

# COMPARISON BETWEEN TOPICAL CLOTRIMAZOLE AND POVIDONE IODINE IN TREATMENT OF OTOMYCOSIS

By

**Sherif Alaa Al-Deen Abd Al-Haleem, Mohammad Abd Al-Fattah  
Ibrahim and Yehia Mohammad Dawood**

Department of Otorhinolaryngology, Faculty of Medicine, Al-Azhar University

**Corresponding author:** Sherif Alaa Al-Deen Abd Al-Haleem,

**E-mail:** [sherif\\_mostafa\\_89@yahoo.com](mailto:sherif_mostafa_89@yahoo.com)

## ABSTRACT

**Background:** Otomycosis is one of the most common conditions encountered in a general otolaryngology clinic setting. It represents about 10% of all cases of otitis externa. It is often seen between the second and third decades of life.

**Objective:** To compare between topical Clotrimazole and Povidone Iodine in treatment of otomycosis.

**Patients and Methods:** This is a randomized controlled clinical trial study included 100 patients clinically diagnosed as otomycosis with positive mycological culture. This study conducted at the otolaryngology outpatient clinic of Al-Hussein University Hospital and Al-Mataria Teaching Hospital between May 2019 and October 2020 after approval by the Research Ethics Committee of faculty of medicine Al-Azhar University.

**Results:** This study showed that 48 patients (21 patients from Povidone Iodine group and 27 patients from Clotrimazole group) gave a history of habitual ear self-cleaning or manipulation from total 100 patients, so it is the most common predisposing factor of otomycosis in patients involved in this study. Abuse of antibiotic eardrops as the only predisposing factor was the second predisposing factor for otomycosis, as 18 patients (12 patients from Povidone Iodine group and 6 patients from Clotrimazole group) from total 100 patients gave a history of using antibiotic eardrops for long periods. Other predisposing factors were using earpiece in an unhygienic manner reported in 12 patients, diabetic mellitus as the only predisposing factor reported in 11 patients, diabetes mellitus with antibiotic eardrops abuse reported in 2 patients and swimming reported only in 1 patient.

**Conclusion:** From this study it can be concluded that there is no statistically difference between Povidone Iodine and Clotrimazole in treatment of otomycosis. Our findings reinforce the use of povidone iodine in otomycosis treatment because it is cheap, available, with no documented resistance thus far and no toxic effects on inner ear in case of perforated tympanic membrane.

**Keywords:** Topical Clotrimazole, Povidone Iodine, Otomycosis.

## INTRODUCTION

Otomycosis is a fungal infection of the external auditory canal. It is a very common clinical entity seen in outpatient department of the otorhinolaryngology (Swain *et al*, 2017).

Various predisposing factors include a humid climate, self-cleaning of the ear, instrumentation of the ear, increase use of topical antibiotics/ steroid preparation, immunocompromised host, patients who have undergone open cavity

mastoidectomy and those who wear hearing aids with occlusive ear molds (Anwar and Gohar, 2014).

Common symptoms of otomycosis are itching, ear pain, ear discharge, blocking decreased hearing and tinnitus. The correct diagnosis of otomycosis requires a high index of suspicion, given that the most common presenting symptoms, otalgia and otorrhea, are nonspecific (Viswanatha *et al*, 2012).

In cases with perforation of the tympanic membrane, the infection can also affect the middle ear. In rare cases, primarily in immunocompromised individuals, the disease may be extensive and involve the temporal bone (Prasad *et al*, 2014).

Management of otomycosis can be challenging, and requires a close follow-up. Treatment options for otomycosis include local debridement, local and systemic antifungal agents and utilization of topical antiseptics (Mofatteha *et al*, 2017).

Since the late 2000s, a steady increase in worldwide reports of azole resistance in *aspergillus fumigatus*, resulting in therapeutic failures, has been a matter of serious clinical concern (Chowdhary *et al*, 2017).

It is a well-known fact that Povidone Iodine is a routinely used antiseptic solution in surgical wards, with no documented resistance thus far. This study was prepared to evaluate the antifungal property of Povidone Iodine and to provide a cheaper alternative in the treatment of otomycosis (Philip *et al*, 2013).

In addition, Povidone Iodine does not have toxic effects on vestibular and cochlear functions of inner ear in contrast with Clotrimazole, which is ototoxic; therefore, Povidone Iodine is a safe choice in patients with perforated tympanic membrane (Ozkiris *et al*, 2013).

**Aim of the present study** to compare between topical clotrimazole and povidone iodine in treatment of otomycosis.

## PATIENTS AND METHODS

This randomized controlled clinical trial study included 100 Patients fulfilling the inclusion and exclusion criteria.

### Inclusion criteria:

1. Clinical evidence of otomycosis which obtained by history taking seeking for symptoms of otomycosis such as itching, ear pain, ear fullness sensation and ear discharge and by otological examination using otoscopy seeking for signs highly suggestive of otomycosis such as black, grey, green yellow or white discharge with debris.
2. Mycological evidence of otomycosis which obtained by positive mycological cultures reports from the regional center for mycology and biotechnology in Al\_Azhar University.

### Exclusion criteria:

1. History of ear surgery.
2. History of recent treatment with antifungal agents.
3. External auditory canal anomaly.

The examination also included external auditory canal for signs of inflammation and the state of tympanic membrane if it is normal intact or perforated.

After the clinical diagnosis was established, three sterile cotton swabs used for collecting debris and fungal elements from the external ear canal of patients clinically diagnosed with otomycosis. All samples transported to the regional center for mycology and biotechnology at Al-Azhar University within one hour and transported inside a small tank contain ice with a shelf separating the swabs from the ice.

The first swab was suspended in 1-2 drops of 10% potassium hydroxide with methylene blue (2:1) on a clean slide and a cover glass was placed over it avoiding air bubbles. It was examined under microscope for the presence of fungal hyphae or yeast cells.

The second swab was inoculated on two Sabouraud's dextrose agar (SDA) plates with chloramphenicol. One plate was incubated at (22oC) and another at (37oC) for 1 -2 weeks. Both plates were observed for fungal growth daily. Fungal growth was identified by standard procedures at the regional center for mycology and biotechnology, Al-Azhar University.

The third swab was inoculated on blood agar and MacConkey's agar plates, incubated at (37oC) for 24 – 48 hours and examined for bacterial growth. Identification of bacterial isolate was done by standard procedures at the regional center for mycology and biotechnology, Al-Azhar University.

### **The patients who participated in this study divided into 2 groups:**

**Group A:** Include 50 Patients treated with povidone iodine.

**Group B:** Include 50 Patients treated with clotrimazole.

Patients who diagnosed with perforated tympanic membrane included in the Povidone Iodine group as alcohol in Clotrimazole- alcohol based- ear drops is considered ototoxic while povidone iodine is not ototoxic (**Ozkiris et al, 2013**).

### **Methods:**

After recording the demographic characteristics such as age, sex, and obtaining informed consent, 100 patients with otomycosis were enrolled into the study and recruited into one of the two treatment groups (50 patients in each group) by blocking randomization.

In the study, one patient group treated with Povidone Iodine so that at each visit, the physician irrigated the patient's ear with 3 mL of povidone iodine solution 10% with a syringe followed by insertion of a wick inside the external auditory canal, instructing the patient to instill 3 drops of Povidone Iodine every eight hours.

The other group received 3 drops of antifungal Clotrimazole, every eight hours. Patients examined on 4, 10 and 20 days after treatment.

### **The patients categorized into three groups based on clinical response:**

**1 Good response:** that means dry external ear canal and tympanic membrane with negative mycobacterial cultures of the ear swabs.

2. **Partial response:** that means improvement but symptoms and signs of otomycosis still present.
3. **No response:** that means no improvement in symptoms or signs.

If there is no response after 20 days of treatment, the patients will be reassessed for any persistence predisposing factors, change of plan of treatment may be reconsidered and patients will be followed up until complete cure.

#### **Ethical considerations:**

The study protocol was approved by the Research Ethics Committee of faculty of medicine Al-Azhar University before starting the fieldwork. An informed consent was obtained from all study participants before taking any data with full explanation of aim, risks, and benefits of this research. The confidentiality of the identity of the participants and their data is strictly preserved. Patients had the right to refuse to participate, or later withdraw (after initial consent) without needing to explain the reasons and without affecting their right to obtain optimal medical care.

No financial burden was added on study subject due to their participation in this research.

#### **Statistical analysis:**

In the present study Quantitative data was displayed in the form of mean  $\pm$  standard deviation (SD). Qualitative data was demonstrated through figures of frequency and percentage. Charts were used to illustrate data and relations where appropriate and  $p < 0.05$  was accepted as indicating statistical significance. Test of normality to confirm the normal distributions of the data. Independent t test of significance was used when comparing between means of two groups. Chi-square ( $\chi^2$ ) test of significance was used in order to compare proportions between two qualitative parameters. Fisher exact was used instead when the frequency is less than 5. Spearman-rank correlation was used to assess relation between different variables with (r) symbol which represent degree of correlation as follow: r (0-0.3)= weak correlation. r (0.4-0.6)= intermediate correlation. r (0.7-0.9)= strong correlation. r (1)= perfect correlation.

## RESULTS

The current study included 100 patients, the Povidone Iodine group included 50 patients and the Clotrimazole included 50 patients.

Demonstrates the age of both groups, similar age was present for both groups. Povidone Iodine group had a mean age of  $42.0 \pm 16.0$  years and Clotrimazole group had a mean age of  $42.0 \pm 15.0$  years

without statistically significant difference ( $p=0.795$ ).

Demonstrates the gender of both groups. The proportion of males were higher than females in both groups. The number of male patients in this study were 31 patients and 26 patients for the Povidone Iodine group and Clotrimazole group, respectively without a statistically significant difference ( $p=0.313$ ) (**Table 1**).

**Table (1): Age and gender distribution between the study groups**

			Povidone Iodine (n=50)			Clotrimazole (n=50)			P
			No.		%	No.		%	
<b>Age</b>									
Mean	±	SD	42.0	±	16.0	42.0	±	15.0	0.795
Min.	-	Max.	5.0	-	68.0	3.0	-	66.0	
<b>Gender</b>									
Males			31		62.0%	26		52.0%	0.313
Females			19		38.0%	24		48.0%	

Demonstrates the predisposing factors of both groups, self-cleaning of the ear represented the most frequent predisposing factor for both groups, with 21 patients from Povidone Iodine group and 27 patients from Clotrimazole group without a statistically significant difference in the distribution of the predisposing factor ( $p=0.404$ ).

Demonstrates the distribution of presenting symptoms between both groups. The most frequent symptom was itching, 19 patients in each group. The second most frequent symptoms were pain associated with fullness sensation, that present in 11 patients from Povidone Iodine group and 14 patients from Clotrimazole group. The difference between groups was not statistically significant ( $p=0.921$ ).

Most of both groups had no associated medical conditions, 38 patients from Povidone Iodine group and 44 patients

Clotrimazole group have no medical conditions. Among povidone iodine group, DM reported by six patients, chronic suppurative otitis media reported by 5 patients and both reported in one patient. Among Clotrimazole group DM reported six patients, without a statistically significant difference in the distribution of the predisposing factor ( $p=0.107$ ).

13 patients presented with tympanic membrane perforation from Povidone Iodine group while no patients with tympanic membrane perforation were in clotrimazole group, that difference was statistically significant ( $p=0.001$ ).

Among Povidone Iodine group, 60% had affection in left side and 40% in right side. Among Clotrimazole group 64.0% had affection in right side and 36.0% in left side, without a statistically significant difference between both groups regarding the laterality ( $p=0.680$ ) (**Table 2**)

**Table (2): Predisposing factors, symptoms, associated medical conditions and tympanic membrane (TM) perforation and the laterality of illness of both groups.**

		Povidone Iodine (n=50)		Clotrimazole (n=50)		P.
		No.	%	No.	%	
<b>Predisposing Factors:</b>	DM	5	10.0%	6	12.0%	0.404
	DM and Ear Drops	2	4.0%	0	0.0%	
	Ear Drops	12	24.0%	6	12.0%	
	Self-cleaning	21	42.0%	27	54.0%	
	Earpiece	5	10.0%	7	14.0%	
	Swimming	1	2.0%	0	0.0%	
	Not Identified	4	8.0%	4	8.0%	
<b>Symptoms</b>	Itching	19	38.0%	19	38.0%	0.921
	Pain	5	10.0%	3	6.0%	
	Pain & itching	7	14.0%	7	14.0%	
	Pain & fullness sensation	11	22.0%	14	28.0%	
	Pain & discharge	8	16.0%	7	14.0%	
<b>Associated Medical Conditions</b>	CSOM	5	10.0%	0	0.0%	0.107
	CSOM and DM	1	2.0%	0	0.0%	
	DM	6	12.0%	6	12.0%	
	No associated medical conditions	38	76.0%	44	88.0%	
<b>TM perforation and the laterality of illness</b>	TM Perforation					<0.001
	Yes	13	26.0%	0	0.0%	
	No	37	74.0%	50	100.0%	
	Laterality					0.680
Right	30	60.0%	32	64.0%		
Left	20	40.0%	18	36.0%		

The form of infection among the study patients was pure fungal infection in 41 patients from the Povidone Iodine group and mixed fungal and bacterial infections in nine patients. For the Clotrimazole group, the form of infection was pure fungal in 43 patients and mixed infection (bacterial and fungal) in 7 patients without a statistically significant difference

( $p=0.585$ ). Regarding the causative pathogen, *Candida albicans* represented the highest organism (58.0% in Povidone Iodine group compared to 54.0% among Clotrimazole group) without a statistically significant difference ( $p=0.920$ ). Cultures that showed bacterial infection (10 were *Staphylococcus aureus* and were *Pseudomonas aeruginosa*) (**Table 3**).

**Table (3): Type of infection and type of fungal pathogen**

Type of infection	Povidone Iodine (n=50)		Clotrimazole (n=50)		P.
	No.	%	No.	%	
Pure fungal	41	82%	43	86%	0.585
Mixed fungal & bacterial	9	18%	7	14%	
Pathogen	No.	%	No.	%	0.920
Candida albicans	29	58%	27	54%	
Aspergillus niger	13	26%	16	32%	
Aspergillus flavus	3	6%	3	6%	
Aspergillus fumigatus	5	10%	4	8%	

The response to treatment at day 4, 10 and 20. At day 4, good response represented 10.0% among Povidone Iodine group compared to 12.0% among Clotrimazole group, that difference was not statistically significant ( $p=0.882$ ). At day 10, good response represented 40.0% among povidone iodine group compared

to 54.0% among Clotrimazole group, that difference was not statistically significant ( $p=0.353$ ). Regarding day 20, good response represented 86.0% among Povidone Iodine group compared to 90.0% among Clotrimazole group, that difference was not statistically significant ( $p=0.671$ ) (Table 4).

**Table (4): Response to treatment in both groups at day 4, 10 and 20**

Response to Treatment	Povidone Iodine (n=50)		Clotrimazole (n=50)		P.
Day 4	No.	%	No.	%	
Good Response	5	10.0%	6	12.0%	0.882
Partial Response	30	60.0%	31	62.0%	
No Response	15	30.0%	13	26.0%	
Day 10	No.	%	No.	%	0.353
Good Response	20	40.0%	27	54.0%	
Partial Response	27	54.0%	20	40.0%	
No Response	3	6.0%	3	6.0%	
Day 20	No.	%	No.	%	0.671
Good Response	43	86.0%	45	90.0%	
Partial Response	5	10.0%	3	6.0%	
No Response	2	4.0%	2	4.0%	

## DISCUSSION

Patients divided into 2 groups, the first group included 50 patients who treated with topical Povidone Iodine and the second group included 50 patients treated with topical Clotrimazole. Patients who diagnosed with perforated tympanic membrane included in the Povidone Iodine group as alcohol in Clotrimazole-

alcohol based- ear drops is considered ototoxic while Povidone Iodine is not ototoxic (Ozkiris et al, 2013).

### The results of this study categorized into three groups:

1. Good response: that means dry and normal external ear canal and tympanic membrane, with negative

mycobacterial cultures of the ear swabs.

2. Partial response: that means improvement but symptoms and signs of otomycosis still present.
3. No response: that means no improvement in symptoms or signs.

This study involved 100 patients (57 males and 43 females) with a documented diagnosis of otomycosis. The age of patients ranged from 3 years to 68 years with a mean age of 42 years. This finding matched with the study made by *Anwar et al. (2014)* with a mean age of 38.5 years.

This study showed that 48 patients (21 patients from Povidone Iodine group and 27 patients from Clotrimazole group) gave a history of habitual ear self-cleaning or manipulation from total 100 patients, so it was the most common predisposing factor of otomycosis in patients involved in this study.

Abuse of antibiotic eardrops as the only predisposing factor was the second predisposing factor for otomycosis, as 18 patients (12 patients from Povidone Iodine group and 6 patients from Clotrimazole group) from total 100 patients gave a history of using antibiotic eardrops for long periods.

This study also showed other predisposing factors such as using earpiece in an unhygienic manner in 12 patients, diabetic mellitus as the only predisposing factor reported in 11 patients, diabetes mellitus with antibiotic eardrops abuse reported in 2 patients and swimming reported only in 1 patient. In a study made by *Rao and Rao (2016)* showed the similar results where instillation of coconut oil was the most

common predisposing factor and represented 35.1% of patients, habitual self-cleaning, was the second most common predisposing factor represented 30.9% of patients. Other predisposing factors were lack of cerumen 12.8%, chronic suppurative otitis media 11.7% and prior use of topical antibiotic eardrops 6.4%. Habit of cleaning ear with such contaminated objects leads to inoculation of fungal debris in external auditory canal. Moreover, it damages the normal lining epithelium, which is the natural defense against such infections (*Rao and Rao, 2016*).

The laterality in this study showed 30 patients in Povidone Iodine group from total 50 patients in this group had otomycosis in the right ear while 32 patients from total 50 patients in the Clotrimazole group had otomycosis in the right ear from total 50 patients in this group, no patients in this study with documented otomycosis in both ears. The predominance of otomycosis in the right side may be explained by the predominant predisposing factor in both groups was ear self-cleaning. This matched with a study made by *Prasad et al. (2014)*, where 54% of cases have otomycosis in the right ear.

Patients included in this study presented with ear itching, ear pain with ear fullness sensation, ear Pain with ear itching, ear pain with ear discharge and finally ear pain. In this study ear itching was the most common predisposing factor as 38 patients (19 patients from Povidone Iodine group and 19 patients from Clotrimazole group), complained from ear itching, followed by ear pain with ear fullness sensation in 25 patients (11 patients from Povidone Iodine group and

14 patients from Clotrimazole group). In addition, 15 patients presented with ear pain with ear discharge, 14 patients presented with ear pain with ear itching and finally eight patients presented with ear pain as the only symptom. In a study made by *Prasad et al. (2014)* ear itching was the predominant symptom seen in 73% of the otomycotic patients followed by a blocked sensation in the ears (38%). Other symptoms were ear discharge (38%), ear pain (35%), and tinnitus (8%). *Pradhan et al. (2010)* reported the same results, as pruritus was the most common symptom (45%). In contrast, *Ho et al. (2010)* reported pruritus in 23% of cases only.

This study showed 13 patients with tympanic membrane perforation in the Povidone Iodine group, while no patients with perforated tympanic membrane included in the clotrimazole group, as alcohol in Clotrimazole -alcohol based-ear drops is considered ototoxic while Povidone Iodine is not ototoxic (*Ozkiris et al, 2013*).

Otomycosis commonly accompanied with bacterial coinfection, especially in cases with chronic otitis media (*Holmes et al, 2016*). This study showed that 84 patients had pure fungal infection and 16 patients had mixed fungal and bacterial infection. The cultures that showed bacterial infection (10 were staphylococcus aureus and six were pseudomonas aeruginosa).

Moreover, the current study revealed that causative organism in 56 patients was *Candida albican* (29 patients from Povidone Iodine group and 27 patients from Clotrimazole group). *Aspergillus niger* was the causative organism in 29

patients (13 patients in the Povidone Iodine group and 16 patients in the Clotrimazole group), while *Aspergillus fumigatus* and *Aspergillus flavus* were the causative organisms in nine patients and 6 patients respectively. In contrast to *Ali et al, (2018)* who found that *Aspergillus niger* (50.9%) was the most common isolated organism, followed by *Aspergillus flavus* (33.33%), and then by *Candida* species (14.7%) and *Shashikala et al, (2018)*, reported that, *Aspergillus Niger* was found in (37.5%), *Aspergillus Flavus* was found in (27%), *Aspergillus Fumigatus* in (18.7) and *Candida* was found in (16.6%).

*Aspergillus* species and *Candida* are the most common isolated fungi among the immunocompetent and immunocompromised patients (*Satish et al, 2013*).

#### **The treatment course in this study showed the following results:**

On the fourth day after treatment, five patients from Povidone Iodine group and six patients from clotrimazole group had a good response to treatment, while 30 patients from povidone iodine and in 31 patients from clotrimazole group had a partial response to treatment. There is no response to treatment in 15 patients treated with povidone iodine and 13 patients treated with clotrimazole.

In addition, on the tenth day after treatment, 27 patients treated with povidone-iodine had partial response to treatment and 20 patients had a partial response to treatment with clotrimazole, While the good response to treatment was observed in 20 patients treated with Povidone Iodine and 27 patients treated with Clotrimazole.

Finally, on the twentieth day after treatment, 43 patients treated with Povidone Iodine and 45 patients treated with Clotrimazole had good response to treatment, while five patients from Povidone Iodine group and three patients from Clotrimazole group had a partial response to treatment. There was no response to treatment in two patients in Povidone Iodine group and two patients in Clotrimazole group. Overall, in our study there was no statistically significant difference in terms of clinical response to treatment in the fourth, tenth and twentieth day after treatment between two treatment groups of Povidone Iodine and Clotrimazole. Significant difference in terms of response to treatment in the fourth, tenth and twentieth day after treatment between two treatment groups of Povidone Iodine and Clotrimazole. In a study made by *Mofatteh et al. (2017)*, 70% of patients had a good response to treatment with Povidone Iodine, while 68% of patients had a good response to treatment with Clotrimazole.

After course of treatment for 20 days, 12 patients from 100 patients involved in the study still not completely cured, seven patients from Povidone Iodine group and five patients from Clotrimazole group.

The predisposing factors in the 7 untreated patients from the Povidone Iodine group were CSOM in 2 patients, DM in one patient and self-cleaning of the ear in 4 patients, while the predisposing factors in the 5 patients from the Clotrimazole group were DM in one case and self-ear cleaning in 4 cases.

The two untreated patients with CSOM suffer from persistent offensive ear discharge and they undergo cortical

mastoidectomy. These two patients followed up for one month after the operation and with dryness of the ear, these two patients were cured.

The two patients with DM have a long history of uncontrolled DM so they referred to internal medicine department for monitoring and controlling blood glucose levels, and they completely cured on the same course of treatment after 10 days from controlling their blood glucose levels.

The eight patients with self-ear cleaning as a predisposing factor have a history of bad body hygiene and suffer from otitis externa. They treated with packing of the external auditory canal with antifungal and steroid cream on a piece of gauze for 2 days, then continuing the course of treatment either Povidone Iodine or Clotrimazole with frequent aural toilet, all of these patients cured after one week.

## CONCLUSION

From this study it can be concluded that there is no statistically difference between Povidone Iodine and Clotrimazole in treatment of otomycosis. Our findings reinforce the use of Povidone Iodine in otomycosis treatment because it is cheap, available, with no documented resistance thus far and no toxic effects on inner ear in case of perforated tympanic membrane.

## REFERENCES

1. Ali K, Hamed MA, Hassan H, Esmail A and Sheneef A. (2018): Identification of Fungal Pathogens in Otomycosis and Their Drug Sensitivity: Our Experience. *International Archives of Otorhinolaryngology*, 22(4): 400–403.

2. **Anwar K and Gohar MS. (2014):** Otomycosis: Clinical features, predisposing factors and treatment implications. *Pakistan Journal of Medical Sciences*, 30(3): 2–5.
3. **Chowdhary A, Sharma C and Meis JF. (2017):** Azole-resistant aspergillosis: epidemiology, molecular mechanisms, and treatment. *The Journal of Infectious Disease*, 216: 436–444.
4. **Ho T, Vrabec JT, Yoo D and Coker NJ. (2010):** Otomycosis: Clinical features and treatment implications. *Otolaryngology - Head and Neck Surgery*, 135(5): 787–791.
5. **Holmes AR, Cardno TS, Strouse J, Ivnitiski S, Keniya MV, Lackovic K, Monk BC, Sklar LA. (2016):** Targeting efflux pumps to overcome antifungal drug resistance. *Future Medicinal Chemistry*, 8(12):1485-501.
6. **Mofatteh MR, Naseripour YZ, Yousefi M, Namaei MH. (2018):** Comparison of the recovery rate of otomycosis using betadine and clotrimazole topical treatment. *Brazilian Journal of Otorhinolaryngology*, 84(4): 404–409.
7. **Ozkiris M, Kapusuz Z and Saydam L. (2013):** Ototoxicity of different concentrations povidone-iodine solution applied to the middle ear cavity of rats. *Indian J Otolaryngol Head Neck Surg.*, 65(2):168–172.
8. **Philip AT, Job A, Sundaresan V and Albert R. (2013):** Effectiveness of 7.5 Percent Povidone Iodine in Comparison to 1 Percent Clotrimazole with Lignocaine in the Treatment of Otomycosis. *ISRN Otolaryngology*, 13: 1–8.
9. **Pradhan B, Tuladhar N and Amatya R. (2010):** Prevalence of otomycosis in outpatient department of otolaryngology in Tribhuvan University Teaching Hospital, Kathmandu, Nepal. *Ann Otol RhinolLaryngol.*, 112: 384 –387.
10. **Prasad SC, Kotigadde S and Shekhar M. (2014):** Primary Otomycosis in the Indian Subcontinent: Predisposing Factors, Microbiology, and Classification. *International Journal of Microbiology*, 2014: 636493-6.
11. **Rao RP and Rao R. (2016):** A Mycologic Study of Otomycosis in a Tertiary Care Teaching Hospital in Karnataka, India. *IJCMR*, 93: 1918-1920.
12. **Satish HS. (2013):** A Clinical Study of Otomycosis. *IOSR Journal of Dental and Medical Sciences*, 5(2): 57–62.
13. **Shashikala BS, Deepthi P and Viswanatha B. (2018):** Fungal Flora in Chronic Suppurative Otitis Media: A Prospective Study in a Tertiary Care Hospital. *Research in Otolaryngology*, 7(1): 5-8.
14. **Swain SK, Behera IC, Sahu MC and Das A. (2018):** Povidone iodine soaked gelfoam for the treatment of recalcitrant otomycosis – Our experiences at a tertiary care teaching hospital of eastern India. *Journal de Mycologie Medicale*, 28(1): 122–127.
15. **Viswanatha B, Sumatha D and Vijayashree MS. (2012):** Otomycosis in Immunocompetent and Immunocompromised Patients: Comparative Study and Literature Review. *Ear Nose Throat Journal*, 91(3):114-21.

## المقارنة بين الكلوترايمازول الموضعي والبوفيدون أيودين الموضعي في علاج الالتهاب الفطري للأذن الخارجية

شريف علاء الدين عبد الحليم، محمد عبد الفتاح إبراهيم، يحيى محمد داود

قسم الأنف والأذن والحنجرة، كلية الطب، جامعة الأزهر

**خلفية البحث:** الالتهاب الفطري للأذن الخارجية هو عدوى فطرية في القناة السمعية الخارجية، وهو حالة مرضية شائعة جداً في عيادات قسم الأنف والأذن والحنجرة. العوامل المؤدية إلى هذا المرض تشمل: المناخ الرطب، التنظيف الشخصي للأذن بطريقة غير سليمة، استخدام أجهزة غير معقمة بالأذن، الإكثار من استخدام المضادات الحيوية الموضعية والمركبات التي تحتوي على الستيرويد، المرضى الذين خضعوا لاستئصال النتوء الحلمي خلف الأذن وأولئك الذين يرتدون أجهزة لتقوية السمع. الأعراض الشائعة لهذا المرض هي الحكّة، ألم بالأذن، إفرازات بالأذن، انخفاض حدة السمع وطنين بالأذن. يتطلب التشخيص الصحيح للالتهاب الفطري للأذن الخارجية إلى رفع مستوى الارتياب لوجود هذا المرض، وذلك لأن الأعراض الأكثر شيوعاً (الألم والإفرازات بالأذن) ليست دقيقة في الدلالة على المرض.

**الهدف من البحث:** المقارنة بين كلوترايمازول الموضعي و البوفيدون أيودين الموضعي في علاج الالتهاب الفطري للأذن الخارجية.

**المرضي وطرق البحث:** هذه دراسة تجريبية إكلينيكية عشوائية تضمنت 100 مريض تم تشخيصهم إكلينيكيّاً على أنهم يعانون من التهاب فطري بالأذن الخارجية. أجريت هذه الدراسة في العيادة الخارجية لأمراض الأذن والأنف والحنجرة بمستشفى الحسين الجامعي ومستشفى المطرية التعليمي في الفترة ما بين مايو 2019 وأكتوبر 2020. تم تشخيص الالتهاب الفطري للأذن الخارجية على أساس إكلينيكي، ويتم تأكيد التشخيص بأخذ مسحات من القناة الخارجية للأذن المصابة وإرسالها (تحت ظروف مناسبة) إلى المركز الإقليمي للفطريات وتطبيقاتها بجامعة الأزهر لعمل مزارع فطريات وبكتريا لهذه المسحات وعمل تقارير بنتائج هذه المزارع.

**نتائج البحث:** في اليوم الرابع بعد العلاج، كانت الاستجابة الجيدة للعلاج قد لوحظت في خمسة من المرضى الذين عولجوا بالبوفيدون أيودين الموضعي وستة من المرضى الذين عولجوا بالكلوتريمازول الموضعي، ولم يكن هذا الاختلاف يعتد به إحصائياً. بالإضافة إلى ذلك، في اليوم العاشر بعد العلاج، كانت الاستجابة الجيدة للعلاج قد لوحظت في عشرين مريضاً من المرضى الذين عولجوا بالبوفيدون أيودين الموضعي وفي سبعة وعشرين من المرضى الذين عولجوا بالكلوتريمازول الموضعي، ولم يكن هذا الاختلاف يعتد به إحصائياً. وأخيراً، في اليوم العشرين بعد العلاج، نجد ثلاثة وأربعين من المرضى الذين عولجوا بالبوفيدون أيودين الموضعي وخمسة وأربعين من المرضى الذين عولجوا بالكلوتريمازول الموضعي لديهم استجابة جيدة للعلاج، وقد تم متابعة بقية المرضى الذين لم يستجيبوا للعلاج حتى تماثلوا للشفاء.

**الاستنتاج:** علاج التهابات الأذن الخارجية المصاحبة للالتهابات الفطرية هو جزء أساسي من العلاج. البوفيدون أيودين هو بديل رخيص ومتوفر للكلوتريمازول في علاج الالتهاب الفطري للأذن الخارجية مع عدم وجود فروق ذات دلالة إحصائية في النتائج. البوفيدون أيودين أكثر أماناً من الكلوتريمازول كعلاج موضعي في حالة وجود ثقب في غشاء طبلة الأذن.