

Original Research Article

Effectiveness of oral itraconazole in the management of otomycosis with tympanic membrane perforation

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ABSTRACT

Background: Otomycosis can be a difficult problem to treat in a patient who already has a perforation of the tympanic membrane. This study highlights the effectiveness of oral Itraconazole in treating such cases.

Methods: Thirty-four patients with otomycosis and a perforated tympanic membrane were included in the study and were treated with oral itraconazole and antibiotic ear drops. They were followed up for six weeks to look for treatment response and any recurrence.

Results: Of the 34 patients in the study, 25 patients were fully cured with one week of oral Itraconazole therapy. Six out of the remaining 9 patients were cured of the disease with two weeks' therapy. Three patients needed prolonged treatment and one patient had a recurrence at six weeks.

Conclusions: Oral itraconazole therapy is an effective alternative to the traditional methods of treatment for otomycosis with tympanic membrane perforation.

Keywords: Itraconazole, Otomycosis, Tympanic membrane perforation

INTRODUCTION

There has been an increase in prevalence of otomycosis in recent years. Overuse of antibiotic ear drops and use of Q tips have contributed to the increase in these cases¹ Patients with immunocompromising diseases like diabetes mellitus and HIV are at a higher risk of developing refractory otomycosis. Many cases of chronic otitis media with a tympanic membrane perforation have associated otomycosis due to the constant moisture in the ear canal.² The main problem in managing these otomycosis patients with tympanic membrane perforation is the difficulty in using topical antifungal ear drops. When the topical antifungals reach the middle ear, some patients experience intense pain and severe burning sensation. In such patients, we would avoid topical antifungal ear drops and instead pack the ear canal with

antifungal cream or with cream coated ear wick after thorough initial cleaning.³ This cream or ear wick has to be changed every few days till complete cure. The patient has the discomfort of a blocked ear till the treatment is over and also has to visit the ENT clinic multiple times. Oral Itraconazole has been found to be an effective drug in the treatment of most fungal infections. We have tried to study the efficacy of oral Itraconazole along with thorough initial suctioning and antibiotic ear drops, as an alternative for topical antifungal ear drops or repeated ear packing, in the treatment of otomycosis with chronic otitis media.

METHODS

This prospective study was done over a period of 2 years from November 2014 to November 2016 at a tertiary care

centre. All patients presenting to the ENT OP with otomycosis, along with a perforated tympanic membrane were considered for the study. Otomycosis was diagnosed clinically by the presence of fungal hyphae in the ear canal by examining under the microscope. An ear swab was obtained and the same sent for fungal culture to confirm the diagnosis and to identify the organism. All patients with chronic liver or renal diseases, those with allergy to Itraconazole and those having squamous type of chronic otitis media, were excluded from the study.

A total of 37 patients diagnosed with otomycosis and tympanic membrane perforation, were enrolled in the study. All patients were assessed for the presenting symptoms, duration of complaints, similar episodes in the past and otoscopic findings including the size of tympanic membrane perforation. Blood sugar estimation and liver function tests were done in all patients. Initially a thorough microscopic suctioning was done to remove the fungal debris from the ear canal. They were then started on oral Itraconazole 100 mg twice daily for 7 days and antibiotic ear drops (Ofloxacin ear drops) 2 drops three times daily for 7 days, to control the bacterial co-infection in the middle ear. All patients were reviewed after 1 week and were also observed for any side effects during the course of Itraconazole therapy. The ear canal was observed under the microscope to assess the response to treatment. In patients who still had features of fungal infection, a repeat suction clearance was done and oral Itraconazole was continued for one more week. Patients were advised follow-up after 3 weeks and 6 weeks of stopping Itraconazole treatment.

RESULTS

A total of 37 patients were initially included in the study but 3 patients did not come for the follow-up, thus making the total number in the study group to be 34. In this study the peak incidence of otomycosis with perforation of tympanic membrane was noted in the age group of 31 - 40 years (38%). Male to female ratio was 1.13:1 with 18 males against 16 females (Figure 1).

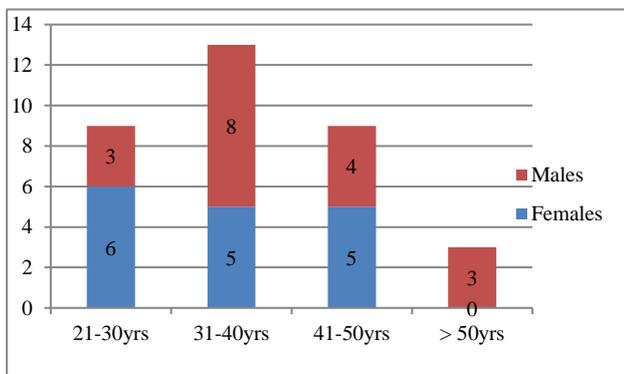


Figure 1: Age and sex distribution.

The prominent symptoms were earache, otorrhea, ear blockage and pruritus. Nine of our patients were known

diabetics who were already on medication. On examination, fungal debris with hyphae were seen in the ear canals of all patients in varying degrees, from little in the floor of the canal to completely filling the canal. In our study the main fungi isolated were the *Aspergillus* species (*A.niger* and *A.fumigatus*) followed by *Candida* species. Our study had 16 patients with large sized central perforation, 14 patients had moderate sized central perforation and 4 patients had small central perforation.

Almost all patients had good relief of the symptoms at the end of one week of treatment. On examination at the end of one week of treatment, fungal material was completely absent in 25 patients (74%), in whom oral Itraconazole was stopped. In the remaining 9 patients repeat suctioning and continuation of Itraconazole therapy was done for one more week. At the end of second week 31 patients (91%) were seen to be completely free of symptoms (Figure 2).

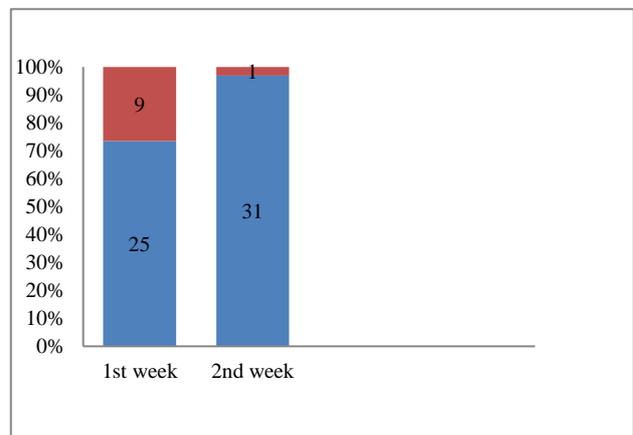


Figure 2: Response to treatment.

The three patients who did not respond to the treatment had uncontrolled diabetes and had to be put on further treatment with Itraconazole. Among them one patient had a cure after three weeks of treatment and the rest two were cured after four weeks of treatment. During follow up, a diabetic patient who was cured with Itraconazole therapy for one week, came back after 3 weeks of stoppage of Itraconazole with a recurrence. She was treated with the same regimen but with two weeks of Itraconazole therapy for complete cure. All other patients were followed up after 6 weeks with no recurrence of otomycosis. No side effects were reported from Itraconazole by any of these patients.

DISCUSSION

Otomycosis is the superficial fungal infection of the external ear canal. The infection may be either acute or chronic and is characterised by inflammation, pruritus, scaling and severe discomfort in the ear. It is estimated that approximately 7-15% of the total cases of otitis externa are due to otomycosis.² Otomycosis is more prevalent in the warm, humid climate and is often seen

between the second and third decades of life, among individuals maintaining a poor hygiene.³ The usual predisposing factors for development of otomycosis include frequent swimming, eczema, excessive use of cotton tips, a narrow ear canal, allergy, chronic drainage, irradiation, obstructing ear wax, a radical cavity after mastoidectomy, use of earplugs and secondary to prolonged use of topical antibacterial treatment.⁴ It is more virulent in the diabetic and immunocompromised patients. Otomycosis may involve the middle ear in case of tympanic membrane perforation and may also involve the auricle in some cases.⁵

The usual organisms isolated in otomycosis are *Aspergillus niger* and *Candida albicans*.⁶ In a study by Ashish Kumar in 82 patients, the chief fungal isolates included *Aspergillus niger* (52.43%), *Aspergillus fumigatus* (34.14%), *Candida albicans* (11%) and *Mucor*.³ Kurnatowski and Filipiak studied 249 patients with external otitis and found that 15% had a mixed bacterial and fungal aetiology, while 13% were caused by fungus alone.⁷

Otomycosis is well known for its recurrence if proper treatment is not initiated. There are large variations in the treatment protocols of otomycosis among otolaryngologists, which includes topical antifungal ear drops, antifungal ointments, using ear wicks for packing the canal and use of oral antifungal drugs. The situation gets more complicated when a patient with perforation of the tympanic membrane comes with otomycosis. Bacterial co-infection is also commonly seen along with otomycosis in cases with chronic otitis media.^{3,4}

The problems of having a tympanic membrane perforation with otomycosis, include the severe stinging pain and ototoxicity of the topical antifungal drops, which directly reach the middle ear through the perforation. So the alternative in such case is to apply medicated antifungal cream to completely fill the ear canal or use a medicated ear wick. With both these methods, the patient has a discomfort of having a blocked ear for many days and also the need for revisits to get it removed and reapplied. A good option in this case would be to go for oral antifungal drugs like Itraconazole, which gives a good cure. In our study, we have given Itraconazole and antibiotic ear drops for the middle ear bacterial infection after thorough microscopic suction.

A short course of oral broad spectrum anti-fungal is very effective in management of troublesome otomycosis.⁸ Itraconazole is an antifungal drug with a broad spectrum of activity than Fluconazole and is effective specifically against *Aspergillus* and *Candida*.⁹ In present study, it was found that majority of the patients responded to the treatment in the first week and most of the patients were fully cured by the end of the second week. Thus a two week short course of Itraconazole therapy along with antibiotic ear drops was seen as a sure shot in the treatment of otomycosis with tympanic membrane

perforation. In our study, cases complicated by diabetes had to undergo a prolonged treatment for three or four weeks. In a study by R Venkataraman et al, five day course of Itraconazole 200mg daily have been found to be effective in the treatment of otomycosis in diabetic patients.⁸ They also found that early therapy with Itraconazole helps in preventing complicated forms of the disease in diabetics and also oral Itraconazole was useful in reducing pruritis. In our study, the patients who had taken at least 2 weeks of Itraconazole treatment had no recurrence of the symptom till 6 weeks follow up.

Itraconazole was found to be very effective and safe, with no patients complaining of any major side effects, in our study. Oral therapy with Itraconazole does not require any liver function monitoring if the baseline liver function tests are normal.¹⁰ In a study by Ryo Amesara et al in 22 patients, oral Itraconazole was found to be very effective and noted that concentrations of Itraconazole in cerumen was exceeding most of the MIC values.¹¹ The main limitation of our study is that the number of patients is comparatively less than that required for an effective epidemiological study and there is no comparison with other methods of treatment.

CONCLUSION

Although several treatment options are available for otomycosis, some of them have limitations when it comes to a case of otomycosis with tympanic membrane perforation. Our study concludes that two weeks therapy with oral Itraconazole has been found to be very effective option in the management of otomycosis, in the presence of a tympanic membrane perforation. It can also be tried in refractory/ recurrent cases of otomycosis with no perforation of tympanic membrane.

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