

Foreign Body Granuloma of the External Auditory Canal

Kevin C. Harris, MD*; Stephen F. Conley, MD*‡; and Joseph E. Kerschner, MD*

ABSTRACT. External auditory canal polyps are most commonly inflammatory in nature but may also manifest more severe disease. Prolonged conservative therapy may delay the correct diagnosis and appropriate intervention. A case is presented of a child with chronic otorrhea treated for 4 months with topical drops and antibiotics. On referral, a large external auditory canal polyp was confirmed to represent a foreign body granuloma covering a large electrical cap, with erosion approaching the facial nerve. External auditory canal polyps that fail to respond promptly to conservative medical therapy warrant a computed tomography scan and surgical exploration with biopsy. *Pediatrics* 2004;113:e371–e373. URL: <http://www.pediatrics.org/cgi/content/full/113/4/e371>; aural polyp, external auditory canal, EAC, foreign body granuloma.

ABBREVIATIONS. EAC, external auditory canal; CT, computed tomography; LCH, Langerhans' cell histiocytosis.

Aural polyps typically present in the external auditory canal (EAC) but may arise from the external ear, middle ear, or adjacent structures. The polyps usually are associated with otorrhea and present as chronic otitis media with or without cholesteatoma.¹ Conservative treatment with topical steroids and antibiotics is recommended before surgical intervention.² However, prolonged topical therapy for persistent aural polyps may delay diagnosis of more serious disease.¹ This case report emphasizes the importance of additional patient evaluation in patients with persistent aural polyps and explores the differential diagnoses.

CASE REPORT

A 9-year-old boy presented with a 4-month history of painless left otorrhea diagnosed as chronic otitis media by his pediatrician. There was no prior history of external otitis, otitis media, trauma, or otologic surgery. Treatment over 4 months with repeated courses of oral antibiotics and topical antimicrobial/steroid drops were without effect. On referral, the left external ear and mastoid were not tender to palpation. A large granulation tissue polyp was noted in the EAC, originating from the posterior-inferior area. The visible portion of the tympanic membrane was mobile without apparent middle ear effusion. A computed tomography (CT) scan of the temporal bones confirmed an EAC mass with partial mastoid air cell opacification but without signs of mastoid bone destruction. The patient underwent surgical exploration, with a

granulation tissue polyp found to conceal a plastic electrical cap measuring 0.6 × 1.8 cm (Fig 1). After removal of the foreign body, the inferior EAC defect was packed with topical antimicrobial/steroid drop-soaked Gelfoam and left to heal by secondary intention. Review of the preoperative CT scan verified the conical object eroding inferiorly through the bony EAC toward the styloid process adjacent to the facial nerve (Fig 2). Facial nerve function remained normal after surgery. Final histopathology revealed foreign body giant cell reaction with chronic inflammation, consistent with a foreign body granuloma. At the 2-month follow-up examination, the patient's EAC defect had healed and completely epithelialized. Prolonged clinical surveillance over 2 years confirmed no persistent defect of the EAC or evidence of EAC cholesteatoma.

DISCUSSION

An EAC polyp may arise from the external ear, middle ear, or adjacent structures such as the parotid and temporomandibular joint. These polyps are associated with numerous pathologies ranging from inflammatory to malignant processes. The most common cause of aural polyps in children is chronic otitis media with or without cholesteatoma.¹ The incidence of cholesteatoma in ears presenting with polyps varies from 25% to 45%, increasing up to 60% in children.³ Gliklich et al⁴ reviewed 35 pediatric patients presenting with primary aural polyps and found 43% with the diagnosis of chronic otitis media with effusion, 29% with cholesteatoma, and 23% with retained ventilation tubes. Although no malignant tumors were identified in that series, the overall incidence of either granulomatous or neoplastic disease is estimated at up to 3% of surgical specimens in some studies.^{4,5}

Foreign bodies of the EAC follow chronic otitis media in frequency as an inflammatory etiology for an EAC polyp. Such foreign bodies may take many forms and are a relatively common problem seen and managed by a variety of physicians and other health care providers. More difficult cases are often referred to otolaryngologists for removal. In their retrospective review of 698 cases of pediatric EAC foreign bodies, Schulze et al⁶ suggest otolaryngologic referral for specific foreign body types, location near the tympanic membrane, presence for >24 hours, patient age of <4 years, and for those foreign bodies that have failed prior removal attempts. Presenting symptoms of an aural foreign body may include pain, drainage, bleeding, hearing loss, or a suggestive history by the guardian. On examination, the foreign body is usually evident; however, a secondary otitis externa may obscure the diagnosis. If the process is prolonged, an inflammatory granulation tissue polyp may be seen, as occurred in this reported case.

Foreign body granulomas arise from a well-de-

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Fig 1. Plastic electrical cap retrieved from the EAC.

scribed foreign body reaction.⁷ The hallmark of all foreign body reactions is phagocytosis or attempted phagocytosis. It begins with the recognition of a “non-self-antigen” by immunogenic cells, which attempt to remove the foreign body via phagocytosis. If the object is too large, the phagocytes unite to form foreign body giant cells in an attempt to surround and isolate the foreign body. If the object is macroscopic, the giant cells fail, and the inflammatory process becomes persistent, forming foreign body granulomas. As seen in this report, the foreign body reaction has the ability to be an erosive process as well. Thus, foreign body granulomas are foci of persistent inflammation associated with material (in this case, a plastic electrical cap) that the body is unsuccessfully attempting to remove by phagocytosis. However, foreign body granulomas also have been described in relation to many other materials includ-

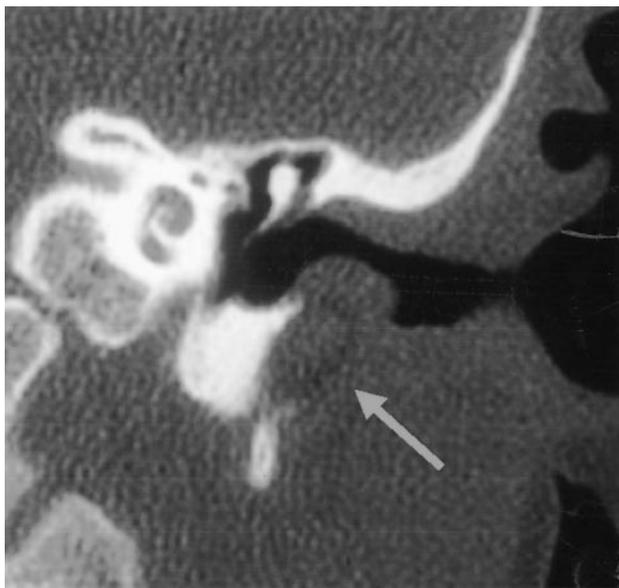


Fig 2. Coronal CT scan with the arrow indicating the foreign body eroding inferiorly through the left bony EAC toward the styloid process.

ing hair, talc, chloromycetin powder, cotton, and Dacron.⁷

Other morbid diseases may present less commonly as EAC polyps. Langerhans’ cell histiocytosis (LCH) is a disease of unknown etiology that unifies the entities of eosinophilic granuloma, Hand-Schuller-Christian disease, and Lettere-Siwe disease. It is a destructive process that can present as single- or multisystem disease with involvement of the head and neck in 70% to 80% of affected children.⁸ LCH occurs from the proliferation of histiocytic (or Langerhans) cells, which have antigen-processing abilities and are characterized ultrastructurally by the presence of tennis-racket-shaped Birbeck granules. The disease is rare, with the estimated incidence in the pediatric population of 3 cases per 1 million children per year.⁹ Quraishi et al¹⁰ reported that 50% of patients with LCH had aural symptoms, of which approximately half had no other lesions at the time of presentation. LCH may be misdiagnosed frequently as otitis externa or chronic otitis media.¹ For single-system disease, postauricular swelling and otorrhea are most common, whereas multisystem disease presents with skin rash, otorrhea, organomegaly, lymphadenopathy, pulmonary symptoms, oral lesions, or cerebellar dysfunction.^{9,11}

LCH is suggested if an aural polyp is seen without disease of the middle ear. Aural polyps in LCH tend to arise in the mastoid and erode the posterior-superior canal wall, often sparing the middle ear and ossicles; the tympanic membrane is usually normal. CT scanning will reveal an osteolytic lesion, but the diagnosis is made histologically. Patients with single-site disease can be managed with topical or intralesional corticosteroids, with or without polypectomy or curettage, whereas multisystem disease may be treated with high-dose corticosteroids with consideration of chemotherapy. Low-dose radiation therapy is reserved only for symptomatic control of persistent pain or when vital structures are at risk.⁸

Other rare inflammatory causes of aural polyps include granulomatous diseases or fungal infection.³ Although much more common in the early 20th century, tuberculous granulation tissue polyps, typically painless, continue to occur today.¹² *Mycobacterium tuberculosis* was the underlying diagnosis in 1 of 35 patients in the Gliklich et al⁴ study of children presenting with aural polyps, with the histology demonstrating characteristic granulomas and microabscesses with acid-fast bacilli present. In contrast, Wegener’s granulomatosis also may rarely present in children as an aural polyp, within the classic triad of necrotizing granulomas of the upper and lower respiratory tracts, focal or proliferative glomerulonephritis, and systemic vasculitis of small- and medium-sized vessels.¹³ Otologic manifestations are a frequent presenting complaint, with secretory otitis media and chronic suppurative otitis media being the most common. Finally, acquired immunodeficiency syndrome patients with extrapulmonary *Pneumocystis carinii* infection may present with an aural polyp, possibly as the initial presentation of acquired immunodeficiency syndrome.^{3,14–16} Infec-

tion of the middle ear is thought to occur via retrograde spread through the eustachian tube.

Frank neoplasms may rarely present as aural polyps. Rhabdomyosarcoma is a malignant tumor of mesenchymal tissue that involves the head and neck in 35% to 40% of cases.¹⁷ The embryonal variation is the most common subtype in the head and neck, whereas involvement of the temporal bone itself occurs in only 7% of cases.¹⁸ In a study of 199 patients with head and neck rhabdomyosarcoma, 22 originated from the middle ear, and only 2 originated from the external ear.¹⁷ Among patients with rhabdomyosarcoma originating in the ear, 83% presented with a mass in the external ear, 64% had ipsilateral cranial nerve palsy, and 42% had otorrhea. The diagnosis of rhabdomyosarcoma is made histologically, whereas staging is based on surgical resectability.¹⁸ Treatment is radiation therapy in combination with chemotherapy using vincristine, actinomycin, and cyclophosphamide.¹⁹ Although staging depends on completeness of surgical resection, the role of surgery may be limited to simple biopsy instead of mastoidectomy or temporal bone resection.²⁰ When the tumor is isolated to the external ear, the prognosis seems favorable, thought to be secondary to prompt removal and lack of meningeal extension.²¹

Bearing in mind the more common infectious and inflammatory etiologies of aural polyps, initial treatment is appropriate culture-directed medical therapy.⁴ Topical corticosteroid and antibiotic therapy may lead to quick resolution of an aural polyp associated with chronic otitis media. In other disease processes, this therapy may reduce inflammation, polyp size, and drainage and simplify the diagnosis or surgical planning.² For resistant disease, knowledge of the differential diagnosis is important in avoiding a delay in diagnosis and potential morbidity. An audiogram and CT scan should be performed before any surgical intervention.⁴ Surgical exploration, with adequate tissue specimens, is critical for a histologic diagnosis to guide therapy.

This case illustrates the potential difficulties from prolonged treatment of an aural polyp without a definitive diagnosis. Although this polyp originated from a benign process, the facial nerve was at risk from the expanding foreign body granuloma. The morbidity of long-term EAC debridement and possible EAC reconstruction fortunately were avoided in this case. Delay in diagnosis of a neoplastic process has even greater potential for morbidity.

CONCLUSIONS

Aural polyps should receive initial treatment with otic drops and oral antibiotics as indicated. If the

process persists after several weeks of this therapy, strong consideration should be given to referral for additional diagnosis and treatment. CT imaging is key in assessing any associated bone destruction and may aid diagnosis. Surgical exploration and biopsy may be needed for diagnosis and should be undertaken in a timely fashion to avoid morbidity associated with a delay in diagnosis.

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