

Comparative Efficacy of Terbinafine and Itraconazole on Fluconazole Resistant *Tinea Corporis* and *Tinea Cruris* Handling

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ABSTRACT

Objectives: The study aimed at comparing the therapeutic efficacy of Terbinafine and Itraconazole in terms of clinical cure in the treatment of Fluconazole resistant *Tinea corporis* and *Tinea cruris*.

Materials and Methods: A clinical trial with 154 patients' having *Tinea corporis* and *Tinea cruris* was performed. All the patients were treated with fluconazole. The resistant patients were randomly divided into two groups. The first group was treated with Terbinafine 250mg daily for 4 weeks, whereas second group was treated by Itraconazole for 4 weeks. The participants were followed up till the end of treatment and one month after treatment.

Results: At the end of the trial, terbinafine group developed 78.84% clinical response, while Itraconazole treated group developed only 39.13%.

Conclusion: Based on the marked observed difference, it may

be concluded that Terbinafine is more effective in treating fluconazole resistant *Tinea corporis* and *Tinea cruris*.

Keywords: Fluconazole, Terbinafine, Itraconazole, *Tinea corporis* and *Tinea cruris*.

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INTRODUCTION

Among various manifestations, *Tinea corporis* and *Tinea cruris* are the major in human which are caused by the Dermatophytes. Symptoms of the infections can be demonstrated on the skin of trunk, groin and genital area (Burns et al., 2004; Wolf et al., 2008). Most of the patients with *T. corporis* and *T. cruris* are diagnosed clinically. Burns et al. (2004) found that they have the tendency of using skin keratin as a source of nitrogen. The disease can manifest as asymptomatic to severe inflammatory reaction in different cases best on the germ virulence and patient's immune response (Habif et al., 2005). To avoid a misdiagnosis, identification of dermatophyte infections requires a mycological examination, consisting of a 10- 15% KOH preparation, from the skin scrapings.

Widely used systemic antifungal agents against these infections were oral fluconazole, terbinafine and Itraconazole. Recently, a large number of tinea corporis/ cruris patients are found ineffective to oral fluconazole. In such a state cutaneous fungal infections are somewhat difficult to address. Itraconazole, a triazole derivative,

possesses strong lipophilic and keratophilic properties and its mode of action is similar to that of other azole antifungals.

Terbinafine is a new class of synthetic antifungal agents, the allylamines. This fungicidal inhibits the fungal enzyme Squalene Epoxidase, which is important in the biosynthesis of ergosterol. This action is differing from that of azoles.

Evaluation of the performances of Terbinafine compared to itraconazole in treating fluconazole resistant tinea infections is meager in Bangladesh.

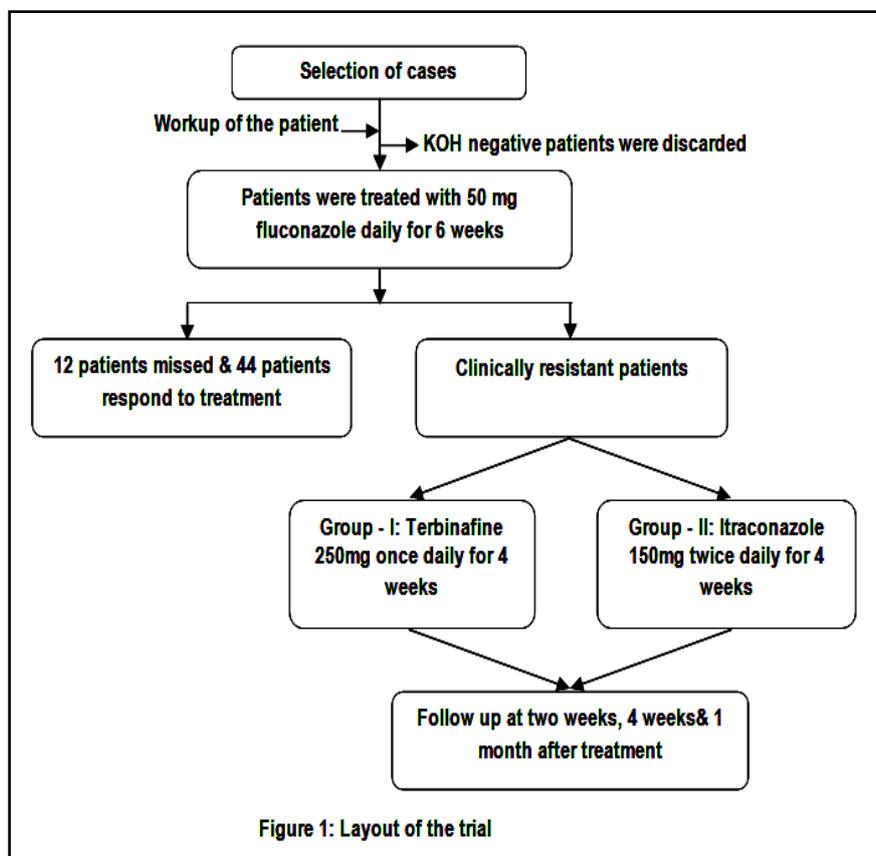
Therefore, the present study is worthwhile to be investigated. This study is directed towards comparison between Terbinafine and Itraconazole application in terms of clinical cure against fluconazole resistant *T. corporis* and *T. cruris*.

MATERIALS AND METHODS

The comparative clinical trial was conducted with 154 patients in the Department of Dermatology, Khulna Medical College Hospital and a Private Clinic from February 2016 to March 2018.

Clinical and confirmatory diagnoses of the infections were carefully performed. Patients having systemic diseases like liver (LFT) or cardiac disease (ECG), evidence of any topical or systemic allergy to antifungal drugs, pregnancy and breast feeding and poor compliance for follow up were excluded. Among the patients, 12 patients were excluded. Thus, finally 142 patients were enrolled. Following purposive selection, a detailed clinical record was prepared including age, sex, address,

occupation, duration of the disease, size and extends of the lesion, history of previous treatments. Smears obtained from the active peripheral margin at the laboratory were examined. Thereafter, all patient were subjected to necessary investigations including blood sugar, SGPT/SGOT, ECG, serum creatinine etc. Investigations were repeated after end of the trial. The layout of the study is demonstrated in Figure 1.



All the patients were treated with fluconazole 50mg daily for 6 weeks. Among them 44 patients were clinically responsive to treatment, 12 patient missed and rest of the 98 cases are clinically resistant to fluconazole. Thereafter, 98 fluconazole resistant patients were divided into 2 groups. Terbinafine in 250 mg was administered orally to 52 patients daily for 4 weeks in Group –I and Itraconazole 100mg to 46 patients twice daily for 4 weeks in Group- II. Patient was followed at 2-week and 4-week and 1 month after treatment. Evaluation is done by clinical assessment. Clinical response of treatment was defined as a rating of healed or improved. Data was analyzed by using SPSS version 22. Student T-test and chi-square test were used to compare differences in different variable. Differences were considered significant at a P value of 0.05 or less.

RESULTS

A total of 154 patients of tinea corporis and tinea cruris of age group 16- 66 years were selected and among them 142 patients were included in this study where 47.9% male and 52.1% were female. At first, all 154 patients were treated with fluconazole and after end of the treatment 12 patient missed, 44 patient cure and rest of 98 patients were divided into two groups by randomized selection. First group (52 patients) was treated with Terbinafine and second group (46 patients) was treated with Itraconazole.

A detailed analysis revealed that the disease was more common in females, the male to female ratio being 1: 1.088, i.e, 47.9% were males and 52.1% were females. The mean age of patients was 35.32+-12.169 years. Lower abdomen and thigh was the most common site of involvement and it should be noted that 93 patients had *Tinea corporis* alone, while 26 patients had *Tinea cruris* alone. In this study only 23 patients had both *Tinea corporis* and *Tinea cruris*. At the end of treatment 31 (31.63%) patients showed no response to treatment clinically, among them, 08 patients were treated with terbinafine and 23 patients were treated with Itraconazole. In other words, in the first group that received terbinafine, 44 (84.61%) patients were clinically cured and in the other group, 23 (50%) patients were cured clinically. After one month of treatment there was 8 patient reappeared clinical sign and symptom of tinea corporis and tinea cruris, where 3 patient from first group and 5 patient from second group. And finally there were 41 patient (treated with terbinafine) and 18 patient (treated with itraconazole) had no clinical sign and symptom after one month of treatment (P= 0.00).

The clinical response rate of first group one month after end of the treatment was 78.85%, whereas of second group was 39.13%. There is higher clinical response rate in first group than of second group (P< 0.05). There was no significant side effect in any of the patients during and after the treatment.

Table 1: Distribution of sample patients according to sex

Sex	n	%
Male	68	47.9
Female	74	52.1
Total	142	100.0

Table 2: Response of itraconazole and terbinafine treatment

	Itraconazole	Terbinafine	Total
No- response	23	8	31
Cure	23	44	67
Total	46	52	98

Table 3: Failure of itraconazole and terbinafine after one month follow up

	Itraconazole	Terbinafine	Total
No- response	28	11	39
Cure	18	41	59
Total	46	52	98

DISCUSSION

This is the first comparative study of terbinafine and Itraconazole in the patient of fluconazole resistant tinea corporis/cruris. Many studies have been published on the efficacy of these drugs, alone, in comparison with each other, or in comparison with old-fashioned treatment with griseofulvin. There are several studies that compare terbinafine and Itraconazole in the treatment of toe nail tinea infection and this study is similar to Brautigam et al, reported that mycological cure rates were 81% for terbinafine and 63% for Itraconazole.⁹

Tinea corporis/cruris is one of the most common forms of disease. It occurs worldwide and is relatively frequent, but its incidence is higher in tropics and subtropics. Infection can occur from direct or indirect contact with skin and scalp lesions of infected persons or animals.⁴ Treatment of tinea corporis/cruris is highly resistant to oral fluconazole and in those cases, other option may be require where infection is chronic or recurrent.

In the current study, the comparative effectiveness of terbinafine and Itraconazole was investigated in the treatment of patients with fluconazole resistant tinea corporis/cruris. There were total 142 patients in this study where the ratio of female to male was found slightly higher with female predominance. This was differing from previous study done by Kumar A et al., 2013 and Acharya et al., 1995, who found higher number in males.^{4,10}

According to this study, out of 142 patients, 98 clinically fluconazole resistant patients were divided into two groups. One month after treatment of the patients of the two groups, there was significant difference between the groups with references to clinical response to treatment which consist of 78.85% for the Terbinafine group and 39.13% for Itraconazole group. As noted before, to the best knowledge of the author, there was no comparison of these two drugs in treatment of fluconazole resistant tinea corporis and tinea cruris.

CONCLUSION

In this first comparative study of systemic terbinafine and Itraconazole, it was concluded that both drugs were effective and safe in the treatment of fluconazole resistant tinea corporis and tinea cruris but Itraconazole was less effective than terbinafine. Though terbinafine is expensive, with regard to side effects and cure rates, terbinafine would be the first choice drug in the treatment of fluconazole resistant tinea corporis and tinea cruris.

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REFERENCES

- Burns, T., Breathnach, S., Griffiths, C., Cox, N., 2004. Rook's textbook of dermatology. Blackwell publishing, Massachusetts.
- Wolff, K., Goldsmith, L. A., Katz, S. I., Gilchrist, B. A., Paller, A. S., Leffell, D. J., 2008. Fitzpatrick's dermatology in general medicine. California, Mcgrawhill.
- Habif, T. P., 2005. Clinical dermatology, California, Mosby.
- Kumar, A., Budania, N., Sharma, P., Singh, M., 2013. A comparative study of mycological efficacy of terbinafine and fluconazole in patients of Tinea corporis. IJBR, 4(11): 7-10.
- Kuokkanen Khulna, Fluconazole in the treatment of onychomycosis, J Dermatol (1992) 3: 115-117
- Nahass GT, Sisto M, onychomycosis: successful treatment with once-weekly fluconazole, Dermatology (1993) 186: 59-61.
- Decroix J, de Doncker P, Cornwell L, et al, Itraconazole in the treatment of onychomycosis: an open randomized trial to evaluate the efficacy and tolerability of 3 or 4-month intermittent therapy with Itraconazole, Janssen Research Foundation, Brussels, Belgium: 1995; data on file.
- Goodfield MJD, Andrew L, Evans EGV, short-term treatment of dermatophyte onychomycosis with terbinafin. BMJ (1992) 304: 1151-4.
- Brautigam M, Nolting Service, Schopf RE, Weldinger G, Randomized double blind comparison of terbinafin and Itraconazole for treatment of toenail tinea infection. BMJ (1995)
- Acharya K M, Mukhopadhyay A, Thakur R K, Mehta T, Bhuptani N and Patel R (1995), "Itraconazole versus griseofulvin in the treatment of tinea corporis and tinea cruris", Indian J Dermatol Venereol Leprol, 61, 209-11.

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