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Case Report

External Auditory Canal Cholesteatoma Masquerading as a Middle Ear Secondary Acquired Cholesteatoma: A Case Report

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Abstract

External auditory canal cholesteatoma (EACC) is a rare condition characterized by the growth of keratinizing squamous epithelium within the external auditory canal. EACC can cause a range of symptoms and its delayed diagnosis can lead to irreversible damage and potential complications. Treatment involves surgical removal of the cholesteatoma, but nonetheless, EACC remains a challenging condition requiring careful management and follow-up.

Keywords: External Auditory Canal Cholesteatoma (EACC); Computed Tomography (CT)

Introduction

External auditory canal cholesteatoma (EACC) is a rare but potentially serious condition of the ear. It is a non-cancerous growth of keratinizing squamous epithelium within the external auditory canal, which can lead to a range of symptoms, including hearing loss, ear pain, discharge, and infection. The condition is often misdiagnosed or overlooked due to its rarity and delayed diagnosis can result in irreversible damage to the ear structures and potential complications. The incidence of EACC is 1.2–3.7 per 1000 patients with otological complaints [1,2]. Treatment typically involves surgical removal of the cholesteatoma. Despite the advances in diagnosis and treatment, EACC remains a challenging condition, requiring careful management and follow-up to prevent recurrence and minimize the risk of complications.

Case Report

A 28-year-old female presented to our OPD with complaints of progressive hearing loss in her right ear for the past 5 years. She also reported a foul smelling discharge from her right ear and occasional pain in the same ear. She also gave the previous history of right ear surgery (details absent) 5 years ago.

Clinical findings

On otoscopic examination, the external auditory canal of the right ear was found to be partially obstructed with a mass-like lesion. The mass was yellowish-white in color and was adherent mostly to the inferior canal wall. There was a large central perforation in the tympanic membrane with oedematous middle ear mucosa visible through it. The white flaky lesions seemed to enter the middle ear through the perforation. Pure tone audiometry revealed a 38.3dB air conduction threshold and 15dB bone conduction threshold in the right ear whereas hearing thresholds were within normal limits in the contralateral ear.

Diagnostic assessment

A High resolution computed tomography (CT) scan of the temporal bone was done, which revealed a soft tissue density area in the middle ear, aditus ad antrum and mastoid air cells with erosions of ear ossicles likely otomastoiditis. The mass appeared to extend to the bony portion of the canal and was consistent with cholesteatoma (Figure 1).

Figure 1: Coronal and axial sections of HRCT temporal bone, respectively, show the erosion and widening of the external canal (right side).

Therapeutic intervention

The patient underwent surgical excision of the cholesteatoma under general anesthesia. Mastoid exploration was also done but the aditus and antrum were free of any disease process. The mass lesion was found in the external canal causing erosion and widening and was completely removed microscopically and sent for histopathological examination (Figure 2 a, b, c). A canaloplasty was performed to reconstruct the canal wall defect using tragal cartilage and split partial-thickness skin graft from the post-auricular area (Figure 3 a, b, c) and the external ear was packed with antibiotic-soaked gauze and gel foam pieces. The middle ear (hypotampanum) was cleared of cholesteatoma and the ossicles were found to be intact. Tympanic perforation was repaired using tragal cartilage and temporalis fascia.

Figure 2: a) shows a yellowish-white mass in the Right External auditory canal intraoperatively. b) Showing defect in the external auditory canal intraoperatively after removal of the mass lesion. c). Disease cleared from the middle ear and revealed an intact ossicular chain thereafter.

Figure 3: a) Showing closing of the defect with tragal cartilage (incisions made on cartilage to accommodate it according to the contour of the canal). b) showing fascia over the middle ear defect and over the posterior canal wall. c) showing split partial-thickness postauricular skin strips covering the fascia and over the reconstructed canal wall.

Follow-up and outcome

The patient was discharged on the 7th postoperative day and instructed to keep the ear dry. The gauze was removed on the 10th postoperative day and there was no evidence of recurrent disease on further follow-ups till now.

Discussion

Description of EACC was first given by Toynbee in 1850 [3]. It was often confused with Keratosis obturans initially, but Piepergerdes., *et al.* differentiated it from latter [4]. According to them, EACC occurs because of the invasion of the focal periostitic area in the canal wall by squamous epithelium whereas keratosis obturans occurs when large plugs of desquamated keratin debris start accumulating in the external canal. The diagnosis of EACC requires a thorough physical examination, including otoscopy and audiology testing. Naim., *et al*. in 2005 gave the first classification of EACC according to clinical features and histology [5]. But this classification system can only predict the extent of EACC postoperatively. Thus a new classification system on the basis of clinical features and CT scan of the temporal bone was given by Shin., *et al.* [6], according to which EACC was classified into four stages. Stage I: when the lesion is restricted to the external auditory canal only, Stage II: invasion of the tympanic membrane and involvement of the middle ear, Stage III: lesion involving external auditory canal, middle ear along with mastoid process; Stage IV: invasion of temporal bone along with its adjacent structures [7,8]. This classification system helps in knowing the extent of EACC preoperatively thus helping the operating surgeon to plan the extent of surgery preoperatively. Earlier stages where there is no bony destruction, can be treated conservatively. But in advanced stages, where there is bony destruction and involvement of middle ear structures, treatment typically involves surgical intervention, such as canal wall down mastoidectomy or a modified radical mastoidectomy to remove the cholesteatoma and repair any damage to the ear canal or ossicles. In our case, it was Stage II at the time of presentation. So cholesteatoma was surgically excised from the external auditory canal and middle ear, the ossicular chain was found to be intact, canaloplasty was done and reconstruction done using tragal cartilage and skin strips from post auricular region. The patient maintained a regular follow-up. The patient felt the hearing improvement subjectively. The external canal healing was satisfactory at the end of 6th month post-operatively with a proper epithelial lined external canal with intact graft and no complaints of otorrhoea.

Conclusion

EACC is a rare but serious condition that can cause a range of symptoms and complications if left untreated. Therefore, it is important to perform thorough examination and diagnostic testing to ensure early detection and treatment. With appropriate surgical intervention, most patients with external auditory canal cholesteatoma can achieve good outcome and maintain their hearing and overall ear health.

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