

ORIGINAL ARTICLE

Efficacy of Oral Voriconazole in the Treatment of Dermatophyte Infections (Tinea Corporis and Cruris)

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ABSTRACT

Objective: To determine the efficacy of oral voriconazole in the treatment of dermatophyte infections (tinea corporis and cruris)

Methodology: A total of 200 patients of both sex with age group 18-60 year having dermatophyte infection of body and groin were enrolled in this study. Each patient was given oral voriconazole 200 mg twice a day (tablet vorif 200 mg) for two weeks. Follow up was done at end of 2nd, 4th and 12 weeks. Efficacy was assessed clinically in the form of complete healing of lesion leaving behind post inflammatory pigmentation or normal skin. Study duration was 3 months. Patients were assessed for any possible side effects at each appointment. All of the patients were truly monitored and checked for their compliance to drug. The data was recorded on preformed Proforma for each patient.

Results: Out of 200 cases, 133 were new, 42 were relapsing and 25 were resistant cases. Total efficacy was noted in 164 patients (82%) of all study cases. Male and female showed efficacy in 81% and 82% of cases respectively (Table 1). Patients belonging to age group 18-40 year showed 86 % efficacy and patients belonging to age group 41-60 year showed 76% efficacy (Table 2). From all new, relapsing and resistant study cases, 90 %, 71% and 58% showed efficacy to treatment respectively (Table 3).

Conclusion: In our population oral voriconazole is efficacious in the treatment of tinea corporis and cruris.

Keywords: Dermatophytes, Efficacy, Voriconazole

INTRODUCTION

The fungus causes three types of infection (mycosis) in human beings i.e. superficial, subcutaneous and systemic mycosis¹. Superficial mycosis can be classified into various subtypes i.e. Dermatophytosis, pityriasis versicolor, and candidiasis¹. Dermatophytosis is caused by a specific group of fungi which infect keratinized tissues (i.e. skin, hair and nail) of our body². Dermatophytes predominantly belong to a family Arthrodermataceae having ~40 species classified among three different genera, i.e., Microsporum, Trichophyton and Epidermophyton³. According to World Health Organization dermatophytes affect about 25% of the world population⁴.

Clinically dermatophytosis can be named according to body area involved i.e. tinea corporis (for trunk), tinea cruris (for groin), tinea capitis (for scalp) and tinea pedis (for toe web spaces)⁵. Various risk factors for dermatophyte infections include hot and humid climate, over population and poor hygienic living conditions⁶. In our country this problem is very common due to presence of these risk factors.

Tinea corporis and cruris may spread via infected humans, animals, fomites, and autoinoculation from distant reservoirs of dermatophyte colonization¹². Clinically tinea corporis and cruris manifest by formation of annular, scaly, erythematous and itchy plaques on body and groin respectively¹³. These lesions may extend several centimetres in diameter. With treatment these lesions start to heal in the centre¹³. For diagnosis of tinea corporis and cruris skin scraping is done from the edge of the lesion and microscopy is performed after addition of potassium hydroxide¹⁴.

Various oral treatment options for tinea corporis and cruris are terbinafine, griseofulvin, fluconazole, itraconazole and voriconazole⁷. Voriconazole is newer antifungal drug belongs to azole antifungal group. It is broad spectrum antifungal causes inhibition of fungal cytochrome P450 mediated 14- α lanosterol demethylation, ultimately resulting in damage and loss of fungal cell membrane function⁸. In literature this drug was mainly used for invasive fungal infections⁹. A few studies were carried out in various countries to determine its efficacy in the treatment of dermatophyte infection. In our country where dermatophytosis is very common problem, this drug was never studied before. Now a days we are dealing many patients of dermatophytosis not responding to traditional antifungal drugs (i.e. terbinafine,

fluconazole and itraconazole)¹⁰. After determining the efficacy of voriconazole, a newer drug option for the treatment of dermatophytosis can be used in new, resistant and relapsing cases.

MATERIAL AND METHODS**Inclusion criteria:**

- Age: 18-60 year
- Gender: Both male and female
- Site: Trunk and groin
- Size of the lesion: Any

Exclusion criteria:

- Patients with chronic immunosuppressive diseases or state (i.e. diabetes, malignancy, liver or renal disease, tuberculosis, AIDS, history of organ transplant and history of immunosuppressive therapy)
- Pregnancy and lactation
- Prior hypersensitivity to azole antifungal drugs

Data Collection and Analysis: After getting approval of this randomized clinical study from ethical review committee and fulfilling the eligibility criteria, total of 200 patients were enrolled visiting outpatient dermatology department of Sheikh Zayed Hospital Rahim Yar Khan. Each patient was given oral voriconazole 200 mg twice a day for 2 weeks. Patients were assessed at the end of 2, 4 and 12 weeks. Efficacy was determined clinically by complete remission of disease leaving behind postinflammatory pigmentation or normal skin. Patients were followed up for relapse of disease at the end of 4th and 12th week. Total study duration was 3 months. Patients were assessed for severe side effects at each appointment. All of the patients were truly monitored and checked for their compliance to drugs. The data was recorded on preformed Proforma for each patient. Frequencies and percentages were calculated for qualitative variables. Effect modifiers like age, gender and site of disease were controlled by stratification. Post stratification chi-square test was applied to see the effect of this on outcome. P value equal or less than 0.05 was considered as significant.

RESULTS

Out of total of 200 patients 142 were males (71%) and 58 were females (29%) (Table 1) and all patients were divided into two age

groups (Table 2) i.e. 18-40 year age group having 122 cases (61%) and 41-60 year age group having 78 cases (39%). To define the Efficacy of the treatment, the patients were divided into 3 groups (Table 3) i.e.

New cases: those patients who had no prior history of tinea corporis or cruris in the last 3 months

Relapsing cases: those patients who had tinea corporis or cruris in the last 3 months, got treatment, lesions healed, then recurred

Resistant case: those patients who took oral antifungal (terbinafine or itraconazole) treatment for at least 2 weeks but disease did not recover

Out of 200 cases, 133 were new, 42 were relapsing and 25 were resistant cases.

Total efficacy was noted in 164 patients (82%) of all study cases. Male and female showed efficacy in 81% and 82% of cases respectively (Table 1). Patients belonging to age group 18-40 year showed 86 % efficacy and patients belonging to age group 41-60 year showed 76% efficacy (Table 2). From all new, relapsing and resistant study cases, 90 %, 71% and 58% showed efficacy respectively (Table 3).

Table 1: Gender wise distribution of efficacy

Cases		Efficacy		P value
		Yes	No	
Total cases	200	164 (82%)	36 (18%)	0.00001
Male	142 (71%)	116(81%)	26 (19%)	0.00001
Female	58 (29%)	48 (82%)	10 (18%)	0.00001

Table 2: Age wise distribution of efficacy

Age group	Cases	Efficacy		P -value
		Yes	No	
18-40 year	122 (61%)	105 (86%)	17(14%)	0.00001
41-60 year	78(39%)	60(76%)	18(26%)	0.00001

Table 3: Efficacy wise distribution

Cases		Efficacy		P value
		Yes	No	
Total	200	164 (82%)	36 (18%)	0.00001
New	133	120 (90%)	13 (10%)	0.00001
Relapsing	42	30(71%)	12(29%)	0.00008
Resistant	25	14(56%)	11 (44%)	0.3953

DISCUSSION

Fungal infections or Mycoses can be classified into 3 types: (1) superficial mycosis involving hair, nails and superficial epidermis; (2) subcutaneous mycosis involving dermis and/or subcutaneous tissue; and (c) systemic mycosis involving internal organs of body via haematogenous spread¹. Superficial mycosis is caused by dermatophyte fungus which has approximately 40 species divided into 3 genera namely Trichophyton, Microsporum and Epidermophyton, all belonging to the Arthrodermataceae family³. Dermatophytosis is defined as the ability of a dermatophyte to attach, invade, and use keratin (found in skin, nails and hair) as a source of nutrition; and this is the main underlying pathogenic mechanism of dermatophyte infection¹¹.

Skin dermatophyte infection is named according to site of involvement i.e. tinea capitis (scalp involvement), tinea corporis (body involvement), tinea cruris (groin involvement), tinea pedis (toe web space involvement)⁵. Predisposing factors for dermatophyte infections include hot and humid climate, over-population and poor hygienic living conditions⁶. Various sources of transmission of tinea corporis and cruris include infected humans or animals, fomites, or may occur via autoinoculation from distant reservoirs of dermatophyte colonization¹².

Clinically tinea corporis and cruris are characterized by formation of annular, scaly, erythematous and itchy plaques on body and groin respectively. These lesions may extend several centimetres in diameter. With treatment these lesions start to heal in the centre¹³. For diagnosis of tinea corporis and cruris skin scraping is done from the edge of the lesion and microscopy is performed after addition of potassium hydroxide¹⁴.

There are many oral treatment options for tinea corporis and cruris for example terbinafine, griseofulvin, fluconazole, itraconazole and voriconazole⁷. Voriconazole is newer antifungal drug belongs to azole antifungal group. It is broad spectrum antifungal drug and causes inhibition of fungal cytochrome P450 mediated 14-alpha lanosterol demethylation, ultimately resulting in damage and loss of fungal cell membrane function⁸. In literature this drug was mainly used for invasive fungal infections⁹. A few studies were carried out in various countries to determine its efficacy in the treatment of dermatophyte infection. In our country where dermatophytosis is very common problem, this drug was never studied before. Now a days we are dealing many patients of dermatophytosis not responding to traditional antifungal drugs (i.e. terbinafine, fluconazole and itraconazole)¹⁰. After determining the efficacy of voriconazole, a newer drug option for the treatment of dermatophytosis can be used in new, resistant and relapsing cases.

Superficial mycosis is a worldwide disease that affects more than 25% of the population¹⁵. Dermatophyte infections are 5 times more prevalent in males than females. Brigida S et al found predominance of tinea corporis in male (56%)¹⁶. Ganage et al also found male predominance of dermatophytosis (54%)¹⁷. Our study results showed male gender predominance (71%).

Das et al found that tinea corporis (86%) and cruris (74%) is predominant type in patients with age 18-40 year¹⁸. Similarly our study results showed predominance of dermatophyte infection in the same age group.

Chandrashekar BS et al found 75 % efficacy of oral voriconazole in the treatment of recurrent and resisting cases¹⁹. Khondker L conducted a prospective, clinical trial with 81 treatment failure cases of dermatophytosis (both relapsing and resistant cases) and found efficacy of oral voriconazole in 67.9% of cases²⁰. Hoq AJMS et al showed 88 % efficacy of oral voriconazole in the treatment of relapsing and resisting dermatophyte infection⁴. In our study we found out that voriconazole shows 71 % and 56% efficacy in treatment of relapsing and resistant cases of dermatophytosis respectively. Our study results also showed 90 % efficacy of oral voriconazole in treatment of new cases of tinea corporis and cruris.

CONCLUSION

Voriconazole is as a new safe drug that can be used in new as well as relapsing and resisting dermatophyte infections with good efficacy.

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