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Case Report

A case of fungal otitis externa caused by coinfection of *Candida auris* and *Aspergillus flavus*Yukitaka Ito^a, Natsuki Inoue^{b,*}, Naomi Kaneko^a, Masanobu Otsuka^a, Shintaro Yamasaki^b, Mamoru Yoshikawa^b^a Division of Clinical Microbiology Laboratory, Toho University Ohashi Medical Center, 2-22-36 Ohashi, Meguro-ku, Tokyo, 153-8515, Japan^b Department of Otorhinolaryngology, Toho University Ohashi Medical Center, 2-22-36 Ohashi, Meguro-ku, Tokyo, 153-8515, Japan

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ABSTRACT

Fungal otitis externa is a disease encountered occasionally and is caused mostly by *Aspergillus* or *Candida* spp. We report a woman with fungal otitis externa who also had typical findings in the external auditory canal. The results of a culture showed coinfection with *Candida auris* and *Aspergillus flavus*. Identification of both species was performed by sequencing analysis of the 26S rDNA (D1/D2) and β -tubulin regions. Additionally, the newly developed CHROMagar™ *Candida* Plus medium was a useful tool for the easy and rapid identification of *C. auris*. To the best of our knowledge, this is the first report of fungal otitis externa caused by coinfection with *C. auris* and *A. flavus*. This case showed good susceptibility to many antifungal drugs and fortunately had a good clinical course with 1% bifonazole cream, which was applied to the fungal coinfection. Notably, *C. auris* is a multidrug-resistant yeast-like fungus. The increase in drug-resistant fungi and co-infections caused by these pathogens can make the diagnosis and treatment more complex and difficult. To solve these problems, performing rapid and accurate identification and susceptibility testing using chromogenic medium and molecular biological analysis would be useful.

1. Introduction

Superficial and cutaneous fungal infection occasionally affects the skin and nails, including the external auditory canal. Kiakojuri et al. reported that, of 237 cases of fungal otitis externa, 74% were *Aspergillus* spp. and 26% were *Candida* spp [1]. To the best of our knowledge, there have been few reports of coinfection with *Aspergillus* spp. and *Candida* spp. in fungal otitis externa.

Candida auris is a global threat because it can colonize the skin, medical equipment, and hospital environment, causing nosocomial, bloodstream, and urinary tract infections [2]. *C. auris* has been identified on every continent and in 40 countries [3] after it was first isolated from the external auditory canal of a Japanese patient in 2009 [4]. There have not been many reports of fungal infections caused by *C. auris*, and it is not a major group of fungi for clinicians. One of the reasons for this lack of reports may be the difficulty of identification in the clinical laboratory.

We report a case of fungal otitis externa with details of the identification of the causative fungi as *C. auris* and *Aspergillus flavus* and of the clinical course. To the best of our knowledge, this is the first report describing fungal otitis externa caused by coinfection with *C. auris* and *A. flavus*.

2. Case report

A female patient in her 70s visited the Department of Otorhinolaryngology, Toho University Ohashi Medical Center to request a hearing aid owing to age-related hearing loss in her right ear. An examination of her ears showed that her right ear was normal, but her left ear was not. The left tympanic membrane was perforated, and white spores on crusts were observed in the external auditory canal. She had undergone surgery for chronic otitis media in her left ear as a child. She was deaf and had cavity problems after open cavity mastoidectomy. She was in good health and had no history of diabetes mellitus, other diseases, or

Abbreviations: CCP, CHROMagar™ *Candida* Plus; CDC, Centers for Disease Control and Prevention; MIC, minimum inhibitory concentration.

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