Fungal Otomastoiditis caused by Aspergillus fumigatus in an immunocompromised patient: case report and literature review

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ABSTRACT
This case report describes a 10-year-old male diagnosed with high-risk B-cell Acute Lymphoblastic Leukemia at a tertiary care center undergoing consolidation with the Total XV protocol. The patient, with a history of Rhino-sinusal Aspergillosis and secondary prophylaxis, presented with recurrent middle ear infections, bilateral non-purulent serous discharge, otalgia, mastoid pain, persistent high-grade fever, and profound neutropenia. Fungal otomastoiditis was diagnosed and treated with targeted antifungals, yielding a positive response.
**Keywords:** Aspergillus fumigatus, invasive aspergillosis, Otomastoiditis, filamentous fungi, neutropenia, triazole antifungals.

**1 INTRODUCTION**

Otomicosis is an infection of the ear canal caused by yeast and filamentous fungi. It accounts for 9-27% of patients with external otitis and is the most prevalent etiological factor in immunocompromised patients. It can lead to notable complications such as mastoiditis or the spread of the infection to the mastoid bone tissue. Aspergillus fumigatus, the most ubiquitous fungal species in the environment, holds significant clinical importance as a leading cause of invasive aspergillosis, particularly in immunocompromised individuals (1)(2)(3).

**2 CASE DESCRIPTION**

A 10-year-old male with a diagnosis of high-risk B-cell Acute Lymphoblastic Leukemia with central nervous system infiltration during the consolidation phase with Total XV protocol. History of Rhino-sinusal Aspergillosis with secondary prophylaxis. The patient presented with recurrent middle ear infections, initial non-purulent bilateral serous discharge, otalgia, and mastoid region pain, accompanied by persistent high-grade fever and profound neutropenia. Empirical management was initiated with fourth-generation cephalosporin, escalating to Carbapenem. Otorhinolaryngology evaluation requested a contrast-enhanced CT scan, revealing bilateral tympanic perforation, cortical osteitis, and soft tissue swelling (Figure 1). Biopsy and culture were requested due to suspected angioinvasiveness based on previous history, and empirical treatment with Liposomal Amphotericin B at 5mg/kg/day was initiated. The culture reported the development of Aspergillus fumigatus (figure 2). Subsequently, the patient underwent left middle turbinate, partial left inferior turbinate, anterior and posterior ethmoidectomy, and transnasal sphenoidotomy; complete treatment with Voriconazole (triazole) for 42 effective days resulted in subsequent clinical improvement.
Figure 1: Contrast-enhanced CT scan of the ear

Source: Diagnostic and Therapeutic Imaging Service of the Centro Médico Nacional 20 de Noviembre.

Figure 2. Aspergillus fumigatus microculture with lactophenol blue 40X

Source: Laboratory of the Centro Médico Nacional 20 de Noviembre.

3 DISCUSSION

Mycological examination includes direct examination with 30% KOH, lactophenol blue or Amann's lactophenol, allowing observation of fungal elements. Treatment of Fungal Otomastoiditis involves eliminating the fungal focus; triazoles are the first-line antifungals used to treat patients suffering from aspergillosis and have brought down mortality rates to 30% or lower in invasive aspergillosis, which is almost always fatal if untreated; for Aspergillus fumigatus, Voriconazole is recommended due to its proven effectiveness, and Itraconazole can be used for maintenance therapy due to its broad spectrum of activity (1)(4).

4 CONCLUSION

Otomicosis caused by Aspergillus should be suspected in immunocompromised patients presenting symptoms such as itching, hearing loss, and otorrhea for prompt diagnosis and targeted management. Early identification can help prevent complications, such as otomastoiditis, which has the potential to be life-threatening (5).
REFERENCES


