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Destructive foreign body granuloma: A case report

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Abstract

External auditory canal polyps are predominantly inflammatory processes but occasionally indicate more severe pathology. Prolonged conservative management may postpone accurate diagnosis and appropriate therapeutic intervention. This case report presents a 37-year-old woman, previously healthy with a normal ear, who underwent a right myringotomy with the insertion of a pressure-equalizing tube in one hospital after an upper respiratory tract infection. However, due to the pandemic era, she lost follow-up for 2 years and subsequently presented to another hospital with worsening hearing and persistent otorrhea. The attending physician found a large polypoid lesion occupying her right external ear canal. A computerized tomography scan revealed an irregular enhancement mass involving the right ear canal, the middle ear cavity, and mastoid air cells with multiple destruction of the skull base and intracranial involvement in the right middle cranial fossa. The possibility of malignancy was raised, prompting the patient to seek evaluation in a third hospital. A right tympanomastoidectomy was performed, and during a posterior tympanotomy, a pressure-equalizing tube was discovered in her middle ear. The pathological results confirmed the presence of foreign body granuloma. Following surgery, the patient's otorrhea improved.

Keywords

Foreign body, aural polyps, middle ear, chronic otitis media, pressure-equalizing tube

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Introduction

An aural polyp is an inflammatory process resulting from the pressure effect on the mucosa of the external auditory canal or the middle ear space. This condition may signify more severe underlying diseases.[1,2] Computed tomography (CT) scans can assess the extent of the pathology beyond what is visible on otoscopy.[3] Surgical intervention is frequently required for both diagnosis and treatment.

Clinicians should consider actual causes, including cholesteatoma, mycobacterial infection, neoplastic disease, or retained foreign body.[3] Infrequently, the foreign body in the inflamed middle ear can serve as a nidus of infection, exacerbating the inflammatory process of the mucosa and leading to the formation of a granuloma. Granuloma can gradually extend into the external auditory canal, middle ear, inner ear, and intracranial spaces, causing complex lesions. The granulation tissue potentially destroys surrounding structures, mimicking other destructive diseases such as cholesteatoma or malignancy.[4,5] Therefore, foreign body granuloma should be considered a potential differential diagnosis in aural polyp cases, especially with a history of ear surgery such as the prosthesis insertion.

Pressure-equalizing tubes, known for their inert nature, have been utilized as a workhorse prosthesis in various ear operations, including middle ear effusion, drainage, and middle ear ossiculoplasty.

Case presentation

A 37-year-old woman without underlying ear disease diagnosed with aural polyp after the foreign body presented with

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a 4-year history of right aural fullness after an acute upper respiratory tract infection. She went to the hospital and the doctor found fluid in her right middle ear. The doctor prescribed intranasal steroids and antihistamines for 6 months, but symptoms never improved. She lost to follow-up and visited another hospital, where the doctor found that she still had fluid in the right middle ear. The doctor performed a myringotomy with pressure-equalizing tube insertion, but the patient was lost to follow-up again due to the COVID-19 pandemic. Four months before visiting Siriraj hospital, she experienced painless otorrhea, worsening right hearing, and felt that her right ear was shallower than the other ear when trying to pick up the ear. She visited another hospital and the doctor found a massive aural polyp in her right ear. A CT scan of the temporal bone and a tissue biopsy were performed. A differential diagnosis of malignancy was mentioned. The patient decided to see expert otologists at the new hospital.

At the third hospital, the physical examination revealed an aural polyp that occluded the right ear canal with purulent discharge; The right tympanic membrane could not be identified, but the left ear was normal and no facial palsy was seen. Pure tone audiometry showed the right profound sensorineural hearing loss (Figure 1). A CT scan of the temporal bone showed an irregular enhancement mass involving the right ear canal, the middle ear cavity, and mastoid air cells with multiple destruction of the skull base and intracranial involvement in the right middle cranial fossa (Figure 2).

Right tympanomastoidectomy with posterior tympanotomy was performed. A dense granuloma was identified in the right mastoid antrum and the attic area (Figure 3). There

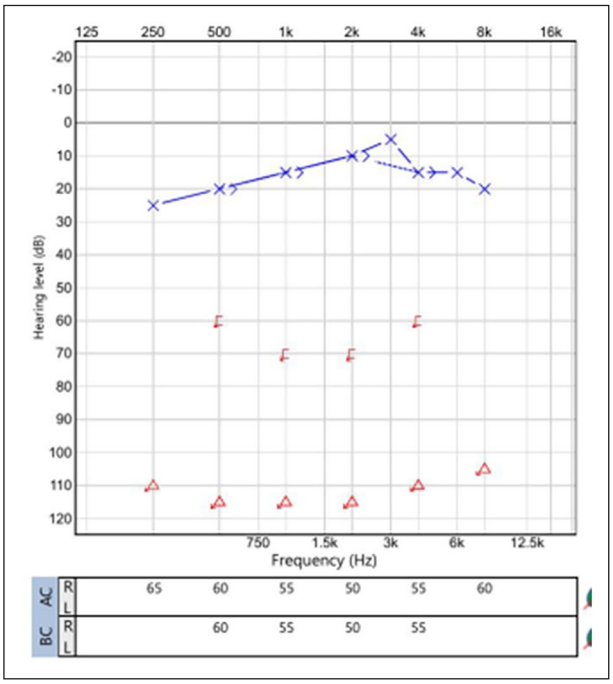

Figure 1. Audiometry revealed profound right sensorineural hearing loss.

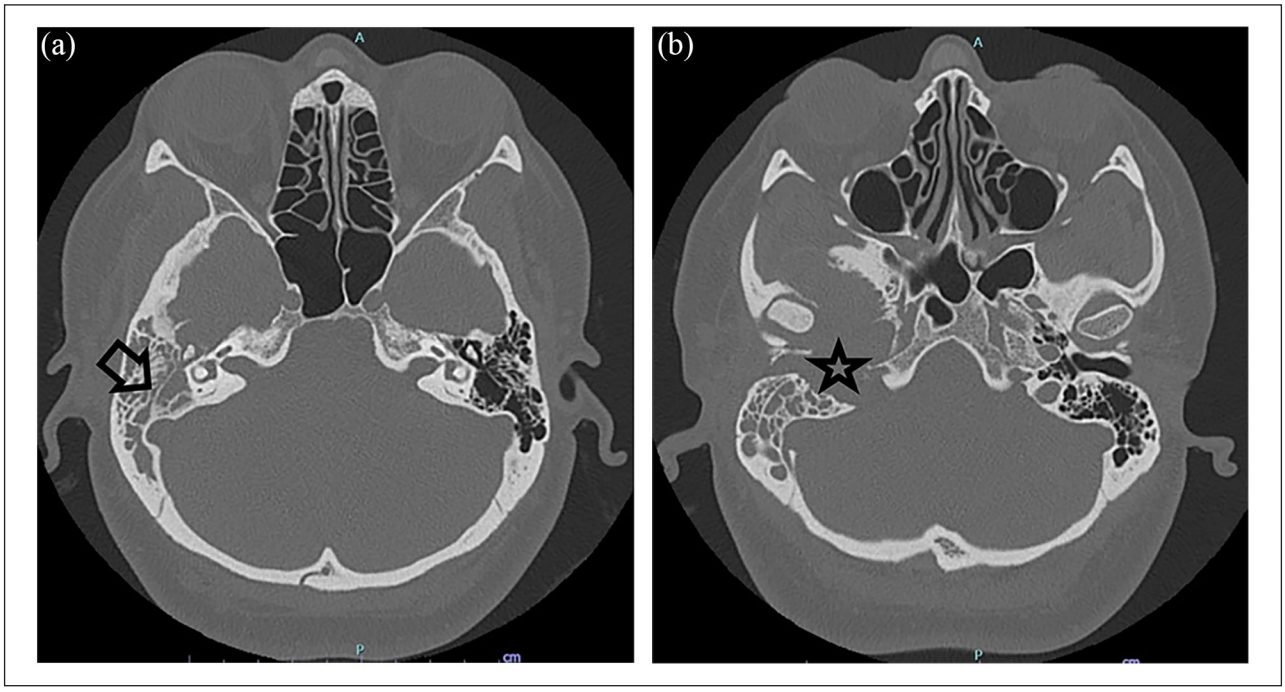

Figure 2. (a) A temporal bone computed tomography (CT) scan axial view showed an irregular enhancing mass involving the right ear canal, the middle ear cavity, and mastoid air cells (arrow). (b) A temporal bone CT scan axial view showed multiple destruction of the skull base and intracranial involvement in the right middle cranial fossa (star).

were abundant granulation tissues in the middle ear covering the tegmen and other critical structures such as facial nerve and ossicles. Attempts to remove all granulation tissue were hindered by massive bleeding and limiting visualization. Consequently, identification of the skull base defect and intracranial involvement was not possible. During a posterior tympanotomy, the surgeon found a pressure-equalizing tube in the facial recess (Figure 4). The lesion, which looks like a malignancy, was not found. The foreign body and a large portion of a granuloma from the mastoid, attic, tympanum, and ear canal were removed and sent for tissue culture and pathological diagnosis. Levofloxacin 750 mg was prescribed once a day.

The pathological report indicated a *foreign body granuloma* without evidence of malignancy. Tissue cultures of the right middle ear and antrum revealed no pathogens.

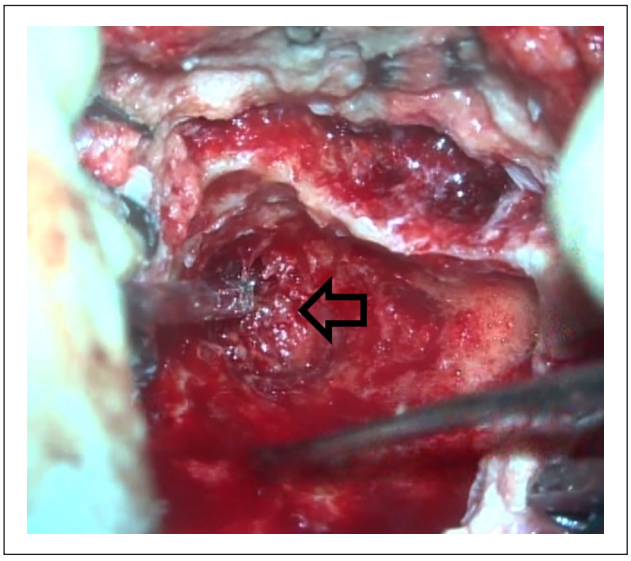

Figure 3. Granulation tissue occluded the right mastoid antrum (arrow).

In the recent visit, the patient reported improvement in clinical symptoms of otorrhea and ear pain but the right profound sensorineural hearing loss was not recovered. A regular follow-up was still appointed.

Informed consent was obtained from the patient for the publication.

Discussion

The patient presented to our hospital with concern for malignancy due to an aural polyp that totally occluded the external ear canal. Her temporal bone imaging showed an irregular enhancing mass involving the right ear canal, middle ear cavity, mastoid air cells with multiple skull base destruction, and middle cranial fossa involvement which mimics malignancy. The clinician learned about the history of myringotomy with tube insertion, and the surgeon decided to perform a right tympanomastoidectomy to seek a diagnosis by tissue culture and histopathology, as malignancy and unusual chronic infection were still in the differential diagnosis. Nevertheless, foreign body granuloma was ultimately reported.

Shui-Hong[3] reported an aural polyp and soft tissue density in the tympanic cavity and mastoid air cells with osteolytic changes in CT. The authors found a tiny white plastic in the tympanic cavity. Niall Woodley[1] showed two patients with foreign bodies, cotton wool, in the middle ear that caused acute mastoiditis and suppurative labyrinthitis. Previous research suggests that removing foreign bodies and getting a proper antibiotic prescription is an adequate treatment option. Mastoid exploration can also improve mastoid ventilation and tissue diagnosis.[1,3]

In this case, the foreign body was identified as a pressure-equalizing tube. Tympanostomy tube insertion is a common procedure that can lead to complications, including otorrhea and permanent perforation. The migration of a tympanostomy tube into the middle ear space occurs at a

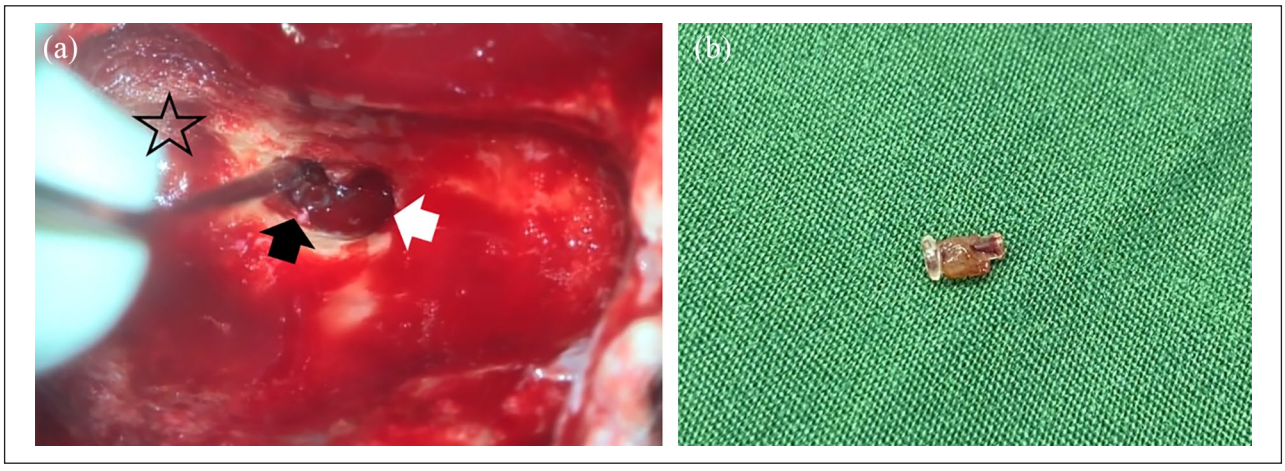

Figure 4. (a) Pressure-equalizing tube (black arrow) located in the right middle ear. (Star: mastoid antrum, white arrow: posterior tympanotomy). (b) Pressure-equalizing tube located in the right middle ear.

rate of 0%–1.1%.[2,6–9] Medial migration of the tympanostomy tube can cause a sensation of fullness, ossicular chains lysis, cholesteatoma,[7] or perilymphatic fistula.[10] This condition is independent of tube type and occurs at different intervals. The mechanisms behind this phenomenon include large incisions, recurrent ear infections, persistent negative middle ear pressure, and technical errors by inexperienced surgeons.[7]

Migration of foreign bodies to the middle ear causes chronic inflammation and can lead to the formation of granulomas, which slowly extend to the external auditory canal. Aural foreign bodies can cause severe sequelae such as labyrinthitis and profound hearing loss.[1,3] In this case, granulation tissue destructed the middle ear and inner ear structures severely, causing this patient to have the right profound sensorineural hearing loss. Delayed diagnosis increases the risk related to foreign bodies in the ear, particularly in adult patients who are unaware of the prior history of foreign bodies.

There is no well-established optimal management of the medial displacement of the tympanostomy tube. Surgical intervention is recommended in symptomatic cases, while closed follow-up or surgical removal is an option for asymptomatic cases. However, due to the potential for severe complications of the retained tube in the middle ear, such as cholesteatoma,[7] perilymphatic fistula,[10] or extensive foreign body granuloma in this case, many authors trendily recommend surgical removal of all medialized tubes even in asymptomatic patients.[10–12]

Conclusions

Clinicians should consider the possibility of an aural foreign body in patients with chronic otorrhea and aural polyps. Foreign body granuloma should be a differential diagnosis in an aural polyp resistant to medical treatment, even if imaging shows no signs. Histopathological analysis of tissue specimens can help with proper management. This case report highlights the importance of differential diagnosis for potentially destructive conditions such as cholesteatoma or malignancy. In addition, prolonged conservative treatment can delay timely diagnosis and appropriate management.

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Author contributions

All authors have contributed to this article. P.W. contributed to Writing – Original Draft, literature review, data collection; S.P. contributed to Conception, supervision, review, and editing; S.A. contributed to Supervision, design; K.T. contributed to Supervision, design; S.L. contributed to the review and editing; K.S. contributed to the review and editing.

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Ethics approval

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

Informed consent

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

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References

1. Woodley N, Slim MAM, Tikka T, et al. Not'just'a foreign body in the ear canal. *BMJ Case Rep* 2019; 12(4): e229302.
2. Ahmed JM, Kandi S and Thoufeer CP. Foreign body in external auditory canal masquerading as middle ear polyp. *Indian J Otolaryngol Head Neck Surg* 2021: 74(Suppl 3): 3675–3677.
3. Shui-Hong Z, Qin-Ying W and Shen-Qing W. Middle ear foreign body causing cholesteatoma and external auditory canal granuloma: a case report. *J Otol* 2012; 7(1): 25–27.
4. Pang EB and Pang KP. A case of ear canal black pigment foreign body mimicking a melanoma. *Med J Malaysia* 2015; 70(3): 198–199.
5. Lee H-Y, Chen C-L and Wu C-T. Foreign body mimicking a granuloma in the ear in an asymptomatic child. *Pediatr Neonatol* 2017; 58(3): 289–290.
6. Benchafai I, Moumni M, Ouraini S, et al. Medial migration of the tympanostomy tube: what is the optimal management option? *Pan Afric Med J* 2019; 34: 216.
7. Groblewski JC and Harley EH. Medial migration of tympanostomy tubes: an overlooked complication. *Int J Pediatr Otorhinolaryngol* 2006; 70(10): 1707–1714.
8. Mukerji S. Medial migration of tympanostomy tubes: the why and what to do? Case report and review of literature. *Austin J Otolaryngol* 2015; 2: 1–2.
9. Ragab A, Mohammed AA-H, Abdel-Fattah AA, et al. Prevalence of complications associated with tympanostomy tube insertion. *Menoufia Med J* 2015; 28(4): 918.
10. Hajiioannou JK, Bathala S and Marnane C. Case of perilymphatic fistula caused by medially displaced tympanostomy tube. *J Laryngol Otol* 2009; 123(8): 928–930.
11. Kumar M, Khan AM and Davis S. Medial displacement of grommets: an unwanted sequel of grommet insertion. *J Laryngol Otol* 2000; 114(6): 448–449.
12. Green K, De Carpentier J and Curley J. An unusual complication of T-tubes. *J Laryngol Otol* 1997; 111(3): 282–283.
13. Friedmann I. Pathological lesions of the external auditory meatus: a review. *J R Soc Med* 1990; 83(1): 34–37.
14. Gliklich RE, Cunningham MJ and Eavey RD. The cause of aural polyps in children. *Arch Otolaryngol–Head Neck Surg* 1993; 119(6): 669–671.
15. Kalra VK. Aural polyp is not always due to chronic otitis media (COM): preoperative computed tomographic scan is good pointer for sinister lesions. *Indian J Otolaryngol Head Neck Surg* 2018; 70: 505–509.