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Case Report

Mastoid cholesterol granuloma: a case presentation

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ABSTRACT

Cholesterol granuloma (CG) may involve the petrous apex and rarely may involve the middle ear and the mastoid bone. On magnetic resonance imaging, the mass revealed a high signal on both T1 and T2- weighted images. This is a case report of mastoid cholesterol granuloma in association of cholesteotoma causing persistent ear discharge in a 12 years old boy.

Keywords: Cholesterol granuloma, Mastoid, Middle ear

INTRODUCTION

Cholesterol granuloma (CG) of the middle ear typically presents with a conductive hearing loss and a blue eardrum; those at the petrous apex either manifest with side-effects from bony erosion (with sensorineural hearing loss, tinnitus, vertigo or cranial nerve impairment), or are identified as incidental findings.[1]

CG is a pathological lesion affecting the mastoid air cells due to partial obstruction of its aeration. Transudation (chocolate brown fluid) and cholesterol crystals precipitation induce foreign body reaction with formation of granuloma.[2]

CASE REPORT

A 12 years old boy presented to our ENT outpatient clinic complaining of recurrent right side ear discharge and hearing loss for more than 2 years. He denies any history of tinnitus, vertigo or neurological complain .No history of previous surgeries or trauma. On otomicroscopic examination, the right tympanic Membrane couldn't be visualized because there was an aural polyp obscuring it, left ear and remaining ENT examination was within normal including facial nerve. The audiogram showed moderate conductive hearing loss of pure tone average of 35 dB. Computerized tomography (CT) of the temporal bone showed soft tissue shadow filling the right mastoid air, no ossicles could be identified as seen in Figure 1.

Magnetic resonance images (MRI) showed a mass filling the mastoid cavity, the mass appeared homogeneous with increased signal intensity relatively to the brain on both T1 and T2 weighted images as shown in Figure 2. Modified canal wall down mastoidectomy showed the huge cholesterol cyst to have a dark chocolate-colored effusion as given in Figure 3. The cyst wall of the cholesterol granuloma was removed and huge cholesteotoma was also cleaned from the mastoid air cells and the middle ear cavity. The removed tissue was sent for histopathological examination.

The patient postoperatively done well. Rinne test was positive on the operated ear and weber radiates to the operated side. The histopathologic report confirmed the diagnosis of CG. The cyst had a fibrous lining and contained cholesterol crystals, haemosidirin and fibrin which were surrounded by foreign-body giant cells. Follow up of the patient for the postoperative course was uneventful and there were no neurological complications. There has been no recurrence for over 6 months duration.

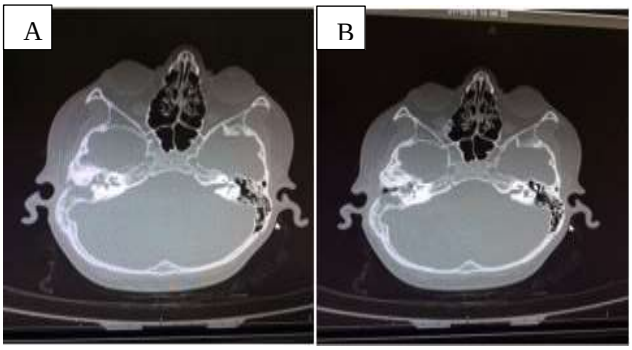

Figure 1: A and B are CT scans of the temporal bone showed soft tissue shadow filling the right mastoid air, no ossicles could be identified.

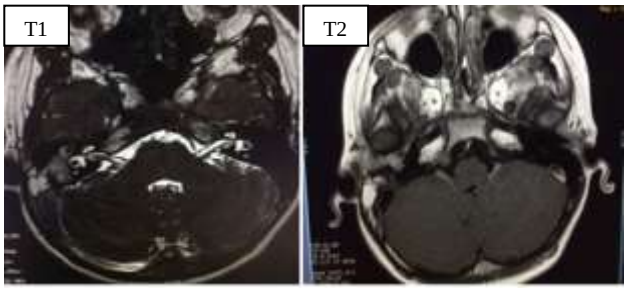

Figure 2: T1 and T2 weighted temporal bone MRI axial views showing a homogenous mass with increased signal intensity relatively to the brain.

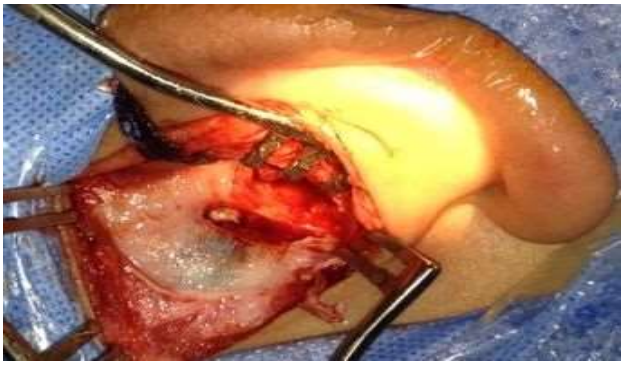

Figure 3: Intraoperative picture showing the mastoid cavity with CG and cholesteotoma.

DISCUSSION

Cholesterol granuloma was first described in 1917 by Manasse. CG results from a foreign body reaction to cholesterol crystals. The crystals are precipitated in the mastoid air cells as a sequel of blood stagnation. Cholesterol resists absorption by giant cells. The causes of blood collection are trauma, chronic infection or persistent negative pressure in blocked air cells.[3] CG may erode into the middle ear, the mastoid bone or the petrous apex. However, aggressive erosion into the cranial cavity is extremely rare. The vast majority of middle ear and mastoid CG conforms to the anatomic compartment in which they have arisen and do not erode adjacent bone.[4,5]

Although it might Mastoid cholesterol granuloma may lead to intracranial complications. A case of large extradural collection of fluid due to cholesterol granuloma was reported.[6]

Initial radiological investigation is performed by temporal bone CT scan, however CT appearance may be indistinguishable from those of cholesteatoma. The MRI characteristic of CG is helpful for its differentiation from cholesteatoma or other diseases. CG characteristically gives a high signal intensity on both T1 and T2 weighted MRI images, owing to the paramagnetic effect of hemoglobin breakdown products derived from microhemorrhages around the crystals.[7]

Surgical intervention depends on the site of CG. Simple mastoidectomy and ventilation tube application is the most surgical approach in mastoid CG. Endoscopic transsphenoidal removal or lateral skull approach is surgical solution for petrous apex CG. Complete removal is advised to avoid recurrence after surgery.[8]

CONCLUSION

Cholesterol granuloma is a pathological lesion affecting the mastoid air cells due to partial obstruction of its aeration. It is commonly unilateral. Histologically, it is characterized by the presence of large pointed crystals and giant cells. Surgical removal of the CG through simple mastoidectomy may be sufficient and recurrence is not common.

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REFERENCES

1. Brackmann DE, Toh EH. Surgical management of petrous apex cholesterol granuloma. Otol Neurotol. 2002;23:529-33.
2. Maeta M, Saito R, Nakagawa F, Miyahara T. Surgical intervention in middle-ear cholesterol granuloma. J Laryngol Otol. 2003;117:3448.
3. Friedmann I, Graham MD. The ultrastructure of cholesterol granuloma of the middle ear: an electron microscopic study. J laryngol Otol. 2002;116:877-81
4. Morioka T, Fujii K, Nishio S, Miyagi Y, Nagata S, Hasuo K, et al. Choleseterol granuloma in the middle cranial fossa: report of two cases. Neuroradiology. 1995;37:564-7.
5. Martin TP, Tzifa KT, Chavda S, Irving RM. A large and uncharacteristically aggressive cholesterol granuloma of the middle ear. J Laryngol Otol. 2005;119:1001-3.
6. Brodie SW, Chaurasia MK. A rare intracranial complication of cholesterol granuloma. J Laryngol Otol. 1985;99:491-5.

7. Nikolaidis V, Malliari H, Psifidis D, Spyridon M. Cholesterol granuloma presenting as a mass obstructing the external ear canal. BMC Ear, Nose and Throat Disorders. 2010;10:4.
8. Georgalas C, Kania R, Guichard JP, Sauvaget E, Tran Ba Huy P, Herman P. Endoscopic transsphenoidal surgery for cholesterol granulomas involving the petrous apex. Clinical Otolaryngology. 2008;33:38-42.

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