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Management of Otomycosis in Pregnancy: A Case Study

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Abstract

Otomycosis is a fungal infection of the external auditory canal that commonly occurs in tropical and humid regions such as Indonesia. Pregnancy is a unique physiological condition characterized by hormonal and immunological changes that may increase susceptibility to fungal infections while simultaneously limiting therapeutic options due to concerns regarding fetal safety. This report details the clinical management of a 25-year-old pregnant patient (G1P0A0) at 24 weeks gestation who presented with complaints of severe pruritus and aural fullness in the right ear. Clinical examination revealed characteristic fungal debris with a "white fluffy" appearance. Management included aural toilet followed by the topical solution, a treatment selected for its high efficacy and established safety during pregnancy. The successful resolution of the infection without maternal or fetal complications reinforces the efficacy of combined mechanical debridement and topical therapy. This case underscores the importance of specialized ENT care in secondary referral hospitals for managing infections in high-risk populations.

INTRODUCTION

The epidemiological landscape of ontological infections in Indonesia is heavily influenced by its tropical climate, characterized by high humidity and temperature, which serve as primary catalysts for the growth of saprophytic fungi. Among these infections, otomycosis a fungal infection of the external auditory canal accounts for a significant portion of ENT consultations. For the general population, otomycosis is typically a bothersome but manageable condition; however, for the pregnant patient, it presents a complex clinical challenge that necessitates a balance between effective maternal treatment and the stringent requirements of fetal safety (Bojanović, 2023; Kim, 2018; Jamwal et al., 2021).

Pregnancy is a state of profound physiological transformation. The elevation of sex hormones, specifically estrogen and progesterone, triggers a series of multi-systemic changes that affect the ear, nose, and throat. In the external auditory canal, these changes manifest as increased Basal Metabolic Rate (BMR), fluid retention, and alterations in the chemical composition of cerumen (Sherlie & Varghese, 2014). Normally, cerumen acts as a protective barrier with a pH between 4 and 5, which inhibits the growth of both bacteria and fungi. During pregnancy, the shift toward a more alkaline pH and the increased secretion of sebum under the influence of estrogen create an environment where common fungi like *Aspergillus* and *Candida* can easily take hold (Bojanović, 2023; Jamwal et al., 2021).

Furthermore, the immunological adaptation of the pregnant woman, characterized by a shift toward Th2-dominant responses to prevent fetal rejection, results in a state of relative local immunosuppression. This decreased inflammatory response can lead to the exacerbation of pre-existing fungal colonization or the rapid development of new infections. Given that

most fungal infections are unilateral and can cause intense pruritus, pain, and conductive hearing loss, the impact on the patient's quality of life during the already taxing gestational period is substantial. Management strategies for otomycosis in pregnancy are limited by the potential teratogenicity of many systemic antifungal agents. Systemic azoles, such as oral Fluconazole, are associated with fetal skeletal and cardiac defects when administered at high doses during the first trimester. Consequently, the clinical consensus prioritizes non-systemic interventions, primarily aural toilet (mechanical debridement) and the use of topical antifungals with negligible systemic absorption, such as Clotrimazole (Sherlie & Varghese, 2014; Sogebi et al., 2024; Patel et al., 2021).

This report details the implementation of these strategies providing a template for the safe and effective management of otomycosis in the pregnant population. This case study therefore aims to describe the clinical presentation, diagnostic process, management, and treatment outcome of otomycosis in a pregnant woman treated at a secondary referral hospital. More specifically, this report seeks to explain the role of aural toilet and topical clotrimazole therapy as a safe and effective treatment strategy for otomycosis during pregnancy. The benefit of this study is both theoretical and practical. Theoretically, this report contributes to the limited body of knowledge regarding otomycosis management in pregnancy, particularly in tropical settings where fungal ear infections are frequently encountered. Practically, this study is expected to provide useful clinical insight for physicians, especially otolaryngologists and general practitioners, in selecting appropriate and safe treatment for pregnant patients with otomycosis. In addition, this report may serve as a reference for future studies and as supporting evidence for the development of patient-centered management strategies in high-risk populations.

RESEARCH METHOD

This study employed a qualitative descriptive method with a case report design. This approach was used to systematically describe the diagnostic process, management, and therapeutic outcomes in a pregnant patient with otomycosis treated at a secondary referral hospital. The focus of the study was directed toward the patient’s clinical characteristics, otolaryngological examination findings, therapeutic options administered, and the clinical response following intervention and treatment. The reported case involved a 25-year-old woman, gravida 1 para 0 abortus 0 (G1P0A0), at 24 weeks of gestation, who presented with severe pruritus, a sensation of fullness in the right ear, and subjective hearing loss. The ENT physical examination revealed fungal debris with a white fluffy appearance accompanied by black specks, erythema of the external auditory canal, and an intact tympanic membrane. Based on these findings, the patient was managed with aural toilet as a form of mechanical debridement, followed by the administration of topical 1% Clotrimazole, along with counseling to keep the ear canal dry and avoid the use of cotton buds. Evaluation of therapeutic outcomes was conducted through a follow-up visit after seven days to assess improvement in subjective symptoms and changes in otoscopic findings. The data presented in this report were obtained from medical history taking, physical examination, clinical documentation, therapeutic intervention, and follow-up results. The data were presented using a narrative-analytical approach to demonstrate that the combination of mechanical cleaning and topical antifungal therapy may serve as a safe and effective management option for

pregnant patients with otomycosis. This methodological description was developed based on the details of the case, clinical examination, intervention, and follow-up presented in the source manuscript.

Case Report

A 25-year-old female patient (G1P0A0) at 24 weeks of gestation with primary complaint was persistent and intense itching (pruritus) in the right ear canal, which had been progressively worsening over the preceding two weeks. She also reported a sensation of fullness in the same ear and a perceived decrease in hearing, which she described as a "blocked" sensation. The patient admitted to a history of frequent ear manipulation using cotton swabs, a practice she increased significantly after the itching began. She denied any history of ear discharge, fever, or previous ear surgeries. There were no reported allergies to medications. Her current pregnancy was being monitored at the hospital's obstetrics department and was reported as uncomplicated, with no signs of gestational diabetes or hypertension.

The physical examination began with an assessment of the patient's vital signs, which were within normal limits for a pregnant woman in the second trimester. The ENT examination focused on the external auditory canal (EAC) observed that the right ear canal was partially occluded by a dense, whitish, and somewhat moist mass of debris. The debris had a characteristic *white fluffy* appearance, with fine filamentous structures (hyphae) visible on the surface. Interspersed within the whitish mass were small black specks. The skin of the canal was erythematous, particularly in the medial portion near the tympanic membrane. Tragal tenderness was present but mild, which helped distinguish the condition from severe bacterial otitis externa. The tympanic membrane was partially visible and appeared to be intact, with no signs of perforation or middle ear effusion. The left ear examination was completely normal, showing a healthy canal and an intact tympanic membrane.

The management strategy implemented followed the dual-pillar approach of mechanical debridement and targeted pharmacotherapy, with a strong emphasis on fetal safety. The first and most critical step was a thorough aural toilet. Meticulously removed all visible fungal elements and epithelial debris from the right ear canal. This mechanical removal is essential to reduce the fungal load and allow the subsequent topical medication to reach the surface of the canal skin. Following the suctioning, the canal was gently dried using a sterile cotton mop, as moisture is the primary driver of fungal persistence.

After the canal was cleaned and dried, the patient was prescribed topical Clotrimazole 1% solution (drops). Clotrimazole was selected because of its broad-spectrum activity against both *Aspergillus* and *Candida* and its proven safety profile during the second trimester of pregnancy (FDA Category B). The patient received counseling on ear hygiene, specifically instructed to avoid the use of cotton swabs or any other objects in the ear canal, keep the ear canal strictly dry, especially while showering, and refrain from swimming or exposing the ear to high-moisture environments.

The patient returned for a follow-up appointment seven days after the initial intervention. She reported a dramatic improvement in her symptoms; the intense pruritus had completely resolved, and the sensation of fullness had disappeared. A repeat examination using otoscopy showed that the right ear canal was clean, with no evidence of new fungal growth and a significant reduction in skin erythema.

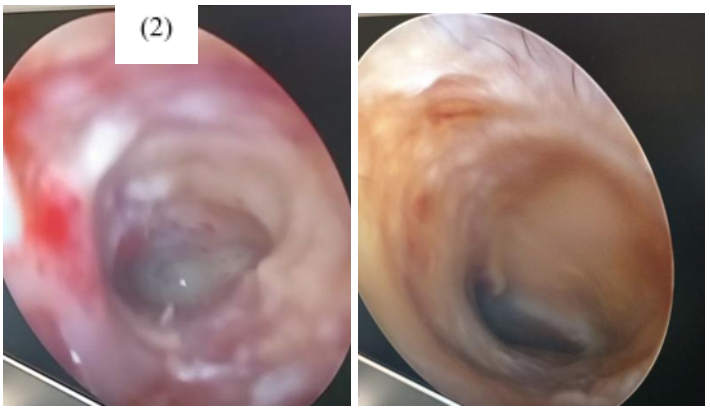

Figure 1. Otoscopic comparison before and after treatment showing fungal debris clearance and improvement of the external auditory canal following aural toilet and topical antifungal therapy.

Source: Clinical documentation (primary data) of the present study.

RESULTS AND DISCUSSION

The predisposition of pregnant women to otomycosis is a multifactorial phenomenon involving anatomical, biochemical, and immunological changes. Pregnancy is characterized by a significant surge in circulating sex hormones, primarily estrogen and progesterone, which modulate various physiological functions beyond the reproductive system. These hormones have a documented impact on the mucous membranes and integumentary structures of the head and neck (Jamwal et al., 2021; Sherlie & Varghese, 2014).

One of the most significant changes occurs in the external auditory canal. The increased metabolic rate (BMR) and expansion of plasma volume during pregnancy lead to generalized fluid retention and mucosal edema. In the ear, this can lead to swelling of the soft tissues of the EAC, which may narrow the canal and trap moisture, creating a warm, humid micro-environment that is ideal for fungal growth. Moreover, estrogen exerts a direct cholinergic effect, increasing the production of acetylcholine and stimulating the activity of the sebaceous and ceruminous glands. Under normal circumstances, cerumen is a critical defense mechanism; its lipid content provides a hydrophobic barrier, and its acidic pH (4–5) inhibits the proliferation of saprophytic fungi. However, the hormonal milieu of pregnancy can alter the chemical composition of cerumen, often shifting its pH toward alkalinity. A more alkaline pH in the EAC is a known risk factor for both bacterial and fungal otitis externa, as it removes the natural inhibitory environment for pathogens like *Aspergillus Niger* and *Candida albicans* (Bojanović, 2023; Sherlie & Varghese, 2014; Abraham et al., 2025).

Immunologically, pregnancy is often described as a state of selective immunosuppression. To protect the fetus—which is a semi-allograft—the maternal immune system shifts from a Th1 (cell-mediated) to a Th2 (humoral) dominant response. This shift, combined with elevated levels of serum cortisol, reduces the body's inflammatory response. While this is essential for a successful pregnancy, it impairs the local defense mechanisms of the skin in the EAC, allowing common opportunistic fungi to transition from benign colonization to active infection (Sherlie & Varghese, 2014).

Otomycosis is primarily an opportunistic infection caused by saprophytic fungi that are ubiquitous in the environment. In Indonesia, and specifically in industrial and humid

areas, the most frequently isolated pathogens are *Aspergillus* and *Candida*. In this case, the presence of whitish debris with black specks strongly suggested *Aspergillus Niger*, which is the most common causative agent, responsible for approximately 45–50% of otomycosis cases in humid climates. *Candida* species are the second most common, often associated with a "cheesy" or "creamy" discharge and frequently seen in patients who have recently used topical antibiotics, which eliminate competing bacterial flora (Bojanović, 2023; Kim, 2018; Kurnatowski & Filipiak, 2001).

Patients in these often resort to frequent ear cleaning with cotton swabs to manage moisture or itching, which introduces local trauma and creates entry points for fungal spores. The case subject's habit of using cotton swabs was a clear predisposing factor that likely accelerated the development of the infection. The clinical challenge in treating a 25-year-old pregnant patient lies in selecting a medication that is effective against the fungus but poses no risk to the developing fetus. The FDA classification system provides a vital framework for this decision-making process (Bojanović, 2023).

Prescribing medications to pregnant women requires a delicate balance between the mother's need for treatment and the potential risk of damage to the fetus, including congenital malformations, adverse effects, and the health of the pregnancy itself. The *imidazoles* (*clotrimazole, econazole, miconazole, oxiconazole, ketoconazole, and sulconazole*) are active against cutaneous candidal infections. Topical azoles, especially clotrimazole, are widely used. Systemic absorption of these agents is minimal and hence safety in pregnancy is not an issue. Jick et al.'s study found 492 pregnant women exposed to topically administered azole preparations in the first trimester were evaluated and no increased risk of congenital disorders in infants was found. In spite of the utility of systemic azoles in nonpregnant patients, their use in pregnancy is extremely limited with minimal safety data to support prolonged high dosage administration and some convincing evidence of teratogenicity in high doses. Their use cannot be recommended (Anwar & Gohar, 2014; King et al., 1998; Sobel, 2000; Jick, 1999).

The importance of the aural toilet cannot be overstated. In otomycosis, the fungal mass and epithelial debris act as a reservoir for infection and a physical barrier that prevents topical medications from reaching the canal skin. The high recurrence rate of otomycosis is often due to the failure to address the underlying predisposing factors. For this patient, the primary focus was on stopping the cycle of trauma and moisture. The patient was educated that the "itch-scratch cycle" using cotton swabs not only damages the protective epithelial lining but also removes the cerumen that naturally protects the ear. Patient education is an integral part of the service, emphasizing that keeping the ear dry is the most effective way to prevent recurrence (Anwar & Gohar, 2014; Kiakojori et al., 2018).

CONCLUSION

This case emphasizes that while otomycosis is rarely a life-threatening condition, its impact on the quality of life during pregnancy is significant. The avoidance of systemic antifungals and the focus on topical antifungal and localized hygiene remain the pillars of modern otomycosis management in the obstetric population. It is recommended that clinicians prioritize early diagnosis and adopt a conservative, non-systemic therapeutic approach when managing otomycosis in pregnant patients. The use of topical antifungal agents with proven

safety profiles should be considered first-line therapy. Furthermore, regular follow-up is essential to ensure complete resolution and to detect early recurrence. Future studies with larger sample sizes are also recommended to strengthen clinical evidence regarding the optimal management of otomycosis during pregnancy and to develop standardized treatment guidelines for this high-risk population.

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