A primary care approach to the discharging ear

Raymond Li, Kristy Fraser-Kirk

Background
Otorrhoea is a common presentation in both primary care and emergency settings, with a broad range of differential diagnoses that can make accurate assessment and management challenging for the primary care practitioner.

Objective
This article describes a systematic approach to the assessment of otorrhoea, outlines common causes and their first principles of management in the primary care setting, and provides recommendations for when specialist referral is indicated.

Discussion
A clear clinical assessment and targeted investigations are essential in the identification and initial management of otorrhoea. Many causes of a discharging ear can be managed in the primary care setting; however, it is also important to recognise circumstances in which escalation is required to a specialist otolaryngology service.

THE DISCHARGING ear is a common primary care ear, nose and throat (ENT) presenting complaint and might represent a wide variety of underlying diagnoses. A targeted approach is essential in differentiating benign disease from that which might warrant specialist referral. This article reviews common causes of otorrhoea, their different features, and principles in assessment and management for the primary practitioner.

Anatomy of the ear

The ear can be broadly considered in three anatomical compartments: the external, middle and inner ear.[1]

The external ear consists of the pinna and the external auditory canal (EAC) up to the tympanic membrane (TM). The EAC is lined by keratinised stratified squamous epithelium and produces keratinaceous debris and cerumen (earwax).[1–5] The middle ear exists behind the TM, housing the malleus, incus and stapes, and has an important role in mucociliary clearance into the nasopharynx via the Eustachian tube.[1,6] The middle ear is mostly comprised of non-keratinised squamous epithelium, sharing similar features to respiratory epithelium.[6] The inner ear is the most medial compartment, consisting of the cochlea and vestibular apparatus, including the vestibular organs (utricle and saccule) and semicircular canals.[1]

Assessment

History

A clear history is essential when assessing undifferentiated otorrhoea. Duration of symptoms can be acute (less than six weeks) or chronic (more than six weeks). Patients should be asked about the colour, texture, frequency and pattern of otorrhoea. Preceding events should be enquired about, including water exposure, trauma or upper respiratory illness. A history of previous ENT conditions should be clearly elucidated in addition to any required medical or surgical intervention. Presence of otalgia, hearing loss and vertigo can help localise the anatomic area of disease. Meningism, facial weakness or cranial nerve dysfunction are red flags that should prompt urgent specialist discussion.

Examination

Aural examination should begin with inspection of the ear for any pinna swelling, deformity or periauricular change, followed by palpation of bony and cartilaginous structures.[7] A pinna pull is non-specific but particularly tender in acute otitis externa (OE). Periauricular nodes might also be palpable and tender in patients with OE.

A systematic otoscopic examination should follow. Canal patency, quality of canal mucosa and presence of debris should be noted. Dry mopping with a swab or tissue spear can help clear debris for better examination.[7] The TM and middle ear should be assessed for perforation, bulge or retraction. A Valsalva manoeuvre helps assess drum mobility and localises small perforations by encouraging passage of middle ear fluid.[5] Microsuction is both a useful diagnostic and therapeutic adjunct that helps in examining the canal and drum under direct vision in equipped clinics.[7]

Cranial nerves should be assessed for all patients suspicious for infective or intracranial complications. Facial nerve function, in particular, should be assessed

given its course through the middle ear. The appearance and distribution of vesicles in and external to the canal should be noted and, in conjunction with the presence of any facial symptoms, might suggest the presence of a herpes zoster infection.

Investigations

Swab microscopy, culture and sensitivities

Swabs should be considered to determine relevant organisms and guide appropriate antimicrobial treatment for infective otorrhoea. Common bacteria implicated in OE include *Staphylococcus aureus* and *Pseudomonas aeruginosa*.[5] Otorrhoea of middle ear origin might involve *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis* and other respiratory organisms.[6] Common fungi include *Aspergillus* and *Candida* species.[5]

Audiogram

For patients with reduced hearing, audiometry can help localise the compartment of disease and monitor progress. Pure tone audiometry helps delineate conductive and sensorineural hearing loss and is best interpreted with tympanometry to assess middle ear function, compliance and TM mobility.

Imaging

Radiologic assessment should be considered in primary care for otorrhoea refractory to first-line management with hearing loss or other concerning features. Computed tomography (CT) can be performed to evaluate the bony architecture of the temporal bone. Middle ear opacification suggests the existence of fluid or soft tissue and might indicate the presence of otitis media or cholesteatoma.

Magnetic resonance imaging (MRI) might be considered in patients with suspected cerebrospinal fluid (CSF) leakage[8,9] or malignant OE but might need to be escalated to an ENT specialist.

Common causes of otorrhoea

Cerumen

Cerumen production is a physiological process that provides barrier protection and lubricates the EAC. Cerumen is also responsible for trapping and expelling debris from the ear through epithelial migration and jaw movement.[3] Texture and consistency can vary depending on individual, genetic and environment factors. Treatment typically involves over-the-counter cerumenolytics and aural toilet.[4] Syringing can be performed but is not recommended in patients with TM perforations due to the risk of OE and potential severe middle ear damage.[3,4]

Otitis externa

OE refers to inflammation of the external ear and presents with debris, canal oedema and pain exacerbated by ear manipulation.[2] OE is commonly bacterial, involving *S. aureus* and *P. aeruginosa*, with mucopurulent otorrhoea. Fungal organisms include *Aspergillus* and *Candida* species and might exhibit cottage cheese-like debris, hyphae or spores on examination. Treatment involves antimicrobial drops, with dry mopping or microsuction if available. Significant canal stenosis might require an ear wick to facilitate medication delivery. Ciprofloxacin-based drops combined with steroid are safe, not ototoxic and recommended for bacterial infections when TM perforation cannot be ruled out. Clotrimazole and Otocomb Otic are effective antifungal preparations but have unclear ototoxicity and are not broadly recommended for perforations. A short course of oral corticosteroids might have a role in reducing pain and swelling in patients with severe OE, with a study by Balch et al demonstrating a reduction in duration of symptom severity but no significant difference in the duration of disease.[10] Clinicians should also be wary of immunosuppressed patients with OE and severe otalgia. These patients might require CT imaging to evaluate for malignant OE (skull-base osteomyelitis).[5]

Acute otitis media with perforation

Acute otitis media (AOM) is an infection of the middle ear and presents with recurrent pain, hearing loss and perforation.[11] AOM with otorrhoea implies a perforated eardrum and might be mucopurulent or bloodstained. AOM is usually self-limiting and should resolve with supportive care and analgesia; however, short courses of oral antibiotics should be considered in patients with systemic symptoms or fevers. A wet ear following AOM with perforation (AOMwP) should be considered for combination ciprofloxacin/steroid drops to reduce otorrhoea from middle ear inflammation.[11] Discharging AOM refractory to first-line treatment, with persistent perforation after six weeks or with symptoms of meningism, facial nerve weakness or other abnormal neurology, should be referred for ENT review.

Chronic suppurative otitis media

Chronic suppurative otitis media (CSOM) is characterised by persistent otorrhoea through a TM perforation due to chronic middle ear inflammation.[2,11] Patients present with a history of over two to six weeks of persistent discharge and will often have mild to moderate conductive hearing loss.[6] First-line treatment involves ciprofloxacin/steroid combination drops, followed by targeted drops and microsuction if available.[11] Recurrent courses of oral and ototopical antibiotics, particularly if not guided by microscopy and culture, are unlikely to be of additional benefit. Patients with symptoms refractory to medical management should be evaluated with audiometry and CT imaging to assess for middle ear disease, and might require referral to an ENT service for consideration of surgery.[6]

Cholesteatoma

Cholesteatomas are skin cysts filled with squamous debris that can cause inflammation, infection and destruction in the middle ear and mastoid.[12] Cholesteatomas can be congenital or acquired and might follow long-standing ear drum retraction and Eustachian tube dysfunction.[12] Otorrhoea usually occurs in the setting of an infected cholesteatoma and might persist despite ototopical treatment. Patients suspicious for cholesteatoma should be referred for audiometry, CT and specialist otolaryngologist review. Extensive cholesteatomas can pose a threat to hearing, balance and facial nerve function, with a risk of intracranial infection.[12]

CSF otorrhoea

CSF otorrhoea is characterised by reproducible, positional, watery discharge, often with a history of head trauma.[8,9] A traumatic CSF leakage can also occur but

is mostly seen in patients with intracranial hypertension or alternative causes of skull base bony erosion.[8] CSF is thin and will often be described as a tap-like drip. Fluid should be collected and sent for beta-2-transferrin to confirm the presence of CSF, following which patients should be referred for urgent specialist review. Temporal bone CT helps assess for bony dehiscence that might provide CSF passage, while MRI might be a useful adjunct in localising the presence of fluid.[9]

Foreign bodies

Aural foreign bodies (FBs) might present with otorrhoea from secondary OE, particularly if not promptly removed.[13] Common retained FBs include beads, small plastic toys and hearing aid tips. Button batteries must not be missed. Removal of the FB is normally sufficient to address the otorrhoea and might be performed under direct vision or microscopy. ENT referral should be considered for FBs lodged in unfavourable positions, prior unsuccessful attempts or for button batteries. Patients with associated OE or EAC trauma should be considered for antimicrobial drops.[13,14]

Post-grommet otorrhoea

Grommets (tympanostomy tubes) are inserted in patients with recurrent middle ear infections or effusions to equalise middle ear pressures and relieve symptoms. Otorrhoea is theorised to occur either due to recurrent OM or a secondary foreign body–like reaction with potential biofilm formation.[15] Management can be initiated in general practice with ciprofloxacin/steroid combination drops.[16] Persistent otorrhoea despite this treatment might need specialist assessment for aural toilet, treatment escalation or grommet removal.

Malignancy

Neoplastic lesions of the ear are rare but recognised causes of otorrhoea. Cranial nerve abnormalities, significant pain and associated hearing loss should prompt specialist referral. Otorrhoea in the setting of suspected malignant lesions might be refractory to drops and warrants a low threshold for ENT evaluation.

Barotrauma

Patients with history suggestive of barotrauma might present with serosanguinous otorrhoea among other symptoms, which normally occurs as a result of middle ear oedema and bleeding following injury.[17,18] Barotraumatic discharge is normally self-limiting in nature, but clinicians should have a low threshold to consider antibiotic and steroid combination drops in the setting of persistent otorrhoea or suspected infective change.[17,18]

Conclusion

Otorrhoea is a frequent ENT presentation in the general practice setting with broad differential diagnoses. This article has outlined an approach for the general practitioner to systematically assess and manage many of the common causes of otorrhoea and identify when escalation to a specialist ENT service might be warranted.

Key points

- A good clinical history and examination are essential when approaching the discharging ear.
- Audiometry and CT imaging are useful adjuncts in the setting of persistent or refractory otorrhoea.
- Ototopical therapy, dry mopping and aural toilet are the first line of treatment when managing most causes of otorrhoea.
- Ciprofloxacin-based drops are preferred when TM perforation cannot be ruled out.
- Specialist referral should be considered for persistent otorrhoea failing conservative management, for red flag symptoms or for suspected complications.

Authors

Raymond Li MD, ENT Principal House Officer, Department of Otorhinolaryngology, Sunshine Coast University Hospital, Sunshine Coast, Qld

Kristy Fraser-Kirk BA (Psych), MBBS (Hons), FRACS (OHNS), ENT Consultant, Department of Otorhinolaryngology, Sunshine Coast University Hospital, Sunshine Coast, Qld

Competing interests: None.

Funding: None.

Provenance and peer review: Not commissioned, externally peer reviewed.

Correspondence to:
ray.mndli95@gmail.com

References

1. Isaacson B. Anatomy and surgical approach of the ear and temporal bone. Head Neck Pathol 2018;12(3):321–27. doi: 10.1007/s12105-018-0926-2.
2. Dannatt P, Jassar P. Management of patients presenting with otorrhoea: Diagnostic and treatment factors. Br J Gen Pract 2013;63(607):e168–70. doi: 10.3399/bjgp13x663253.
3. Munro KJ, Giles TC, Smith-Howell C, Nazareth I. Ear wax management in primary care: What the busy GP needs to know. Br J Gen Pract 2023;73(727):90–92. doi: 10.3399/bjgp23X732009.
4. Tynan T, Griffin A, Whitfield BCS. An ex vivo comparison of over-the-counter cerumenolytics for ear wax. Aust J Otolaryngol 2020;3:33. doi: 10.21037/ajo-20-50.
5. Rosenfeld RM, Schwartz SR, Cannon CR, et al. Clinical practice guideline: Acute otitis externa. Otolaryngol Head Neck Surg 2014;150 Suppl 1:S1–24. doi: 10.1177/0194599813514365.
6. Mittal R, Lisi CV, Gerring R, et al. Current concepts in the pathogenesis and treatment of chronic suppurative otitis media. J Med Microbiol 2015;64(10):1103–16. doi: 10.1099/jmm.0.000155.
7. Chang P, Pedler K. Ear examination—A practical guide. Aust Fam Physician 2005;34(10):857–62.
8. Naples JG, Shah RR, Ruckenstein MJ. The evolution of presenting signs and symptoms of lateral skull base cerebrospinal fluid leaks. Curr Opin Otolaryngol Head Neck Surg 2019;27(5):344–48. doi: 10.1097/MOO.0000000000000561.
9. Rao N, Redleaf M. Spontaneous middle cranial fossa cerebrospinal fluid otorrhea in adults. Laryngoscope 2016;126(2):464–68. doi: 10.1002/lary.25461.
10. Balch G, Heal C, Cervin A, Gunnarsson R. Oral corticosteroids for painful acute otitis externa (swimmer's ear): A triple-blind randomised controlled trial. Aust J Gen Pract 2019;48(8):565–72. doi: 10.31128/AJGP-12-18-4795.
11. Seedat RY. The discharging ear: A practical approach. Cont Med Education 2004;22(5):2008.
12. Castle JT. Cholesteatoma pearls: Practical points and update. Head Neck Pathol 2018;12(3):419–29. doi: 10.1007/s12105-018-0915-5.
13. Grigg S, Grigg C. Removal of ear, nose and throat foreign bodies: A review. Aust J Gen Pract 2018;47(10):682–85. doi: 10.31128/AJGP-02-18-4503.
14. Kullar P, Yates PD. Infections and foreign bodies in ENT. Surgery 2012;30(11):590–96. doi: 10.1016/j.mpsur.2012.09.005.
15. Schmelzle J, Birtwhistle RV, Tan AK. Acute otitis media in children with tympanostomy tubes. Can Fam Physician 2008;54(8):1123–27.
16. van Dongen TMA, Damoiseaux RAMJ, Schilder AGM. Tympanostomy tube otorrhea in children: Prevention and treatment. Curr Opin Otolaryngol Head Neck Surg 2018;26(6):437–40. doi: 10.1097/MOO.0000000000000493.
17. Glazer TA, Telian SA. Otologic hazards related to scuba diving. Sports Health 2016;8(2):140–44. doi: 10.1177/1941738116631524.
18. Claes J, Germonpre P, Van Rompaey V, Bourmanne E. Ear, nose and throat and non-acoustic barotrauma. B-ENT 2016; 26 Suppl 1:203–18.