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Efficacy of antifungal drops versus antifungal cream in the treatment of otomycosis prospective study of 30 patients

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Abstract---Otomycosis occurs when an isolated fungal infection is found in the external auditory canal. In the otorhinolaryngology outpatient department, it appears to be a highly common clinical problem every corner of the globe. *Aspergillus* is the most common etiological bacterium that forms biofilm in the ear canal. In addition to *Candida* spp. Unnecessary insertion of earplugs, cleaning supplies, and medication. Otomycosis can begin as a result of a canal infection. Otomycosis is characterised by ear pain, discharge, and itching. A lack of hearing. Right diagnosis must be made at this early stage of infection in order to take an aggressive action. However, suppurative conditions in the mastoid region necessitate specialised medical attention when infection has spread there. Notably in people with a compromised immune system. The primary goal of this in-depth analysis is to attract readers' attention. In order to live a healthy life, one must pay attention to personal hygiene and receive adequate health education. Methods: A future investigation. Patients with confirmed otomycosis were included in the study. All samples taken from patients were tested for fungi that cause otomycosis using standard microbiological methods. Following that, patients were divided into two groups and given either 1% clotrimazole drop medication or 1% cream treatment at random. Pain, pruritis, restricted feeling and discharge were reduced after one and two weeks of follow-up. Otomycotic debris was assessed in the external auditory canal. Every patient's preference for treatment modality was solicited. Results *Aspergillus niger* (45 percent) was the most commonly found species in our research. On day 07, there was a significant difference between the two groups in the improvement of symptoms and the otomycotic debris compared to the day 01 symptoms. The group that

received cream experienced much higher sensory blockage. All symptoms and otomycotic debris showed remarkable recovery in the second week of follow-up. The majority of patients (45%) favoured using cream over the other options. To summarise, our investigation indicated that *Aspergillus* species was responsible for most cases of otomycosis. Drops and cream containing 1% clotrimazole were equally effective in treating otomycosis. Aim .It was the goal of the study to determine the most common presentation of otomycosis, as well as the spectrum of fungi implicated, and to assess the efficacy of 1 percent clotrimazole drops and 1 percent clotrimazole cream in the treatment of otomycosis.

Keywords---external auditory canal, otomycosis, aspergillus, 1 percent clotrimazole, drops, cream.

Introduction

Otomycosis is a medical word for an infection of the ear canal epithelium. a yeast infection in the External Auditory Canal (EAC) 9 percent of cases of external otitis are caused by filamentous fungi^{1,2}. diagnoses. As invaders, fungi can be found in the outer ear. because it has all of the necessary components foods high in protein, carbs, and humidit the right temperature and the right acidity Among the risk factors are long-term use of sunscreen in tropical and humid regions A compromised immune system as a result of treatment with antibiotics or steroids working in an atmosphere where one is constantly exposed to germs dust, debris in the EAC, and EAC cleaning using hereditary variables and the occurrence of seborrheic dermatitis as well as swabs fertiliser, and other substances that help the seed germinate. Some of the most common fungi's conidia and spores 2,4—8 Types of Most *Aspergillus* (60-90 percent) and *Candida* species are *A. niger*. Pathogens that cause 10-40% of all human illness are the most often cultivated. 2—5,7,8 Debridement of the EAC requires great care in order to ensure the removing the infectious agent and allowing the use of topical Drugs are able to reach their intended targets. Treating the skin Although recurrence rates are significant, most patients are cured. 5 Many Antifungal agents with varying characteristics have been employed. the success rate varies widely, hence there is no consensus on a standard. the most efficient and successful representative. The study's goal is to contrast topical antifungal therapy's effectiveness prescription drugs, the Tolnaftate solution vs. Clotrimazole cream, Fungal otitis externa is treated.

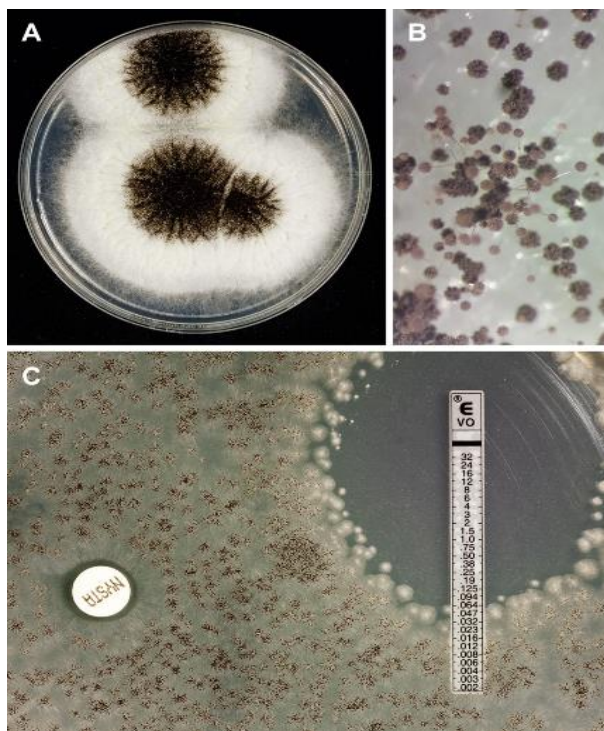


Fig. 1. Mycological investigations performed on ear wax mass. A. Macroscopic aspect of culture on Sabouraud's agar, consistent with *Aspergillus niger*. B. Observation of an *A. niger* colony with a binocular magnifier, showing hyaline conidiophores bearing dark-brown conidial heads. C. Susceptibility testing of *A. niger* against nystatin (disk diffusion) and voriconazole (E-test).

Epidemiology

The intricate structure of the ear aids in hearing, as well as maintaining balance, according to epidemiology. There are numerous sorts of ear problems that can affect people of all ages. patients. Otitis media is a common inflammatory ear disease. Acute/chronic externa affects 4% of the population. 3-5 percent of the population suffer with acute type from a long-term case of chronic external otitis.¹⁰ One of the most populous countries in the world, Saudi Arabia, has a Study found that around 49.3 percent of those who took part in it were 37 percent of the older individuals had ear problems 9.4 percent -2.9 percent of those surveyed had some degree of hearing loss.

The condition is known as medial otitis. An investigation carried out by Gorems and co-workers found that youngsters under the age of years had an acute ear infection Patients in the years of age range were found to have recurring ear infections. Otomycosis has been linked in certain studies to Prevalence is particularly high in tropical regions. As previously said, infected with otomycosis between July and August months and young patients in the management group showed more Infection of the eardrums. Some research has been done by In 2009, Fasunla et al. (2008), and Barati et al. (2009), among others, pontes et al. Several studies, including those by Aneja and colleagues (2010), Lia and

colleagues (2012), and others, have found female otomycosis, despite the fact that it is more common in women. Female patients are less likely to get otomycosis. Nazeer and others A high incidence of otomycosis was reported in the age group of 10 to 15 years old in 2015. Of the age range of 21 to 30. In order to get a diagnosis, otoscopy and biomicroscopy are used. Otomycosis can be diagnosed with the aid of tools. In the otoscope, there is a light, a lens, and a probe. viewing piece with a funnel-shaped viewing area The ear canal and eardrum are included. Procedure: Biomicroscopy is a type of microscopy. Microscopy is used to examine tissues. a few indications severe symptoms, such as hives, ear pain, discharge, and a change in hearing Patients with otomycosis report a loss of hearing. For example, otomycosis, with coconut oil infusion into the ear canal (36.59 percent) strong levels of association were seen in the external ear. Nazeer According to et al22, there was a strong correlation between the two. usage of coconut oil in the ear to treat otomycosis The oil extracted from the coconut capable of preventing the development of spores, hence they can assist to keep the deposition of conidia in the ear and to make it easier .The emergence of otomycosis as an illness. The is still another consideration. Pins and sticks that are not sterilised This unsanitary metho Fungal infections might occur as a result of a lack of ear cleansing. in the ear canal, as well as on the skin the initial line of protection against infection. While conidiophores can be seen in the presence of sporing aspergillus, hyphal aspergillus may not be detectable. hyphae are taken up during the swabbing process. wax and dirt in the ear canal. Thus, a correct diagnosis is essential. essential, as well as a lesion that mustn't be ignored, Antibiotics should not be used in cases when they are not absolutely necessary. Pain and a blocked ear are the most common clinical symptoms. this could be the very first sign This might be because of the buildup and inhibition of microbial colonisation Pain ensues as a result of this. Other signs and symptoms emerged as well. such as otalgia, drainage, and itching. Despite this, Fungal infection is not the only cause of these symptoms. in Yehia's opinion, the sickness is a symptom of something else. Not very contagious, then. Pruritis was first a benign ailment. with the moderate degree of pain, erythema can be visible. Oedematous redness and seropurulent discharge are present. When the illness is severe, it can cause excruciating discomfort in the ears. Due to a blockage in the ear canal.

Etiology: There is a greater possibility of developing the disease. infection of the outer skin of the ear by fungus it has a humid location with an appropriate pH for this purpose microbes. Microbiological testing in conjunction with clinical observation When conducting tests, it is critical to know which organism is causing the problem.infection. Until recently, only fungi were considered relevant. otomycosis, however further research is needed It was shown that this infection was linked to bacterial contamination. Staphylococcus aureus and Pseudomonas aeruginosa Otomycosis has been linked to it. Osguthorpe et al. 2011 found that 10% of fungi were associated with a fungus. conditions must be met first and foremost. In addition, it was discovered by way of Ophthalmic examination revealed a black, fuzzy growth on the cornea Cerumen may cause some hearing loss because it blocks the auditory canals. Outside of the ear canal. Additionally, candida species are found all over the world. More often than not, candida albicans is connected with otomycosis. Invasive otomycosis is becoming more common in the United States Rather than *A. niger*, *A. fumigatus* is to blame.

Methods

It is an observational study prospective from July 2019 to July 2021 at the department of ENT, where patients were prospectively recruited who are suspects of otomycosis with a sample size of 30. Criteria for inclusion Patients with otomycosis who agreed to participate in the study were included. Patients having tympanostomy tube in situ, chronic otitis media, mastoidectomy cavity, uncontrolled diabetics, and those utilising hearing aids were excluded from this study. The clinical characteristics and otoscopic observations of hyphae, fruiting bodies, and thick white cheesy material were used to make the diagnosis of otomycosis. Patients were instructed to use a visual analogue scale to rate their symptoms. Ophthalmalgia, pruritis, blocked sensation, otorrhea, and pruritis were among the signs and symptoms. Sterile cotton tipped swabs or sterilised scalpel blades were used to obtain all mycological samples. A drop of 10% KOH was used to treat the swab/scrapped material on the glass slide. Chloramphenicol was used to inoculate the second swab/scrapped material onto two Sabouraud's dextrose agar plates. There were two separate experiments: one that was done at room temperature, and the other that was done at 370 degrees Fahrenheit for 2 to 3 weeks. On alternate days, cultures were inspected for growth. Standard methods were used to identify fungi. Patients were divided into two groups using standard random sampling approaches. Group A had 1% clotrimazole drops while Group B contained 1% clotrimazole cream. Patients in Group A were told to take three drops of 1% clotrimazole three times a day for a week before returning to the outpatient department (OPD). Group B is given 1% clotrimazole cream by 2 ml syringe endoscopically guided infusion into the EAC and requested to return after a week for a follow-up. Follow-up evaluations included a re-examination of symptoms and an evaluation of the EAC. When the patient was deemed to have been treated There was no sign of fungus remaining. If the patient showed signs of otomycosis on the initial visit, the treatment was repeated, and the patient was reassessed a week later. After recovery, a typical question was administered to each subject. "If the results are the same, will they prefer a one-time cream instillation or topical drops that need to be implanted three times daily?" is the question. The response was taken into consideration.

Statistics

Requisite statistical tests were applied on the results. Fishers's Exact Test was used for comparing the symptom change between two groups. McNemar's test was used for Intra group symptom improvement. P value <0.05 was considered assignifi can't difference.

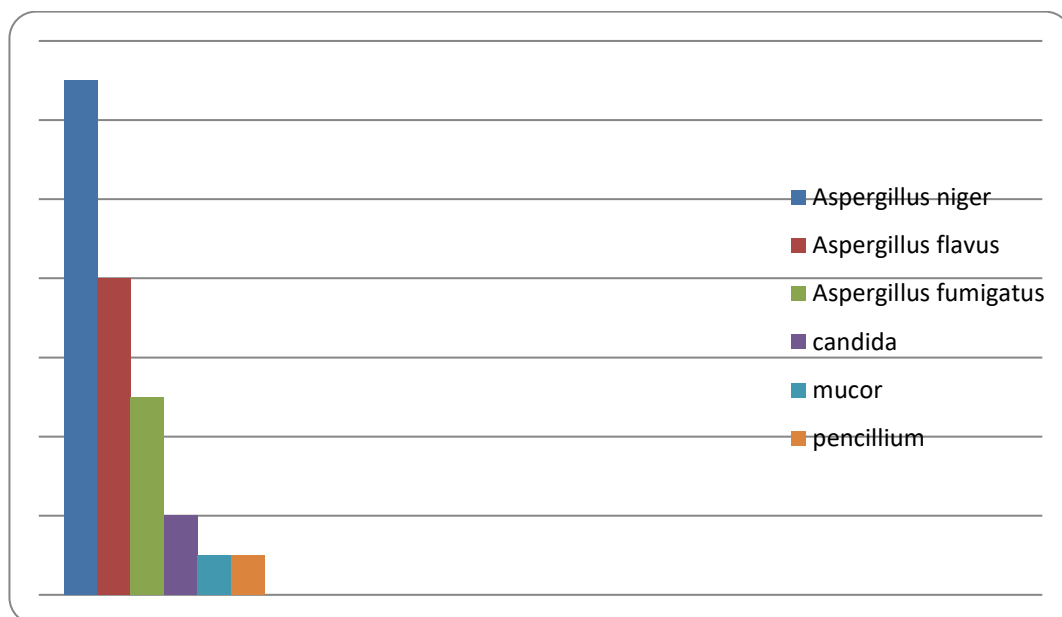
Results

Out of 30 specimens collected from patients of otomycosis, 14 patients were males and 16 were females. Predominant otomycosis was found in the age group of 21-30 years, (Table 1).

Table 1: Age and sex distribution

Age (years)	Male sex	female sex	Total (%)
<10	1	1	3 (5)
11-20	3	2	13 (21.6)
21-30	4	5	17 (28.3)
31-40	2	3	9 (15)
41-50	2	3	9 (15)
51-60	1	1	5 (8.3)
>60	1	1	4 (6.6)
Total	14	16	30 (100)

Out of the 30 specimens collected, all the specimens yielded single organism. *Aspergillus niger* 27 (45%) was the predominant species isolated. Second most common species isolated was *Aspergillus flavus* 16 (26.6%), (Figure 1).



divided the patients into two groups, 15 patients in each group, with their symptoms noted (Table 2).

Table 2: Symptoms in both the groups at the start of the treatment

Symptoms at the start of the treatment	Group A otomycosis cream	Group B otomycosis drop
Pain	15	14
Blocked sensation	14	13
Pruritis	13	14
Discharge	7	6

Otomycotic debri	14	14
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Table 3: persistence of symptoms after a week of patients in each group

Persistence of symptoms after first week	Group A otomycosis cream	Group B otomycosis drop
Persistence of pain	5	6
Pruritis	3	3
Discharge	1	1
Persistence of otomycotic debri	5	6
Persistence of ear block	7	11

After a week review, there was a symptomatic improvement between both the groups except for symptom of ear blockage. The group with cream had significantly more sensation of ear blockage compared to the drops group. The result of change in symptoms after 2 weeks is as per Figure 2.

Group A otomycosis cream ,, Group B otomycosis drop

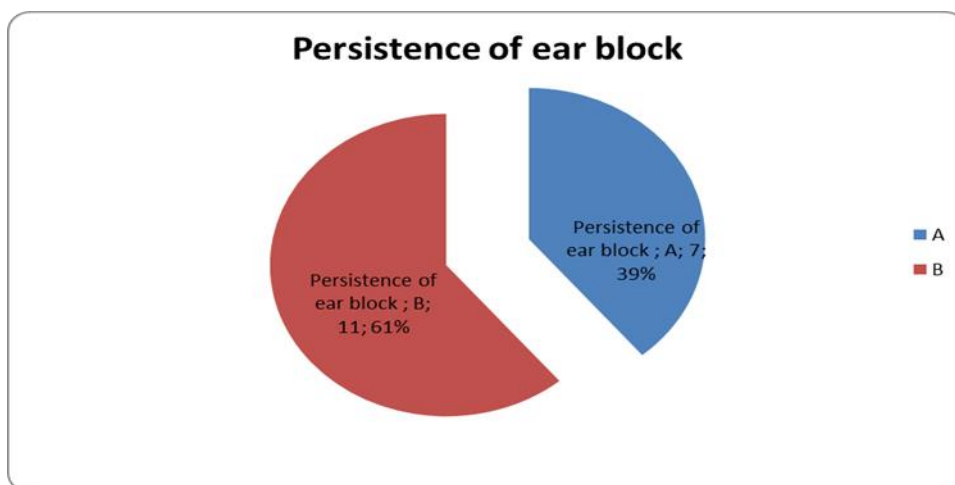


Figure 2. Persistence of ear block

Discussion

When it comes to ENT outpatients, it's not uncommon to face otomycosis, which is a fungal infection of the the outside of the external auditory canal Most of the time, the patient comes to see us symptoms such as otalgia, pruritis, block feeling, and otoscopy the presence of otoscopy findings of tangled hyphae, spores, or curdy precipitation in the external auditory canal. Pradhan conducted a study Pruritis has been identified as the primary symptom of otomycosis in a study by et al. however it was reported to be 23% by Ho Tang et al in their study [6,8]. There is a lack of consensus on the impact of many factors. Otomycosis and other fungal infections are treated with antifungal medications. There have been many examples of the same. Nevertheless, the appropriate usage of Chemical and mechanical debridement, in addition to antifungal treatment, must be used the

cornerstone of treatment. Topical antifungals are among the most commonly prescribed antifungals. Clotrimazole is still a popular treatment option [7]. Clotrimazole is 1% by weight. good results have been seen with the usage of cream in the treatment of this disease effectiveness [10]. Patients in this trial also had a positive reaction. Cream can be used as a substitute. 1 percent clotrimazole drops must be ingested by patients. at least three to four times a day. This has the potential to spiral out of control. cumbersome for those who work in an office In addition, direct instillation is a viable option. An additional side effect of antifungal solution is burning mouth and throat Perforated drums are an exception [11]. There's a debate going on. the time spent in contact with the antifungal cream .The skin of the meatal agent. There was a greater sense of immobility. individuals who were treated with a well-known topical cream fact, according to Hurst et al. In comparison to 1%, there aren't many research out there. clotrimazole drops and 1% cream in the treatment of atopic dermatitis otomycosis. Clotrimazole was utilised in a study by Abou Halawa et al. treatment with an ointment for otomycosis constant use and discovered that self-application and wicking were the best methods of application Both methods of treatment for otomycosis have the same efficacy. It has been found that otomycosis recurs in almost all cases. [11] 8.89 percent of the patients who received treatment It usually takes between two and three weeks to accomplish a full recovery from illness. Because of this, there is a lower risk of a repeat. patients' well-being is also taken into account. the study compared the simplicity of installation of the cream to that of the powder drops. In the survey of treatment preferences given to all patients at the conclusion, the results were in favour of Clotrimazole cream with a 1% concentration. Patients may be to blame for this. the patient prefers a one-time injection of cream rather than self-treatment 3-4 times a day, applying drops on the skin.

Conclusion

Clotrimazole drops containing 1% clotrimazole and drops containing 1% clotrimazole were found to be effective in this prospective randomised research. in the treatment of lice, clotrimazole cream is similarly effective. otomycosis. Cream increases the sensation of a block during the process. First week compared to drops. In any case, in the event that based on the fact that it can only be used once Topical creams rather than drops are preferred by patients for treatment of otomycosis.

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