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Review Article

The management of aural polyps

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An aural polyp is a soft to rubbery reddish mass that typically presents within the external auditory canal. The polyp is usually the result of inflammatory proliferation and its presence signifies active ear disease. It is lined by pseudostratified columnar, cuboidal and occasionally squamous epithelium, and may be of external or middle ear origin. In the majority of cases, aural polyps are presenting features of chronic suppurative otitis media, arising both in tubotympanic and atticoantral disease (Lederer, 1941; Veitch *et al.*, 1988). However, this may not be the case in some parts of the world where most aural polyps apparently arise from within the external auditory canal (Loh, 1987).

The association of aural polyps with cholesteatoma is well known and requires appropriate surgical treatment. The incidence of cholesteatoma in ears presenting with polyps varies from 25 per cent to 45 per cent (Veitch *et al*, 1988; Milroy *et al.*, 1989; Rhys Williams *et al.*, 1989; Gliklick *et al.*, 1993). In children the incidence could be as high as 60 per cent (Dawes and Soames, 1995). There is a significant association between the presence of cholesteatoma and aural polyps arising from the attic or posterior-superior marginal tympanic membrane defects. However, the decision as to whether or not to explore the middle ear for possible cholesteatoma can be difficult. Differing management strategies have been recommended, varying from immediate mastoid exploration in all cases to action based upon clinical suspicion (Veitch *et al.*, 1988; Rhys Williams *et al.*, 1989).

Other inflammatory causes of aural polyps include granulomatous diseases such as tuberculosis, syphilis, fungal and protozoal infection. Aural polyps may be a manifestation of xanthomatosis and eosinophilic granuloma (Lederer, 1941; Gliklick *et al.*, 1993; De Rowe *et al.*, 1995). In children, mucosal reaction around ventilation tubes can result in polyp formation (Gliklick *et al.*, 1993). This was thought to represent a foreign body reaction to trapped squamous epithelium rather than the tube itself (Hawke and Keene, 1981). A enlarging glomus jugulare tumour, middle-ear adenoma and facial nerve neurinoma can present as an aural polyp through a tympanic membrane perforation (Okabe *et al.*, 1992). AIDS patients with extrapulmonary *Pneumocystics carinii* infection may present with aural polyp (Burns and Meyerhoff, 1991). A case of fibroepithelial polyp arising from the skin of the external auditory canal overlying an osteoma has been reported (Toma and Fisher, 1993).

Malignant aural polyp, either primary or secondary, is very rare. Malignant parotid gland tumour may invade the external auditory canal and nasopharyngeal malignancy may spread along the Eustachian tube to present as an aural polyp. Primary malignant melanoma, squamous cell carcinoma, adenocarcinoma, adenoid cystic carcinoma and rhabdomyosarcoma have also been reported in aural polyps (Rhys Williams *et al.*, 1989; Axhausen and Jahnke, 1992; Kang *et al.*, 1992). It is therefore important to obtain a histological diagnosis in all aural polyps, firstly to exclude neoplasia or specific granulomatous disease and secondly to avoid inappropriate surgical exploration which can compromise the definitive treatment of the tumour. Table I provides a summary of the causes of aural polyps.

Mast cells have been described in nasal and aural polyps but their significance in the ear is yet to be established (Drake-Lee *et al.*, 1984; Hussain, 1995). Degranulation of mast cells releases potent biologically active mediators which produce the symptoms in a Type I hypersensitivity reaction. The association of nasal polyps and allergic reaction has long been accepted and as the epithelium of the middle ear and the nasopharynx is contiguous, it might be reasonable to speculate that allergy too has a role in the pathogenesis of aural polyps. However, there is no

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TABLE I
CAUSES OF AURAL POLYPS

Inflammatory
Infection – specific
tuberculosis
syphilis
– nonspecific
bacterial
fungal
protozoal
Cholesteatoma
Granulomatous conditions
eosinophilic granuloma
xanthomatosis
Foreign body
Neoplasm
Benign
Malignant – primary
– secondary

evidence of a significant association between allergy and aural polyps.

Predictor of cholesteatoma

Attempts have been made to identify those ears most at risk of harbouring underlying cholesteatoma. Gliklich *et al.* (1993) in their retrospective study of aural polyps in children found that the co-occurrence of conductive hearing loss to be a good predictor of cholesteatoma. However, this was not found to be helpful in adult patients. Instead, radiological evidence of bony erosion of the mastoids was reported as a good predictor of underlying cholesteatoma (Rhys Williams *et al.*, 1989). However, bone destruction is only seen in the more advanced cases and a negative X-ray does not exclude a cholesteatoma. In the majority of cases, plain X-rays of the temporal bone are unhelpful and not routinely used.

Milroy *et al.* (1989) showed that histological examination of aural polyps can be used to predict the presence or absence of an underlying cholesteatoma. In their study, the finding of a combination of raw granulation tissue with keratin as masses or flakes in an aural polyp, makes the presence of an underlying cholesteatoma very likely, with a probability of between 70–80 per cent. On the other hand, the absence of these features, coupled with the presence of a covering epithelium, a fibrous core with glands and lymphoid aggregates has a 70–80 per cent chance of cholesteatoma being absent. However, other studies (Hussain, 1991; Gliklick *et al.*, 1993; Dawes and Soames, 1995) have shown that this method of using histopathological features is an unreliable predictor of cholesteatoma. It is too nonspecific and a false-positive rate of 44 per cent has been reported (Gliklick *et al*, 1993). Clinical suspicion after meticulous assessment of the ear under direct vision, preferably with an operating microscope, appear to be the best predictor of cholesteatoma (Dawes and Soames, 1995). Recurrent aural polyp disease despite adequate medical treatment should also alert the clinician to the likelihood of an underlying cholesteatoma.

Conservative treatment

A trial of conservative treatment is indicated when there is no clinical suspicion of neoplasia, cholesteatoma, inner ear or intracranial pathology. This consists mainly of suction clearance under magnification in the outpatient clinic and the application of a topical steroid/antibiotic laden wick (Hussain, 1992). Ear swabs may be taken for bacteriological culture although in the majority of cases the organisms involved are *Proteus* sp., *Pseudomonas* sp., coliforms and *Staphylococcus* sp. The polyp may be cauterized with solid silver nitrate.

Conservative treatment decreases inflammatory activity in the ear and may render subsequent surgery to be less extensive. Middle ear surgery is easier to perform and more likely to be successful if the ear is inactive. Browning *et al.* (1988) found that about 50 per cent of active mucosal chronic otitis media will become inactive after a four-to-six week medical treatment provided compliance is greater than 70 per cent. However, the relapse rate once therapy is discontinued is high.

Surgical treatment

Permeatal removal of inflammatory polyp is carried out when there is no improvement on conservative treatment or if the polyp completely occludes the external auditory canal. It is of paramount importance in all cases to attempt to identify the origin of the polyp. Aural polyp can arise from the mucosa overlying a dehiscent facial nerve or the stapes footplate and care is required to prevent trauma to these structures. In those cases with large polyps, it may be appropriate, indeed essential, to make an endaural incision in order to allow adequate access to the site of origin. The ear should be examined under magnification and the presence of cholesteatoma, the site and extent of retraction pocket or tympanic membrane perforation noted. Removal of a ventilation tube, if present, is recommended. All aural polyps removed should be submitted to histological examination. Rhys Williams *et al.* (1989) reported a 73 per cent success rate of rendering tubotympanic chronic otitis media inactive following aural polypectomy and treatment with topical antibiotics. In atticoantral disease, the success rate is significantly lower and a more radical operation should be considered.

Recurrent aural polyp disease despite permeatal polypectomy and adequate medical treatment warrants surgical exploration in the form of tympanomastoidectomy. In non-cholesteatomatous mucosal chronic otitis media, mastoidectomy is required to eradicate a reservoir of infection in the mastoid air cell system. In ears found to contain cholesteatoma at the time of polypectomy, subsequent surgical treatment is necessary. In the presence of complications such as vertigo, facial paralysis or earache, urgent surgical exploration is required.

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Conclusions

Aural polyps indicate active ear disease. The ear should be treated appropriately and with respect. The initial management of inflammatory aural polyps is conservative. An underlying cholesteatoma or neoplasm has to be excluded; the former by clinical examination and the latter by histology. Any polyp that does not resolve on intensive conservative treatment should be removed for histological examination. We recommend an endaural incision to assist in polypectomy if access is inadequate or if the polyp is large. Tympanomastoidectomy should be considered in aural polyp associated with cholesteatoma or when the polyp recurs/persists despite adequate conservative treatment.

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