factors and sequelae.[1]

Case Presentation

A 67-year-old male with 57 pack-year history of smoking presented with one year of left-sided hearing loss and aural fullness. Otoscopy revealed bilateral serous middle ear effusions and globally retracted tympanic membranes. Audiological evaluation was consistent with mixed conductive and sensorineural hearing loss with Type C tympanogram bilaterally. The patient had no nasal obstruction/congestion or other nasal symptoms. Nasopharyngoscopy demonstrated irregular, lobular,

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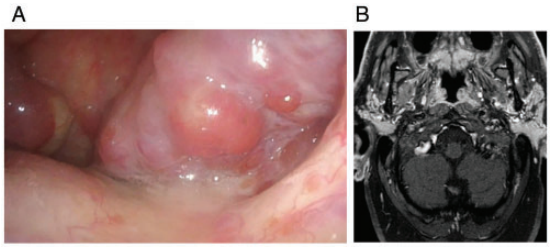

Figure 1. A, Endoscopic view of nasopharynx with left torus tubarius demonstrating irregular and lobular changes to the submucosal tissue. Similar changes could be seen of the right eustachian tube. B, MRI T1 fat suppressed post-contrast image which demonstrates cystic lesions of the bilateral tori tubarius with surrounding isointensity.

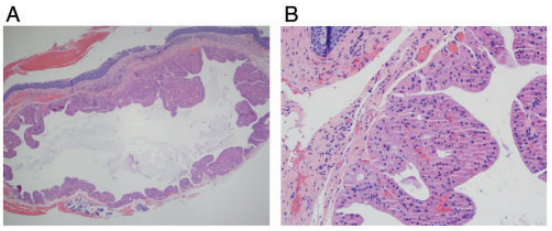

Figure 2. A, Low power view shows sections of an oncocytic proliferation arising within a dilated mucoserous gland, or retention cyst, of the nasopharynx. Cyst lining shows papillary projections lined by oncocytic cells. Nasopharyngeal epithelium is seen overlying the cyst. B, This high power view shows bland oncocytic epithelium, which in some areas has a bi-layered appearance, lining papillary projections into the retention cyst.

submucosal enlargement of bilateral tori tubarius (Figure 1(A)). CT demonstrated no discrete nasopharyngeal masses. MRI with contrast showed cystic lesions within the bilateral tori tubarius (Figure 1(B)). The patient underwent placement of a pressure equalizing tube for his eustachian tube dysfunction and nasopharyngeal biopsy. Histological assessment demonstrated retention cyst of minor salivary gland with cyst lining showing papillary projections lined by oncocytic cells (Figure 2). Due to the location of the lesion, excision was not performed to avoid scarring near the eustachian tube orifice and potential worsening of his eustachian tube dysfunction. The patient was also counseled on cessation of tobacco use, and surveillance with serial nasopharyngoscopy was recommended, and the patient had resolution of his symptoms. Tympanograms returned to normal and mucosa of the nasopharynx continued to demonstrate irregular submucosal cystic lesions. At last follow up one year after presentation, there were no endoscopic exam changes or new symptoms.

Discussion

The nasopharynx can give rise to a range of pathologies due to its position at the confluence of diverse embryologic structures of the nasal cavity, pharynx, and skull base. One such pathology is the nasopharyngeal oncocytic lesion, a spectrum of lesions that differ based on the presence of cystic and inflammatory components. They involve oncocytes, which are polygonal epithelial cells with extensive eosinophil, granular cytoplasm composed of overabundant mitochondria, and round centrally placed nuclei, and may be the result of metaplasia.[2,3] Acquired nasopharyngeal oncocytic lesions are thought to arise due to chronic inflammation and cystic degeneration with aging.[1]

Subtypes include Warthin's tumors, or papillary cystadenoma lymphomatosum, which are particularly linked with cigarette smoking and have a higher incidence in males.[4,5] These lesions have a distinct histopathologic appearance with a characteristic bilayered epithelium of oncocytic luminal cells and basal cells that are lined by a lymphoid stroma containing germinal centers.[6] While Warthin tumors are almost exclusively restricted to the parotid gland, extraparotideal sites are thought to arise from metaplasia of minor salivary gland components trapped with submucosal lymphoid stroma.[1,7–10] Oncocytic cysts, in contrast to Warthin's tumors, do not contain an inflammatory component and oncocytic papillary cystadenomas are cystic lesions with an inflammatory infiltrate. Oncocytomas, another subtype, often refer to solid oncocytic lesions.[1]

In addition to Warthin's tumors and solid and cystic oncocytic lesion subtypes, other morphological variants of nasopharyngeal oncocytic lesions have been recognized.[11] Melanocytic oncocytic metaplasia, which are a rare, brown pigmented variant, was first described by Shek et al.[12] This variant follows a benign course and consists of oncocytic metaplasia with melanin pigments of yet unclear origin, contained within oncocyte cytoplasm.[13,14] They have largely been described in older Asian males who are chronic smokers.[14] These lesions can similarly present as diffuse oncocytic metaplasia, and histologically are S-100 positive and contain HMB-45 negative dendritic melanocytes, aiding in differentiating it from malignant melanoma.[13,14] Like the other subtypes, presentation depends on location; they may be purely incidental, or if located around torus tubarius, can cause eustachian tube dysfunction, hearing impairment, and headache.[13,14]

CT imaging of oncocytic lesions are highly variable depending on solid and cystic components and are not well described. CT may demonstrate mixed solid-cystic lesions. MRI will exhibit predominantly intermediate signal on T1 and T2 weighted images with foci of hyperintensity.[15]

Preferred treatment consists of complete endoscopic surgical excision with removal of the affected salivary gland or mass, and avoidance of environmental irritants. Alternative treatment modalities for nasopharyngeal

cysts in general might include aspiration, incision and drainage of cyst content, or marsupialization, but recurrence is a risk with these methods.[16] In the case of nasopharyngeal oncocytic cysts, treatment must be balanced with morbidity of surgery, as extensive manipulation can cause scarring near the eustachian tube orifice. This patient had diffuse lesions, with the entirety of the patient's nasopharynx covered in cystic oncocytic changes, rendering little role for incision and drainage secondary to risks of scarring and permanent eustachian tube dysfunction. If the morbidity or risk of the primary surgical treatment outweighs the potential benefits, then multiple modalities can be used to address the resultant eustachian tube dysfunction. These may include myringotomy, myringotomy with ventilation tube, and eustachian tube dilation.[17]

Several other etiologies should be considered for unknown nasopharyngeal masses causing eustachian tube dysfunction. These include nasopharyngeal carcinoma, lymphoma, and lymphoid hyperplasia. Nasopharyngeal carcinoma is the most common nasopharyngeal tumor.[6] High-risk populations include people from China, Southeast Asia, North Africa, and Arctic natives.[6] Viral (i.e., EBV) and environmental risk factors have been attributed to the disease.[6,18] Patients may present with cervical lymphadenopathy, epistaxis, eustachian tube dysfunction, nasal obstruction and cranial neuropathies from advanced disease.[6,19] Nasal endoscopy may demonstrate a mass emanating from the lateral wall of the nasopharynx (i.e., fossa of Rosenmüller). Magnetic resonance imaging (MRI) is helpful in delineating soft tissue infiltration and intracranial extension, while positron emission tomography can evaluate for distant disease.[6] Biopsy is the gold standard for diagnosis. Histopathologic classification includes keratinizing squamous cell carcinoma, nonkeratinizing carcinoma, and basaloid squamous cell carcinoma.[6] Treatment consists of radiation therapy with or without concurrent chemotherapy depending on stage.[19]

Nasopharyngeal non-Hodgkin's lymphoma accounts for 2.5% of extra nodal sites and is defined by the bulk of the disease presenting in the nasopharynx.[6] In the West, nearly all cases are B-cell lymphomas, particularly diffuse large B-cell lymphomas, whereas in Asia there is also a significant incidence of NK/T cell lymphomas and peripheral T-cell lymphomas.[6] Histopathology demonstrates a lymphocytic lesion with immunohistochemical cell surface markers staining for CD20 in B-cell lymphomas and CD56, CD3e+ and EBER+ in NK/T-cell lymphoma.[6]

Reactive hyperplasia of the nasopharyngeal mucosa to environmental triggers is common and can pose a challenging diagnostic picture. This is distinguished from nasopharyngeal carcinoma by the lack of cytokeratin immunoreactivity and presence of lymphoid markers.[6] The lymphoid tissue is distinguished from lymphoma by lack of clonal proliferation. Nasopharyngeal biopsy should be considered the gold standard for diagnosis and is required to rule out a more insidious process.

Conclusion

Oncocytic metaplasia of salivary glands and related retention cysts can be seen in older patients, possibly due to degenerative changes in the mucoserous glands as well as chronic inflammation from smoking. The large, bilateral oncocytic cysts demonstrated in this case represent an unusual cause of eustachian tube obstruction and chronic otitis media with effusion. Oncocytic cysts should be included in the differential diagnosis for nasopharyngeal masses resulting in eustachian tube dysfunction.

Ethical Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr. Toby O. Steele is a consultant for Intersect ENT, and Stryker. None of the other authors have any conflicting interests.

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Statement of Human and Animal Rights

This article does not contain any studies with human or animal subjects.

Statement of Informed Consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

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