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Original Research Paper

Dermatology

COMPARATIVE EFFICACY OF ORAL TERBINAFINE VERSUS ITRACONAZOLE IN THE TREATMENT OF DERMATOPHYTIC INFECTION- A PROSPECTIVE STUDY

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ABSTRACT

Background: Dermatophytosis is a common superficial fungal infection of skin, hair and nail. Since the organism prefer hot humid climate, there is rising prevalence in tropics. Terbinafine and Itraconazole are commonly used antifungals for the same. Hence this study was conducted to compare the efficacy of these two oral drugs in the treatment of dermatophyte infection. **Methods:** A prospective comparative study was done on 80 patients with clinically and mycologically diagnosed tinea corporis and tinea cruris. Patients were randomized into two groups A and B. Group A were given tablet terbinafine 500mg once daily and group B were given capsule itraconazole once daily, both for 4 weeks. Patients were followed up at 2 and 4 weeks. Efficacy was assessed based on complete clinical and mycological cure rate. **Result:** At end of 4 weeks 85% in group A achieved complete remission compared to 82.5% in group B. At the end of 4 weeks, there was statistically significant improvement (p value < 0.05) in the total symptom score (erythema, scaling and pruritus) in group A as well as in group B compared to baseline. None of the patients showed any significant side effects in both the groups. **Conclusion:** Study showed that Terbinafine has slightly higher efficacy in comparison to Itraconazole in the treatment of dermatophyte infection.

KEYWORDS :

INTRODUCTION

Dermatophytosis is a very common superficial fungal infection of the keratinizing structures of the body like skin, hair and nail with the worldwide prevalence contributing to around 20-25%, according to the World Health Organisation.[1] Existence of the organism depends upon many factors and hence vary between countries. Since the organism prefers a hot humid climate, its prevalence is more common in the tropical countries, of which India serves as the major hub of the infection.

For extensive, recurring, and nonresponsive cases of dermatophytosis, systemic therapy is recommended. Systemic antifungals are also necessary for treating multi-site skin infections that do not respond to topical therapy. There are numerous systemic antifungals, including terbinafine, griseofulvin, itraconazole, and fluconazole, that can be used to treat dermatophyte infections. Among these, terbinafine and itraconazole are the most frequently prescribed medications because the other two need to be taken for a longer time.[1]

Because of its favorable mycological and pharmacokinetic profile, terbinafine is regarded as a first-line treatment for dermatophytosis. However, as a result of drug overuse, terbinafine resistance has been more common recently, leading to an increase in clinical failures and relapses. In the treatment of dermatophytosis, terbinafine has been shown to be both safe and effective at higher dosages of 500 mg per day.[2]

On the other hand, itracanozole has shown good results in treating dermatophytosis by inhibiting ergosterol production when administered at daily doses of 100 mg or 200 mg for two weeks.[3]

There is an emerging trend of resistant dermatophyte infections not responding to conventional doses of available systemic antifungal therapies. Hence, the present study was conducted to compare the effectiveness of high dose of oral terbinafine and standard dose of itraconazole in the treatment of dermatophyte infections.

METHODOLOGY

This study was a prospective comparative study conducted at Department of Dermatology, KVG medical college and hospital, Sullia. After taking written informed consent total of 80 patients were selected for the study. Patients were randomized into two groups Group A and Group B under which each 40 patients were assigned. Group A were given capsule Itraconazole 200mg once daily and group B were given tablet Terbinafine 500mg once daily, both for 4 weeks. Response of treatment was recorded at 2 and 4 weeks in terms of both clinical (resolution of erythema, pruritus and scaling) and mycological (negative KOH mount test) cure.

Inclusion Criteria

All consenting with different types of superficial fungal infections like tinea corporis, tinea cruris, tinea pedis, tinea barbae, tinea manuum, tinea faciei were included in the study. Only those patients who were diagnosed de novo for superficial fungal infections were considered for the study. Patients in the age group of 18 to 60 years were included in the study.

Exclusion Criteria

The excluding patients were those who were previously treated, pregnant and lactating women, patients with pre existing renal disease, hepatic disease, cardiac disease, patients unwilling for a regular follow up.

The data collected were coded, processed and analyzed with SPSS version 27 for Windows® (Statistical Package for Social Sciences) (IBM, SPSS Inc, Chicago, IL, USA). Qualitative data as number (frequency) and percent was presented. The Chi-Square test made the comparison between groups.

RESULTS

Eighty patients were recruited for the study. Out of 80 patients with dermatophye infections of the skin included in the study, 40(50%) took oral Itraconazole 200mg daily and 40(50%) took oral Terbinafine 500mg daily after the randomization. The average age of the patients was 36.24 and 35.27 years respectively, in Group A and Group B. There were 22(55%) males and 18(45%) females in Group A, while Group B had

14(35%) males and 26(65%) females.

The baseline KOH examination was positive in 36 out of 40 patients in Group A, where as the same was positive in 35 out of 40 patients in Group B.

At the end of 4 weeks, there was a statistically significant improvement (p value <0.05) in the total symptom score(erythema, scaling and pruritus) in Group A as well as in Group B compared to baseline. The significant improvement started from 2 weeks and persisted till the end of the treatment in both the groups.

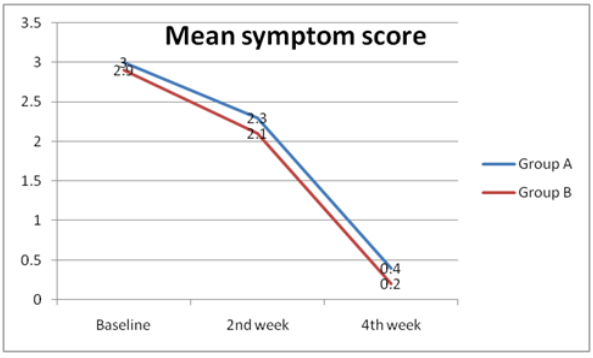

Figure 1: Week-wise total symptom score comparison

Mycological cure was achieved in 27 patients(67.5%) in Group A and 18 patients(45%) in Group B at the end of 2 weeks that was statistically significant(p=0.01) and at the end of 4 weeks, 33 patients (82.5%) in Group A and 34 patients (85%) in Group B achieved mycological cure rate that was statistically not significant(p>0.05).

Table 1: Clinical Response In Group A And Group B

Clinical response	Group A	Group B	p- value
Yes	30 (75%)	38 (95%)	0.01
No	10 (25%)	2 (5%)	
Total	40 (100%)	40 (100%)	

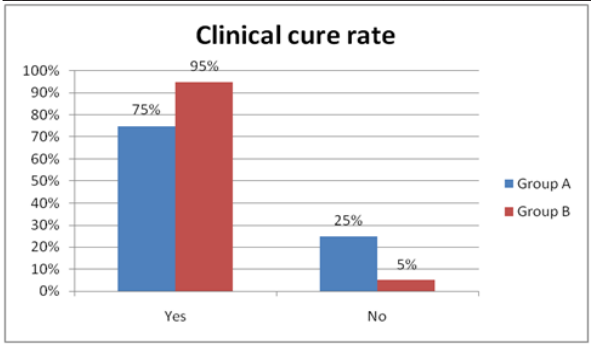

Figure 2: Comparison of clinical cure rate between two study groups.

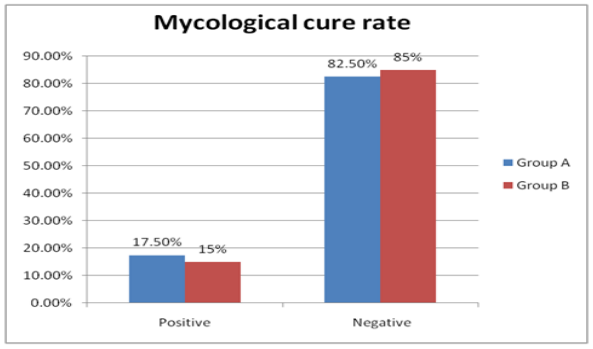

Figure 3: Comparison of mycological cure rate between two study groups.

Table 2: KOH Test In Group A And Group B.

	Group A(Itraconazole)		Group B (Terbinafine)		p-value
	Positive n (%)	Negative n (%)	Positive n(%)	Negative n(%)	
Baseline	36(90%)	4(10%)	35(87.5%)	5(12.5%)	
2nd week	13(32.5%)	27(67.5%)	22(55%)	18(45%)	0.042
4th week	7(17.5%)	33(82.5%)	6(15%)	34(85%)	0.076

DISCUSSION

Dermatophytosis has become more common in India in recent years, and the medical fraternity has been observing an increase in the prevalence of dermatophytosis and resistance to conventional dosage of antifungal drugs. Due to this change in the clinical scenario with increasing rise in prevalence of treatment failures, there is a growing need to find a first-line treatment that effectively clears dermatophytosis completely and rapidly. Topical antifungals are the first line of treatment for dermatophytosis, according to initial studies. However, in the current scenario in India, topical therapy is ineffective in clearing up large lesions or multisite dermatophytosis in the patients, which results in treatment failures and relapses. Systemic therapy is often recommended for these patients. According to recent comprehensive reviews by Sahoo et al.[4] and Murlidhar et al.[5], use of a combination of topical and systemic antifungals is recommended in the treatment of patients with large lesions or resistant tinea infections.

It has been established that systemic anti-fungal medications, including griseofulvin, terbinafine, fluconazole, and itraconazole, are effective against dermatophytes; terbinafine is the sole medication that has fungicidal properties. [6, 7] Of these, terbinafine and itraconazole are administered more frequently than griseofulvin and fluconazole, presumably because the latter need a longer course of treatment.[8]

Terbinafine has previously demonstrated consistent efficacy against dermatophytosis at a dosage of 250 mg/day, with over 90% cure rates when given for a two-week period.[9,10] But recently, there has been a rise in the incidence of terbinafine resistance, which has led to treatment failure.[11.] It has been observed that inadequate drug concentration in skin tissues can result in the development of antifungal resistance.[14] Because of this, several clinical trials have concluded that terbinafine at a greater dose of 500 mg/day is more beneficial.[15, 16, 17]. Itraconazole is a triazole antifungal drug which is also increasingly being used as a first-line drug for dermatophytosis, but it is being given for longer periods as compared to before. [6,18].

Only 43% of patients in a recent trial by Majid et al who received oral terbinafine at a dose of 250 mg daily showed improvement in their dermatophytosis.[11] This recent decrease in the clinical efficacy is well corroborated by an upsurge in the cases encountered by dermatologists in daily clinical practice along with a failure to respond to the standard oral terbinafine therapy. 74% of terbinafine cases had a mycological cure, according to another. In each of these trials, 250 mg of terbinafine was used daily. However, 500 mg of terbinafine per day was the dose we employed in our trial, which was well supported by some previous research.

A three-week course of itraconazole 200 mg/day resulted in a 50% cure rate in a recent research. This was lower as compared to previous studies showing variable cure rates of 80-92%. In our study, the mycological cure rates in Group A and Group B were 82.5% and 85% respectively. This clearly indicates the need of using a higher dose of terbinafine. Though many studies showed resistance or no clinical response to terbinafine, our study showed reverse results.

Similarly, at week four, the clinical cure rate in the terbinafine group was significantly higher than that of the itraconazole group. This might be because terbinafine has fungicidal properties and can stay in the stratum corneum for several months after treatment is stopped.

Limitations of our study include its small sample size and short duration of follow-ups. We were unable to assess the patients' relapse rates because of the short duration of the follow-up periods. Additionally, this study was conducted at a single centre and hence these findings cannot be generalized.

CONCLUSION

From the above study conducted, we concluded that Terbinafine has higher clinical and mycological cure rates as compared to Itraconazole. It is possible that the lack of a statistically significant difference is attributable to the small sample size of the cases that were included. Further studies with larger sample size could determine the statistical significance of these differences in a better way.

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