

Case Report

An unusual presentation of postauricular swelling: cholesterol granuloma

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ABSTRACT

Post auricular swellings are not uncommon encounterances in surgical practice. Common differential diagnosis would include dermoid and lymph nodes. Cholesterol granulomas are cystic swellings formed with a multi-nucleated giant cell reaction to red blood cells' breakdown products, haemosiderin and cholesterol crystals. Any aerated portion of the temporal bone may develop a cholesterol granuloma; the mastoid air cells are the most common location and are the most common cystic lesion of the petrous apex. This is the first, unique and rare case of post auricular presentation of a cholesterol granuloma. 21-year-old female presented with a painless swelling behind the left ear from last four years. The radiological examination revealed a left-sided, soft-tissue mass extending into the posterior fossa. She underwent a surgical exploration and complete resection was achieved. The histopathological and radiological features were consistent with a cholesterol granuloma. Authors have seen first case of a mastoid cholesterol granuloma presented as a postauricular swelling. This case illustrates the need to consider cholesterol granuloma in daily clinical practice. Otolologists should be aware of uncharacteristic invasive cholesterol granulomas of the mastoid, which require aggressive surgical obliteration.

Keywords: Cholesterol granulomas, Cholesterol crystals, Haemosiderin, Petrous apex, Post auricular swellings

INTRODUCTION

A cholesterol granuloma is a foreign body giant cell formation in response to cholesterol crystals. Cholesterol granulomas are uncommon in the aerated bones of the skull, and are most frequently found in the petrous apex, as a result of inflammatory reactions in obstructed air spaces.¹ The decreased pressure results in hemorrhage, with the hemoglobin catabolized into cholesterol, which is relatively resistant to absorption by giant cells; this process results in a granulomatous reaction.² They can manifest as slowly growing aggressive lesions that cause bone erosion. Mastoid cholesterol granulomas are often accompanied by middle ear lesions, such as chronic otitis media, adhesive otitis media, and middle-ear cholesteatoma. Contrasting petrous apex cholesterol

granulomas, mastoid cholesterol granulomas tend to be benign and are usually nonaggressive and nonprogressive.³ Petrous apex cholesterol granuloma may present as, deep-seated headache and/ or cranial neuropathies (most commonly abducens nerve palsy); many are discovered incidentally on scans performed for other reasons. In this case patient presented with painless post auricular swelling.

CASE REPORT

The 21-year-old female presented with a painless swelling behind the left ear from last four years. Swelling was gradually increasing in initial 4 months and remained static to present size 3cm x 2.5cm (Figure 1). Swelling was soft, cystic, and non-tender with restricted mobility.

Margins are not well defined. Skin over the swelling was normal and was not attached to it. There was no discharging sinus or pointing abscess. Bruit or any pulsation was not present in the swelling. There was no history of trauma, fever, loss of appetite, discharging ear, difficulty in hearing, tinnitus, vomiting and giddiness. The patient had no other complaints or other constitutional symptoms. There was no history of such lesion in his family members.



Figure 1: Soft, cystic, and non-tender swelling behind the left ear.

On otoscopic examination both ear TM intact and cone of light present. Pure Tone Audiometry revealed both ear hearing sensitivity within normal limit. In FNAC smears shows plenty of hemosiderophages, RBC and few lymphocytes against proteinaceous background. Magnetic resonance imaging (MRI) showed a well defined cystic lesion measuring 25x28x27mm extending toward the posterior fossa inward with high-signal intensity on T1 and T2 weighted images noted in mastoid region abutting ear and causing bone erosion (Figure 2).

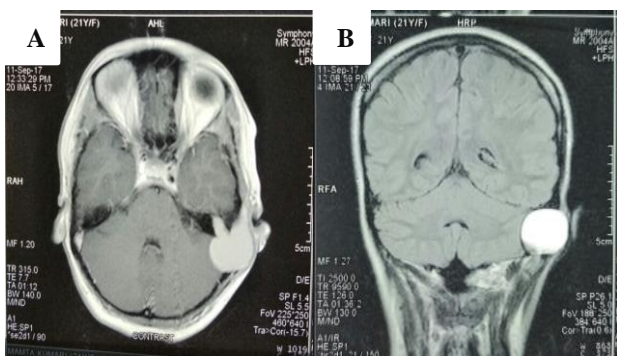


Figure 2: MRI showed a well-defined, high-signal-intensity, soft-tissue mass protruding to the left posterior fossa; A) Axial MRI, B) Coronal MRI.

The patient underwent surgical exploration under general anesthesia. Left retro auricular incision given extended toward the temporal area. Retro auricular flap everted, and cyst wall seen causing thinning of the bone forming a covering over it (Figure 3). Entire sac was explored from

the wall which was eroding bony tables, dark brown colour fluid seen and aspirated (Figure 4). Under mastoid tip area a yellowish colour crystals seen (Figure 5). Dura was exposed but intact cyst wall debrided from the bone along with fluid and debris.



Figure 3: Cyst wall causing thinning of the bone forming a covering over it.



Figure 4: Dark brown colour fluid seen and aspirated.



Figure 5: Under mastoid tip area a yellowish colour crystal seen.

The histopathological examination revealed fibrous cyst wall lined by low columnar epithelium. Vascular proliferation chronic inflammatory infiltrate and siderophages seen in the wall with cholesterol clefts with foreign body giant cell reaction (Figure 6).

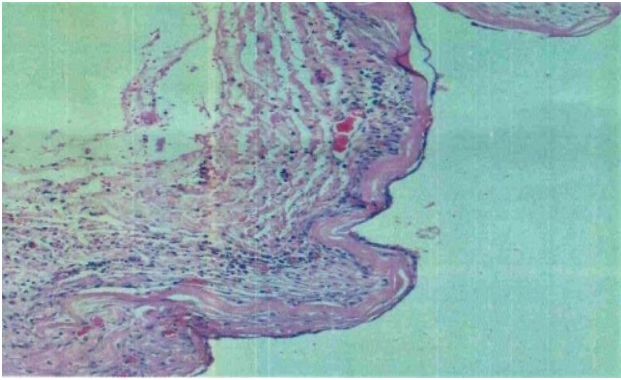


Figure 6: The H & E stain reveals cholesterol clefts, hemosiderin deposits, and granulomatous inflammation with giant cells.

DISCUSSION

Clinical symptoms, Radiological and Histological features highly suggestive of Cholesterol granuloma. They can manifest as slowly growing aggressive lesions that cause bone erosion. The pathogenesis of cholesterol granuloma is uncertain and two theories have been proposed: the classic “obstruction-vacuum hypothesis” and the “exposed marrow hypothesis”.^{4,5} Histologically, cholesterol granuloma are composed of yellowish-brown fluid which contains cholesterol crystal, multi nucleated giant cells, RBC and blood break down products. This is surrounded by fibrous capsule with fragile blood vessels.

Based on the clinical symptoms and radiological features, cholesterol granulomas can be classified as aggressive and nonaggressive.⁶ The more common lesions are aggressive cholesterol granulomas that originate from the petrous apex. Pfister et al. determined the amount of ongoing hemorrhage required to produce an aggressive cholesterol granuloma in the petrous apex.⁷ Non-aggressive cholesterol granulomas usually occur in the tympanomastoid region. Aggressive petrous apex cholesterol granulomas can erode into the cochlea, internal auditory meatus, or middle or posterior cranial fossae, threatening several cranial nerves, including nerves V and VI.

The possibility of dural adherence and invasion by this aggressive variant is relevant to the surgical plan. Surgeons must be prepared for dura and sinus repair, and a multidisciplinary approach might be needed. Due to its rarity, however, cholesterol granuloma was not included in the differential diagnosis and its destructive pattern might not be expected preoperatively CT failed to distinguish the cholesterol granuloma from other lesions, such as cholesteatoma. Authors had reviewed four other case reports, in which cholesterol granuloma was not included in the differential diagnosis until MRI or surgery was performed.⁸⁻¹¹ The MRI characteristics of cholesterol granuloma with high signal intensity on T1- and T2-weighted images facilitates its differentiation from a cholesteatoma, which has low signal intensity on T1-

weighted images, but high intensity on T2-weighted images, or from other diseases, and to delineate the anatomic location and involvement of adjacent structures.

CONCLUSION

Otolaryngologists should be aware of uncharacteristic invasive cholesterol granulomas of the mastoid, which require aggressive surgical obliteration. Preoperative MRI has more diagnostic value than CT in terms of differentiating a cholesterol granuloma from other masses, such as a cholesteatoma.

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