Cholesterol Granuloma in a Post-mastoidectomy for Cholesteatoma

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SUMMARY

Cholesterol granuloma is a histological term used to describe the foreign body reaction towards cholesterol crystals causing granuloma. We report a case of cholesterol granuloma in a patient who presented with a mass in her ear after 6 years of mastoidectomy. The diagnosis has been confirmed by MRI and postoperative findings. The difference between cholesterol granuloma and the other entities especially cholesteatoma and meningoencephalic herniation must be made in view of its implications and surgical management of each lesion.

KEY WORDS:
Ear diseases; mastoidectomy; cholesterol granuloma

INTRODUCTION

Cholesterol granuloma is a histological term used to describe the foreign body reaction towards cholesterol crystals causing granuloma. It is a benign lesion which is known to be found in the mastoid antrum, aerated cells of temporal bone, the middle ear cavity and the petrous apex. It can present on its own or coexist with cholesteatoma. However, its occurrence in a postoperative mastoid cavity is rarely been seen. We described a case of cholesterol granuloma in a patient who presented with a mass in her ear after 6 years of mastoidectomy.

CASE REPORT

A 48-year-old lady presented with a history of chronic right ear discharge and was diagnosed to have right ear cholesteatoma eight years ago. She then had modified radical mastoidectomy done a month later with no immediate postoperative complications. Six years after that, on her regular follow up, a white to bluish mass was noted in her right ear (Fig. 1). There were no symptoms of ear pain, ear discharge, vertigo, tinnitus, headache or worsening of hearing. On examination the mass filled part of the external auditory canal and was seen coming from the mastoid cavity. The mass was soft in consistency. The mastoid bowl was dry with no keratin debris noted. Clinical impression was to rule out the possibilities of brain herniation through the mastoid cavity.

In contrast, the CT scan report showed a right cholesteatoma with involvement of the adjacent structures. It showed an enhancing mass occupying the superior part of the right middle ear cavity and external ear canal with destruction of the ossicles, the tegmen tympany and the posterior part of the petrous bone.

In view of the contradictory findings between clinical and CT scan, MRI was done and showed a small well-defined lobulated lesion in the right middle ear which appeared heterogeneously hyperintense on T1W1 (Fig. 2), T2W1 and was not suppressed on FLAIR. Post contrast, heterogenous enhancement of the mass was also seen. No intracranial extension of the lesion was noted. Excluding the possibilities of brain herniation, the patient underwent a right mastoid exploration with the removal of the cholesterol granuloma. Intraoperative findings revealed a cystic mass adhering to the middle ear cavity and the ossicles were unable to be seen and identified. The mass consist of a brownish semi-solid material. No evidence of brain herniation seen. The diagnosis was then confirmed to be cholesterol granuloma by the histological examinations.

DISCUSSION

Cholesterol granuloma is a histological rather than a clinical term for a pathological process which can occur anywhere in the middle ear cleft. According to a histopathologic study, cholesterol granuloma may be present in 12% of patients with chronic otitis media with an intact tympanic membranes [1]. It can also occur with or without the presence of cholesteatoma [2]. A lesion in the petrous apex of temporal bone should arouse the suspicion of cholesterol granuloma with other differentials such as congenital cholesteatoma, mucocele and meningioma. Patients with cholesterol granuloma in the petrous apex may present with sensorineural hearing loss, tinnitus, vertigo or cranial nerve involvement [3].

In view of the previous history of mastoidectomy, the two initial diagnoses linger between recurrent cholesteatoma and the possibilities of herniation of brain tissue through the tegmen tympany defect. Ct scan was only able to report the defect over the tegmen tympany but has poor soft tissue differentiation. With MRI, the lesion was seen hyperintense on T1 and T2 weighted imaged and enhanced with gadolinium contrast. MRI can specifically demonstrate brain hernia as a continuous mass from the brain, and of the same signal while cholesterol granulomas have been shown as hyperintense areas on both T1- and T2-weighted images [3]. As far as the time of presentation is concerned, cholesterol

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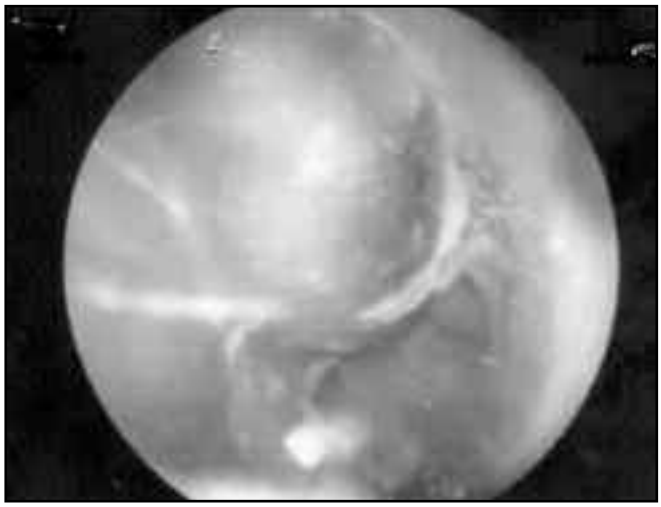

Fig. 1: Cholesterol granuloma in the external ear canal.

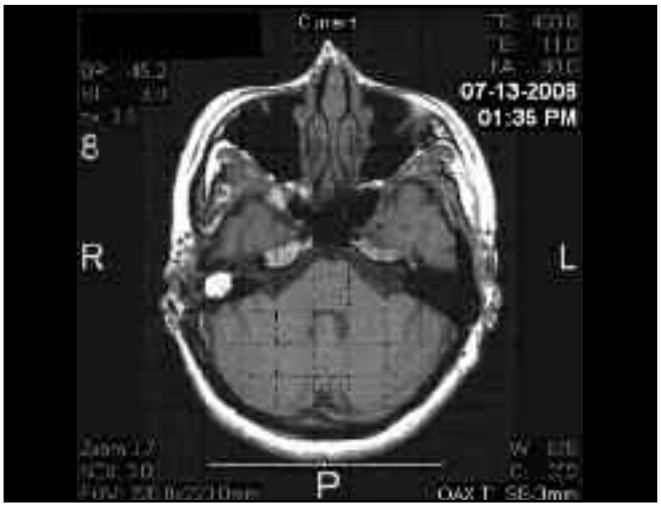

Fig. 2: MRI Axial T1 showing the mass in right ear.

granuloma has a slow and insidious onset. Bizakis *et al.* reported a cholesterol cyst of the mastoid which was noted after 8 years of canal wall down procedure for cholesteatoma [4]. In their case, the cyst was still in the mastoid cavity itself.

Even though it is not common, the possibility of cholesterol granuloma occurrence in post-mastoidectomy patients needs to be known. The difference between cholesterol granuloma and the other entities especially cholesteatoma and meningoencephalic herniation must be made in view of its implications and surgical management of each lesion.

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