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Original Research Article

Terbinafine Vs Itraconazole Vs Fluconazole in the Management of Superficial Dermatophytosis – A Randomized Comparative Study

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Abstract

Introduction: Superficial dermatophytic infections constitute a common dermatological illness that require necessary therapy. Oral or topical antifungal medications have proven effective in treating dermatophyte fungal infections. Oral antimycotics such as terbinafine, itraconazole, and fluconazole are useful in fighting surface mycoses. The purpose of this research was to compare the effectiveness of three pulse therapies for superficial dermatophytosis: itraconazole, terbinafine, and fluconazole.

Materials and Methods: This randomized study included with 120 patients with superficial dermatophytosis divided in to three groups administered with Itraconazole pulse regimen 200 mg (Group I), Tab. Terbinafine 250 mg OD (Group T) and Tab. Fluconazole 150 mg (Group F). Post treatment follow-up was done up to 4 to 8 weeks to assess the treatment response.

Results: The itching was absent in 2.5% of cases at 4th week, 70% at 8th week in group T, Erythema was absent in 20% and 7.5% at 4th week, 5% and 30% at 8th week in group I and group T respectively. Scaling was absent in 27.5%, 32.5% and 12.5% at 4th week, 10%, 12.5% and 12.5% at 8 weeks in group I, T and F respectively. The recurrence of symptoms was 22.50%, 5% and 30% in group I, group T and group F respectively.

Conclusion: Pulse therapy of Tab. Terbinafine 250 mg with intermittent administration showed effective outcome and good feedback from the cases with superficial dermatophytosis. Hence, it is an effective drug to minimize the condition and reduces the diseases transmission.

Keywords: Superficial dermatophytosis, Itraconazole, Terbinafine, Fluconazole.

Introduction

The word "dermatophytosis" refers to a superficial dermatophyte infection that affects the skin, hair, and nails. It may be caused by several organisms, such as Microsporum, Trichophyton, and Epidermophytonosis. Infections related to tinea pedis, tinea corporis, and tinea cruris are often seen [1-3]. Although these fungi are normally superficial and harmless, they have the potential to become invasive and cause deeper and more widespread illnesses. Lesions have the potential to spread and result in significant effects for social, psychological, and occupational

health, as well as a significant decline in quality of life [4]. Depending on the extent and type of infection, dermatophytosis may be successfully treated with an oral or topical antifungal medication. Owing to their potential for hepatotoxicity, therapeutic drugs are seldom given for the treatment of surface infections [5]. Topical antifungal treatments are often successful and may be obtained without a prescription in most areas. Additionally, patients find these medications attractive and readily accessible since they are less costly than oral formulations and have less adverse effects [6, 7]. 4–6 Fluconazole is a triazole antifungal drug that preferentially prevents lanosterol from being converted to ergosterol by interacting with the enzyme lanosterol 14-alpha demethylase, which is reliant on fungus cytochrome P450 [8]. Because terbinafine has a decreased risk of drug interactions and doesn't cause cardiac problems, it is the recommended oral medication for treating onychomycosis and extensive cutaneous illness in the senior population [9].

When used in regimens of 100 mg for two weeks in the case of tinea cruris and corporis, or thirty days in the case of dry type tinea pedis, it is effective against a broad variety of dermatophytes [10]. For tinea corporis, the current recommended regimen is for 400 mg per day for one week, and for dry type tinea pedis, it calls for two weeks [11]. Various investigations have been carried out in the past to compare the treatment plans for fungal diseases. On the other hand, the differences in cure and recurrence rates with each regimen have not been well studied. Therefore, the purpose of the current research was to evaluate the effectiveness of Itraconazole, Terbinafine, and Fluconazole pulse treatments in the management of superficial dermatophytosis.

Materials and Methods

The present randomized study was conducted in the Depa of Maheshwara Medical College and Hospital in Patancheru, Isnapur during July 2021 to June 2022. A total of 120 patients with superficial dermatophytosis attending outpatient department of Dermatology above 18 years of age were recruited. All cases, regardless of gender, without history of antifungal treatment for past 30 days, with findings of KOH positive for fungal elements and willing to participate were included. Cases with systemic disorders including cardiovascular, cerebrovascular, renal and hepatic disorders, in pregnancy, lactation, allergic to study drugs, immunosuppressive and not willing to participate were excluded. The detailed study procedure was explained to the participants and given enough time to clarify the doubts. Later, written informed consent was obtained from all the participants and study protocol was approved by institutional ethics committee. Three drug groups were randomly assigned to study participants. Group I received an Itraconazole pulse regimen consisting of one 200 mg once daily tablet pulsed for a week, followed by a three-week drug-free interval and the administration of a placebo for the duration of the one-month treatment. Group T received intermittent pulse treatment consisting of eight doses of Tab. Terbinafine 250 mg OD once every three days, to be finished within a month. Group F received Tab. Fluconazole 150 mg once every three days for six weeks over a one-and-a-half-month treatment period. Post treatment follow-up was done up to 4 to 8 weeks to assess the treatment response. The recurrence of condition was evaluated till the end of 12 months. During every follow-up the details of lesions including extent, scaling, erythema, appearance, pustulation and absence of central cleaning was checked and details were recorded.

The data analysis was conducted by using SPSS 16.0. The categorical variables were represented in frequency and percentages. The continuous variables were represented in Mean and SD. The significance in the

data chi-square test was used. The $p<0.05$ was considered as statistically significant.

Results

Table 1: Clinico-demographic profile of study participants

Parameter	Total no of cases (n=120)			Chi-square value	P-value
	Group I (n=40)	Group T (n=40)	Group F (n=40)		
Age (In years)					
18-30	17 (42.5%)	18 (45%)	13 (32.5%)	4.894	0.206
31-40	10 (25%)	08 (20%)	11 (27.5%)		
41-50	06 (15%)	08 (20%)	08 (20%)		
51-60	05 (12.5%)	04 (10%)	05 (12.5%)		
Above 60	02 (5%)	02 (5%)	03 (7.5%)		
Gender					
Male	22 (55%)	19 (47.5%)	24 (60%)	5.218	1.762
Female	18 (45%)	21 (52.5%)	16 (40%)		
Family Members with Dermatophytosis					
Present	14 (35%)	11 (27.5%)	15 (37.5%)	4.379	0.936
Absent	26 (65%)	31 (72.5%)	25 (62.5%)		
Details of contact transmission of dermatophytosis					
Present	21 (52.5%)	18 (45%)	17 (42.5%)	2.952	0.890
Absent	19 (47.5%)	22 (55%)	23 (57.5%)		
History of treatment					
Yes	22 (55%)	23 (57.5%)	22 (55%)	4.256	0.068
No	18 (45%)	17 (42.5%)	18 (45%)		
History of KOH treatment					
Yes	24 (60%)	27 (67.5%)	24 (60%)	2.061	1.374
No	16 (40%)	13 (32.5%)	16 (40%)		

Table 2: Outcome during follow-up in study participants

Score	Study groups	Status	At beginning	At 4 weeks	At 8 weeks
Itching score	Group I	Present	40 (100%)	40 (100%)	39 (97.5%)
		Absent	-	-	01 (2.5%)
	Group T	Present	40 (100%)	39 (97.5%)	12 (30%)
		Absent	-	01 (2.5%)	28 (70%)
	Group F	Present	40 (100%)	40 (100%)	40 (100%)
		Absent	-	-	-
Erythema	Group I	Present	40 (100%)	32 (80%)	38 (95%)
		Absent	-	08 (20%)	02 (5%)
	Group T	Present	40 (100%)	37 (92.5%)	28 (70%)
		Absent	-	03 (7.5%)	12 (30%)
	Group F	Present	40 (100%)	40 (100%)	40 (100%)
		Absent	-	-	-
Scaling	Group I	Present	38 (95%)	29 (72.5%)	36 (90%)
		Absent	02 (5%)	11 (27.5%)	04 (10%)
	Group T	Present	39 (97.5%)	27 (67.5%)	35 (87.5%)
		Absent	01 (2.5%)	13 (32.5%)	05 (12.5%)
	Group F	Present	38 (95%)	35 (87.5%)	35 (87.5%)

		Absent	02 (5%)	05 (12.5%)	05 (12.5%)
Absence of central clearing	Group I	Present	36 (90%)	25 (62.5%)	34 (85%)
		Absent	04 (10%)	15 (37.5%)	06 (15%)
	Group T	Present	28 (70%)	32 (80%)	28 (70%)
		Absent	12 (30%)	08 (20%)	12 (30%)
	Group F	Present	37 (92.5%)	35 (87.5%)	38 (95%)
		Absent	03 (7.5%)	05 (12.5%)	02 (5%)

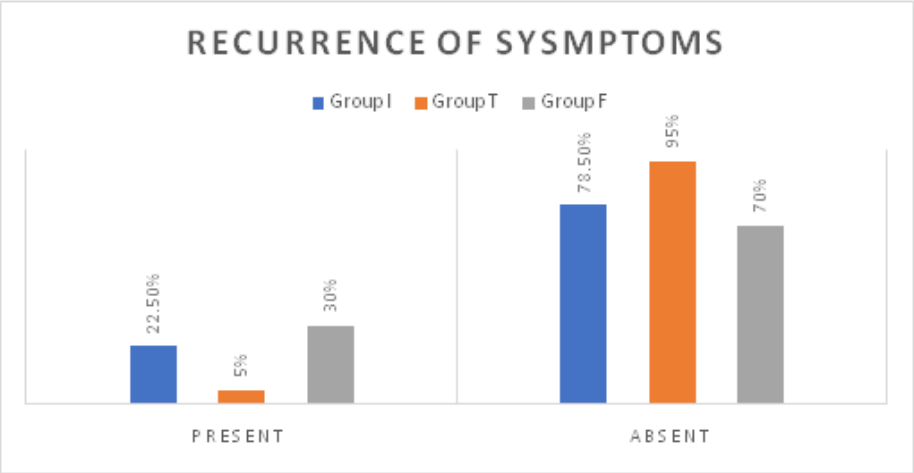

Figure 1: Details of Recurrence of symptoms among three drug groups

Discussion

Majority of participants were aged between 18-30 years and 31-40 years. Male participants were more than females. Positive family history with dermatophytosis was observed in 35% of group I, 27.5% of group T and 37.5% of group F cases. The contact transmission of dermatophytosis was seen in 52.5% of cases in group I, 45% in group T and 42.5% in group F cases. Around 55%, 57.5% and 55% of cases were using steroid treatment for dermatophytosis in group I, group t and group F respectively. Majority cases were under HOH treatment in three study groups i.e. 60%, 67.5% and 60% in group I, group T and group F respectively (Table 1). The difference of age, gender, family history, contact transmission, treatment history and KOH treatment was not significant between study groups ($p>0.05$). All the participants in three study groups were reported itching was at the beginning and cases of group F during entire follow up period. However, 2.5% of cases at 4th week, 70% at 8th week reported absence of itching in group T. The erythema was not observed in 20% and 7.5% at 4th week, 5% and 30% at 8th week in group I and group T respectively. All the participants at the beginning, and in group F exhibited erythema during entire study period. The scaling was present in 95%, 97.5% and 95% of cases at beginning, at 4th week, 72.5%, 67.5% and 87.5%, at 8th week 90%, 87.5% and 87.5% in group I, group T and group F respectively. Absence of central clearing was observed at beginning in 90%, 70% and 92.5%, at 4th week in 62.5%, 80% and 87.5%, and at 8th week in 85%, 70% and 95% in group I, group T and group F respectively (Table 2). The recurrence of symptoms was observed in 22.50% of cases of group I, 5% of cases of group T and 30% of cases of group F.

However, the rate of recurrence was low in group T (Graph 1). According to a study by Sharma P et al., patients with dermatophytosis were treated for three weeks with terbinafine 250 mg, itraconazole 200 mg, and a combination of

both once daily taken on the same day. The study found that cases receiving combination therapy showed the highest rates of clinical and mycological cure (90%) followed by those receiving itraconazole (50%) and terbinafine (35%). The study also found that systemic terbinafine with itraconazole treatment might be a safe and effective combination for treating dermatophytosis [12].

According to Chang et al., oral terbinafine, itraconazole, and fluconazole administered intermittently or continuously for superficial dermatophytosis was linked to a low frequency of side effects in an immunocompetent group [13]. A systemic review and meta-analysis reported that itraconazole and terbinafine combination therapy has a better cure rate when compared to terbinafine monotherapy [14]. In managing toenail dermatophytic onychomycosis, Gupta et al. performed a randomised, single-blind trial with 101 elderly subjects. The study indicated that the mycologic cure rate for terbinafine was 64%, while for itraconazole it was 62.7% [15].

According to study conducted by Bhatia et al., giving terbinafine 500 mg daily for two to four weeks improved the itching score in 24% of patients and the erythema in 16% of instances. On the other hand, scaling score improved in 16.7% of patients after 2-4 weeks with a daily dosage of 500 mg of terbinafine and 29.6% in the group that received 200 mg of itraconazole [16].

According to Shivakumar V et al., intermittent pulsed terbinafine medication administered once every three days for three weeks resulted in a 91.3% cure rate for tinea corporis/cruris and a very low recurrence rate, supporting terbinafine previously mentioned excellent pharmacokinetic qualities [17]. The results of present study were similar to the findings of above studies. A systemic review and meta-analysis found that the sure rates were significantly improved for combination therapy than terbinafine monotherapy [18].

The present study has limitations in terms of low participants in each drugs groups with limited assessment of disease clinical profile. Further largescale studies are required to evaluate different drug dosages in dermatophytosis.

Conclusion

The results of present study concluded that oralItraconazole, Terbinafine and Fluconazole were effective in the management of for superficial dermatophytosis. However, pulse therapy of Tab. Terbinafine 250mg with intermittent administration showed effective outcome and good feedback from the cases with superficial dermatophytosis. Hence, it is an effective drug to minimize the condition and reduces the diseases transmission.

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