INTRODUCTION

Invasive mycotic infections of the head and neck have been steadily increasing over the past several decades. Otomycosis is the term generally used to describe fungal infections of the ear. Diabetes and the increasing global incidence of acquired immunodeficiency syndrome (AIDS) are major contributors.

Fungal infection of the external auditory canal is common and generally managed conservatively. Malignant or necrotizing otitis externa is a rare, potentially fatal entity involving the external auditory canal and surrounding tissue, mastoid, or skull base. This disease most commonly affects elderly males with underlying diabetes mellitus, but has been described in children, immunocompromised individuals, and very rarely in immunocompetent adults. Invasive fungal otitis externa mandates aggressive treatment as it may result in cranial nerve palsies, perilymphatic fistula, hearing loss, osteomyelitis, great vessel thrombosis, or mortality.

Aspergillus is ubiquitous in nature and generally does not cause symptoms in immunocompetent individuals. Otopathogenic Aspergillus species are extremely uncommon; with the first case described only 25 years ago. We report on a case of invasive aspergillosis in the infratemporal fossa masquerading as chronic otitis externa that was ultimately diagnosed by surgical exploration and successfully managed with aggressive antifungal therapy, including intravenous amphotericin B.

CASE REPORT

A 70-year-old man with type II diabetes mellitus presented with progressively worsening left sided otalgia and bloody otorrhea. He had a known history of fungal otitis externa, which had been managed with local debridement and topical antifungals. Examination demonstrated tenderness over the left condylar head, and extension of disease to the left external auditory canal and around the dura. CT detected bone erosion, abscess formation, and mastoid involvement and predicts chronicity and recurrence of disease. Nuclear imaging including gallium and technetium scan has been the mainstay for diagnosis and follow-up of malignant otitis externa of any etiology.

Aspergillus is a saprophyte. Invasive disease is most commonly seen in immunosuppressed individuals. The clinical presentation of otomycosis is not diagnostic of Aspergillus species. The patient’s treatment was modified to include amphotericin B lipid complex and the patient symptomatically improved, eventually demonstrating clinical resolution of further fungal disease.

Diagnosis is augmented by radiologic imaging. MRI is best for soft tissue delineation and may reveal a hyperintense signal within fatty marrow spaces or along the dura. CT detects bone erosion, abscess formation, and mastoid involvement and predicts chronicity and recurrence of disease. Nuclear imaging including gallium and technetium scan has been the mainstay for diagnosis and follow-up of malignant otitis externa of any etiology.

Conclusions

Aspergillus species is a rare cause of invasive otitis externa. In rare instances, the organisms may become invasive. Aspergillus is most commonly associated with immunocompromised patients and disorders. Oxygen tension is low in diseased tissue and Aspergillus utilizes gluten to outgrow host defenses. The degree of host immune suppression may determine the speed and extent of infection.

One month after discharge, the patient presented with increasing left sided facial pain and severe otalgia. Repeat imaging was obtained, including MRI, CT, and gallium scans, and persistent infection in the auricular region and infratemporal fossa was noted. The patient underwent extensive surgical exploration via a combined pauracular and infratemporal fossa approach. Multiple biopsies of the left tympanic bone and mandibular condyle were taken, in addition to exploration of the left middle ear, TMJ, and jugular vein at the skull base to determine patency. The deep tissue biopsies of the left tympanic bone and TMJ later yielded a focal Aspergillus organism (Figure 3). Thereafter the patient’s therapeutic regimen was modified to include intravenous amphotericin B and later oral voriconazole. Clinical symptoms and exam findings rapidly improved and in follow-up the patient demonstrated complete resolution of disease.

DISCUSSION

Otomycoses are almost always limited to the external auditory canal. In rare instances, the organisms may become invasive. Aspergillus is most commonly associated with immunocompromised patients and disorders. Oxygen tension is low in diseased tissue and Aspergillus utilizes gluten and proteases to impair host defenses. The degree of host immune suppression may determine the speed and extent of infection.

Aspergillus was first described in 1729 by the Italian botanist Micheli. It is a filamentous and ubiquitous saprophyte. Invasive disease is most commonly associated with immunocompromised patients and disorders. Oxygen tension is low in diseased tissue and Aspergillus utilizes gluten to outgrow host defenses. The degree of host immune suppression may determine the speed and extent of infection.

REFERENCES

8. Walsh TJ, Anaissie EJ, Denning DW, et al. Infectious Diseases Society of America. National infectious disease recommendations have been published for invasive fungal infection, thus a multidisciplinary approach is required.
9. Bellini C, Antonini P, Ermanni S, Dolina M, Passega E, Bernasconi E. Malignant otitis externa, and occurs primarily in immunocompromised patients. The organism is usually indolent, but invasive disease can be life threatening.
10. Tissue biopsy is necessary for diagnosis, and the best management consists of aggressive surgical debridement, systemic antifungals, and treatment of the underlying immunologic deficiency. A high level of clinical suspicion along with a multidisciplinary team approach can help improve the outcome of patients afflicted with invasive otitic Aspergillus, and survival rates can approach 85%.