



The Outpatient Prescribing of Miconazole in a Tertiary Hospital in Riyadh Region

Nehad Jaser Ahmed ^{a*} and Hasan Soliman Yusufoglu ^b

^aDepartment of Clinical Pharmacy, College of Pharmacy, Prince Sattam Bin Abdulaziz University, Al-Kharj, Saudi Arabia.

^bDepartment of Pharmacognosy & Pharmaceutical Chemistry, College of Dentistry & Pharmacy, Buraydah Private Colleges, Buraydah 51418, Saudi Arabia.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i60A34552

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/79632>

Original Research Article

Received 15 October 2021
Accepted 19 December 2021
Published 20 December 2021

ABSTRACT

Aim: The present study aimed to describe the use of miconazole in the outpatient setting of a tertiary hospital in Riyadh Region.

Methodology: This was a retrospective study that included reviewing the electronic prescriptions that contained miconazole among patients in a public hospital in Riyadh Region.

Results: Most of the patients who received miconazole were females (89.29%) and the age of 51.79% of them was between 30 and 39 years. Most of the prescriptions were written by residents (96.43%) and most of the prescriptions were prescribed by emergency department (66.07%). Most of the patients received miconazole as vaginal suppository (50.00%) or as cream (39.29%).

Conclusion: The present study showed that miconazole was uncommonly prescribed in Riyadh Region. Further studies are needed to explore the frequency and pattern of miconazole use as well as to explore the frequency of prescribing other antifungal medications in different settings.

Keywords: Antifungal; miconazole; outpatient; use.

1. INTRODUCTION

Fungi can live in the soil, air, plants, and water and some fungi live naturally in the human body [1]. Like many microorganisms, there are harmful fungi and helpful fungi [1]. Different types of fungi can cause fungal infections. Some of these fungi are normally present on or inside the body and can multiply out of control to cause an infection and in other cases, fungi that aren't found on or inside the body can colonize and cause an infection [2].

Fungal diseases are commonly occurring in the skin or in the lungs. Other fungal diseases such as bloodstream infections and fungal meningitis are less common than lung and skin infections but can be fatal [3]. Antifungal drugs are used to treat these fungal infections [4]. The most common antifungal drugs are miconazole, clotrimazole, econazole, nystatin, terbinafine, ketoconazole, amphotericin, and fluconazole [4].

Miconazole is an azole antifungal with broad-spectrum activity used in the treatment of fungal infections affecting the mouth, vagina, and skin [5]. It was first synthesized in 1969 and first granted Food and Drug Administration approval on January 1974, for sale as a topical cream by INSIGHT Pharmaceuticals [6,7].

Miconazole could cause several adverse effects. Topical or vaginal miconazole could cause burning, irritation, itching, and rash [8]. On the other hand, miconazole oral could cause diarrhea, headache, nausea, abdominal pain, dysgeusia, and vomiting [9]. It may also interact with several medications such as ibuprofen, lorazepam, amoxicillin/clavulanate, diphenhydramine, fluconazole, omega-3 polyunsaturated fatty acids, and alprazolam [10].

There are few studies about the frequency and pattern of using miconazole in Riyadh Region. So, the present study aimed to describe the use of miconazole in the outpatient setting of a tertiary hospital in Riyadh Region.

2. METHODOLOGY

2.1 Setting

This was a retrospective study that included reviewing the electronic prescriptions that contained miconazole among patients in a public hospital in Riyadh Region.

2.2 Inclusion and Exclusion Criteria

The inclusion criteria included the prescriptions that were prescribed in the outpatient setting and that contained miconazole in the study period between January 2018 and June 2018. Exclusion criteria include the prescriptions that were written by other settings such as inpatient setting in addition to the outpatient prescriptions that didn't contain an miconazole dosage form.

2.3 Data Collection and Presentation

The collected data included the personal data of patients, the number of prescriptions that contained miconazole and that were prescribed during different months of the study, duration of miconazole use, the level of prescribers who prescribed miconazole, the prescribed dosage forms of miconazole, and the departments that prescribed miconazole. The data were collected and analyzed by Excel spreadsheet and after that they were represented descriptively as numbers and percentages.

3. RESULTS AND DISCUSSION

Miconazole were prescribed to 56 patients in the outpatient department of the hospital during the study period from the beginning of January 2018 to the end of June 2018. Most of the patients were females (89.29%) and the age of 51.79% of them was between 30 and 39 years. Table 1 shows the personal data of the patients.

Table 2 shows the number of the prescriptions that were prescribed in the different months of the study. more than 28% of the prescriptions were prescribed in April and 19.64% of the prescriptions were prescribed in June.

Table 3 shows the duration of miconazole use. More than 76% of the patients received miconazole for 1 week and 8.93% of them received it for 5 days.

Table 4 shows the level of prescribers who prescribed miconazole. Most of the prescriptions were written by residents (96.43%).

Table 5 shows the prescribed dosage forms of miconazole. Most of the patients received miconazole as vaginal suppository (50.00%) or as cream (39.29%).

Table 1. The personal data of the patients

Variable	Category	Number	Percentage
Gender	Female	50	89.29
	Male	6	10.71
Age	Less than 10	5	8.93
	10-19	1	1.78
	20-29	11	19.64
	30-39	29	51.79
	40-49	4	7.14
	50-59	3	5.36
	60-69	2	3.57
	More than 69	1	1.78
Nationality	Saudi	45	80.36
	Non- Saudi	11	19.64

Table 2. The number of the prescriptions that were prescribed during the study months

Month	Number	Percentage
January	5	8.93
February	10	17.86
March	10	17.86
April	16	28.57
May	4	7.14
June	11	19.64

Table 3. The duration of miconazole use

Duration	Number	Percentage
3 Days	1	1.78
5 Days	5	8.93
1 Week	43	76.79
1 Month	4	7.14
2 Months	1	1.78
More than 2 Months	2	3.57

Table 4. The level of prescribers

Prescribers level	Number	Percentage
Specialist	1	1.78
Resident	54	96.43
Consultant	1	1.78

Table 5. The prescribed dosage forms of miconazole

Dosage form	Number	Percentage
Oral gel	6	10.71
Cream	22	39.29
Vaginal suppository	28	50.00
Total	56	100

Table 6 shows the departments that prescribed miconazole. Most of the prescriptions were

prescribed by emergency department (66.07%) and 19.64% of the prescriptions were written by obstetrics & gynecology department.

Table 6. The departments that prescribed miconazole

Department	Number	Percentage
Dermatology	7	12.50
Emergency	37	66.07
Internal Medicine	1	1.78
Obstetrics & Gynecology	11	19.64

The present study showed that the prescribing of miconazole was uncommon the outpatient department in Al-Kharj. In contrast to that, previous studies found that miconazole is prescribed commonly to treat fungal infections. Abhinav et al reported that miconazole, ketoconazole, and clotrimazole are prescribed more frequently than other imidazoles [11]. Centers for Disease Control and Prevention stated that miconazole is one of the most frequently recommended and effective topical antifungal medications for the treatment of fungal infections such as vulvovaginal candidiasis [12].

Ghaninejad et al informed that miconazole nitrate is used widely to treat fungal infections [13]. Moreover, Khadka et al reported that the most commonly used drugs and the most effective antifungal drugs to treat candidal infections were clotrimazole, miconazole and fluconazole [14]. Hermawan et al reported that miconazole is commonly used to the skin or to mucous membrane to cure fungal infections [15].

In the present study, more than 76% of the patients received miconazole for 1 week and 8.93% of them received it for 5 days and for 1

month 7.14 and this is rational because the duration of miconazole is different for treating different diseases. For example, regarding topical dosage forms, the duration of treating vaginal candidiasis was between 3 and 7 days, for treating tinea corporis and tinea pedis the duration of treatment is 4 weeks, and the duration of treating cutaneous candidiasis is 2 weeks and for oral for oral thrush the treatment duration is 14 consecutive days [16,17].

Most of the patients in the present study received miconazole as vaginal suppository (50.00%) or as cream (39.29%) and because this medication is used commonly to treat vaginal yeast infections and as shown in the present study that most of the patients who received miconazole was females (89.29%). Moreover, most of the prescriptions were prescribed by emergency department (66.07%) and 19.64% of the prescriptions were written by obstetrics & gynecology department. this is rational because the patients in emergency department are commonly suffer from fungal infections and several patients visited obstetrics & gynecology department have vaginal infections.

4. CONCLUSION

The present study showed that miconazole was uncommonly prescribed in in Riyadh Region. Further studies are needed to explore the frequency and pattern of miconazole use as well as to explore the frequency of prescribing other antifungal medications in the outpatients setting and in the other settings.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ACKNOWLEDGEMENT

This Publication was supported by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Medicalnewstoday. What you need to know about fungal infections. Cited 11 December 2021. Available:https://www.medicalnewstoday.com/articles/317970#_noHeaderPrefixedContent
2. Healthline. Everything You Need to Know About Fungal Infection. Cited 11 December 2021. Available:https://www.healthline.com/health/fungal-infection#TOC_TITLE_HDR_1.
3. CDC. Fungal Diseases. Cited 11 December 2021. Available:<https://www.cdc.gov/fungal/index.html>.
4. NHS. Antifungal medicines. Cited 11 December 2021. Available:<https://www.nhs.uk/conditions/antifungal-medicines/>.
5. Drugbank. Miconazole. Cited 11 December 2021. Available:<https://go.drugbank.com/drugs/D01110>.
6. Godefroi EF, Heeres J, Van Cutsem J, Janssen PA. The preparation and antimycotic properties of derivatives of 1-phenethylimidazole. *J. Med. Chem.* 1969;12(5):784–791.
7. FDA. Oravig. Cited 11 December 2021. Available:https://www.accessdata.fda.gov/drugsatfda_docs/label/2020/022404s005lbl.pdf
8. Medicinenet. Miconazole. Cited 11 December 2021. Available: https://www.medicinenet.com/miconazole/article.htm#what_is_the_dosage_for_miconazole.
9. Medscape. Miconazole oral. Cited 11 December 2021. Available:<https://reference.medscape.com/drug/oravig-miconazole-oral-999515>.
10. Drugs.com. Miconazole. Cited 11 December 2021. Available:<https://www.drugs.com/drug-interactions/miconazole.html>.
11. Abhinav C, Mahajan VK, Mehta KS, Chauhan PS. Allergic contact dermatitis due to clotrimazole with cross-reaction to miconazole. *Indian J Dermatol Venereol Leprol.* 2015;81:80-82
12. CDC. Sexually Transmitted Diseases Treatment Guidelines. Cited 11 December 2021. Available:<http://www.cdc.gov/std/tg2015/candidiasis.htm>.

13. Ghaninejad H, Gholami K, Hashemi P, Hajibabai M, Rahbar Z, Farivar MS, et al. Sertaconazole 2% cream vs. miconazole 2% cream for cutaneous mycoses: a double-blind clinical trial. *Clin. Exp. Dermatol.* 2009;34(8):e837-e839.
14. Khadka S, Sherchand JB, Pokhrel BM, Parajuli K, Mishra SK, Sharma S, et al. Isolation, speciation and antifungal susceptibility testing of *Candida* isolates from various clinical specimens at a tertiary care hospital, Nepal. *BMC Res Notes.* 2017;10:218.
15. Hermawan D, Sulaeman U, Istiqomah A, Aboul-Enein HY. Development of high performance liquid chromatography method for miconazole analysis in powder sample. In *IOP Conference Series: Mater. Sci. Eng.* 2017;172(1):012011.
16. Drugs.com. Miconazole Dosage. Cited 11 December 2021. Available:<https://www.drugs.com/dosage/miconazole.html>.
17. Drugs.com. Miconazole Topical Dosage. Cited 11 December 2021. Available:<https://www.drugs.com/dosage/miconazole-topical.html>

© 2021 Ahmed and Yusufoglu; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/79632>