

COMPARABLE EFFICACY OF TERBINAFINE AND ITRACONAZOLE IN THE TREATMENT OF TINEA PEDIS

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Abstract

Background: Tinea pedis (athlet's foot) is the most common fungal infection. Relapse is common in tinea pedis and may be result of recurrence following inadequate treatment or reinfection.

Objective: To evaluate the comparable efficacy of terbinafine and itraconazole in the treatment of tinea pedis.

Methods: 120 patients of tinea pedis confirmed by KOH microscopy were included in the study. The study was carried out in three different Hospitals and Private Chambers for a period of 3 years from July 2006 to June 2009. Mean age of the patients was 40.28±10.23. The patients were divided into 2 equal group:A & B. Group- A was given terbinafine 250 mg/day and group-B was given itraconazole 200 mg/day for 2 weeks.

Results: Follow up 2 weeks after cessation of therapy revealed clinical and mycological cure of 93.3% in terbinafine group and 86.6% in itraconazole group.

Conclusion: Efficacy analysis revealed that terbinafine is superior than itraconazole in the treatment of tinea pedis (P value 0.224).

Key words: Terbinafine, Itraconazole, Treatment outcome, Tinea pedis.

Introduction

Tinea pedis (Athlet's foot) is the most common fungal infection that causes scaling, flaking and itching of affected areas. Tinea pedis is contagious and can be passed through direct contact or contact with items such as shoes, stocking and shower or pool surfaces. There are several distinct forms encountered in clinical practice:

- a. Interdigital type - toe web space infection in which the interdigital toe clefts become fissured, macerated and itchy and is the most common presentation of tinea pedis. The changes frequently recur endlessly following treatment.
- b. Papulosquamous type - scaly papular lesions on dorsum of the feet and may also involved plantar aspect.

- c. Hyperkeratotic type - minute papules with well demarcated erythema on margin, fine white scaling and hyperkeratosis confined to heels, soles and lateral border of feet.
- d. Vesico-bullous type - occurs particularly on the soles and sides of the feet. These may widespread and confluent leading to quite big blisters. The areas are generally extremely itchy.
- e. Mixed type - combination of above presentation.^{1,2}

Male are affected more than female and 20-50 years age group is commonly affected. Relapse is common in tinea pedis and may be the result of inadequate treatment or reinfection.³

There are many conventional treatments such as topical antifungal agent, which can take the form of

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spray, powder, cream, gel or lotion and oral medication as griseofulvin, fluconazole, itraconazole, terbinafine, ketoconazole etc. Topical therapy sometimes are effective but recurrence is more after stopping.⁴ There have been many reports on the therapeutic effects of oral terbinafine and itraconazole on tinea pedis. However till now no reports on these drugs have published in Bangladesh. So this study has been designed to evaluate the comparable efficacy of terbinafine and itraconazole in the treatment of tinea pedis.

Patients and Methods

Over a 3 year period from July 2006 to June 2009, 120 patients of tinea pedis aged 20-60 years were studied in the Department of Dermatology & Venereology at Bangabandhu Sheikh Mujib Medical University, Combined Military Hospital and Shaheed Suhrawardy Hospital and 3 Private Chambers, Dhaka, Bangladesh. The cases were taken based on clinical feature and KOH examination. Routine hematological and KOH examination were done at the start of treatment and at 6 week follow up end point. 80 male and 40 female of whom, 40 had papulosquamous type, 38 had intertriginous type, 30 had hyperkeratotic type and 12 had mixed type. The patients were randomly divided into 2 equal groups. Group-A was given terbinafine 250mg/day and itraconazole 200mg/day in group-B for 2 weeks. All patients had given informed written consent. The patients were excluded from the study if they were pregnant, nursing mother, age below 20 and above 60 years, sensitivity to terbinafine and itraconazole, patients who used any other antifungal (topical/systemic) within a week before initiating this treatment, taking medications that could interfere with trial drugs and having serious systemic illness.

Outcome measures were evaluated weekly during treatment and 2 weeks after cessation of therapy and then the patients (those cured) were followed up for 3 years to see the relapse.

Cure means resolution of signs & symptoms and -ve KOH microscopy.

Relapse means reappearance of signs and +ve KOH microscopy.

Demographic data of the patients and clinical findings and clinical response are summarized in table-I to V.

Results

120 patients (80 male and 40 female) of 20-60 years age group were included into this study. Mean age of the patients was 40.28±10.23 (Table-I). The duration of the disease ranged from less than 3 months to more than 6 months. The mean duration in group-A was 4.21±2.14 and in group-B was 4.83±2.77. Maximum patients (36.66%) in this study were in 3-6 months duration followed less than 3 months (35.83%) in table-II. In our study papulosquamous type was more 40 (33.33%) followed by intertriginous 38 (31.66%). Mixed type was least variant 12 (10%) followed by hyperkeratotic 30 (25%) (Table III). The rate of clinical and mycological cure was found in 56 (93.3%) cases in Group A and 52 (86.6%) in group- B at the follow up end point (6 weeks after starting treatment). In total treatment produced cure in 108 (90%) and no cure in 12 (10%) cases. The severity of the clinical signs and symptoms decreased from baseline to treatment end point and to the treatment end point to follow up end point in both group. The tolerability of study medication was rated good in almost all patients. The patients (those cured) were followed up for 3 years to see the relapse. At 1 year, 12.5% had a relapse, at 2 year, 16.07% had relapse and at 3 year, 17.86% had relapse in group-A and in group- B, 17.30%, 21.15%, 23.07% had relapse at 1,2, and 3 year respectively.

Table I
Age and Sex incidence (N=120)

Age in years	Male		Female	
	Number	Percentage	Number	Percentage
20 – 30	15	12.50	08	6.66
31 – 40	20	16.66	10	8.33
41 – 50	35	29.16	18	15
51 – 60	10	8.33	04	3.33
Total	80	66.66	40	33.33

Mean age 40.28±10.23

Table-II
Duration of the disease (N=120)

Duration in months	Male		Female		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
<3 months	28	23.33	15	12.5	43	35.83
3–6months	30	25	14	11.66	44	36.66
>6 months	22	18.33	11	9.16	33	27.5
Total	80	66.66	40	33.33	120	100

Table III
Clinical pattern of Tinea Pedis (N=120)

Clinical pattern	Group A N= 60	Group B N= 60	Total N= 120
Papulosquamous	20 (33.33%)	20 (33.33%)	40 (33.33%)
Interginous	19 (31.66%)	19 (31.66%)	38 (31.66%)
Hyperkeratotic	15 (25%)	15 (25%)	30 (25.00%)
Mixed	06 (10%)	06 (10%)	12 (10.00%)
Total	60 (100%)	60 (100%)	120 (100%)

Table IV
Clinical response in Tinea Pedis

Clinical pattern	Clinical response in Group A (N=60)	Clinical response in Group B (N=60)
Papulosquamous (20)	20 (100%)	20 (100%)
Interginous (19)	19 (100%)	17 (89.47%)
Hyperkeratotic (15)	13 (86.66%)	12 (80%)
Mixed (06)	04 (66.66%)	03 (50%)
Total	56 (93.3%)	52 (86.6%)

Table V
Relapse of Tinea Pedis

Clinical pattern	Group A Terbinafine (N=56)			Group B Itraconazole (N=52)		
	1 st year	2 nd year	3 rd year	1 st year	2 nd year	3 rd year
Papulosquamous	3	3	3	2	3	3
Interginous	2	2	3	3	3	4
Hyperkeratotic	2	3	3	3	4	4
Mixed	0	1	1	1	1	1
Total	7 (12.5%)	9(16.07%)	10 (17.86%)	9 (17.30%)	11 (21.15%)	12 (23.07%)



Fig 1a: *Hyperkeratotic type (Before treatment)*



Fig 1b: *Hyperkeratotic type (After treatment)*



Fig 2a : *Papulosquamous type (before treatment)*



Fig 2b : *Papulosquamous type (after treatment)*



Fig 3a: *Interdigital type (before treatment)*



Fig 3b: *Interdigital type (after treatment)*



Fig 4a: *Mixed type (before treatment)*



Fig 4b: *Mixed type (after treatment)*

Discussion

Tinea pedis is the most common fungal infection. It may last for a longtime and may come back after treatment. The affected areas are usually itchy, painful or asymptomatic. It ranges from mild to severe. They may persist or recur but they generally respond to treatment. Longterm medication and preventive

measures may be needed. There are several forms of tinea pedis such as papulosquamous, hyperkeratotic, intertriginous, vesico-bullous, mixed type etc.^{1,3}

In this study, we have taken papulosquamous type, intertriginous type, hyperkeratotic type and mixed type in both the group A and B. Group-A was given terbinafine 250 mg daily and intraconazole 200 mg

daily in group-B for 2 weeks. Terbinafine is a synthetic allylamine, inhibits ergosterol synthesis by inhibiting squalene epoxidase. It is known that accumulation has a biocidal effect on dermatophyte. In short, terbinafine has both mycostatical and biocidal effects on dermatophyte in general. The effectiveness of itraconazole can be attributed to its high tissue affinity and persistence in the stratum corneum for upto 4 weeks after discontinuation of therapy.²

In the present study total 120 patients were involved. Male 80 (66.66%) were predominant in the study than female 40 (33.33%) which is consistent with other study done by Lachapelle JM et al.⁴ The age of the study population ranged from 20-60 years and maximum patients in our study were in 41-50 years age group 53 (44.16%) followed by 31-40 years age group 30 (25%) which is differing from other study done by Wishart J.M.⁵ In this study, the duration of the disease were less than 3 months to more than 6 months, we found maximum number of patients were 3-6 months duration 44 (36.66%) followed by less than 3 months duration 43 (35.83%). This findings also is differing from other study done by Gupta A K et al.⁶ In this study, most common clinical variants was found papulosquamous 40 (33.33%) followed by intertriginous 38 (31.66%) which is also differing from other study, where they found intertriginous type was most commonly found.⁷

Two groups of people were studied: group-A with terbinafine 250 mg daily and group-B with itraconazole 200 mg daily for 14 days. We evaluated weekly during treatment and 2 weeks after cessation of therapy. The clinical response was rated as cure 108 (90%) and no cure 12 (10%). The clinical response was found in papulosquamous type: 20/20, 20/20; intertriginous type: 19/19, 17/19; hyperkeratotic type: 13/15, 12/15; mixed type: 04/06, 03/06 in group-A and group-B respectively. In average 93.3% clinical improvement was found in group-A and 86.6% in group-B.

Keyesen De et al.⁸ compared 2 weeks of terbinafine at 250 mg/day to 2 weeks of itraconazole at 100 mg/day in tinea pedis, they found terbinafine superior to itraconazole for clinical cure (94% vs 72.4%). Iwao Takinchi et al.⁹ studied and found 89.3% improvement of tinea pedis with 1 week treatment with 250 mg terbinafine. A study done by Barnatson et al.¹⁰ and found 72% improvement with 250 mg of terbinafine for 1 week in tinea pedis.

Hay et al.¹¹ compared 2 weeks of oral terbinafine (250mg/day) with 4 weeks of oral itraconazole (100mg/day) and cure of terbinafine group was 78% in tinea pedis.

Kagawa S¹² treated 184 patients with oral terbinafine (250mg/day) for 2 weeks and reported a clinical cure of 94%. Using similar regimen, White et al.¹³ treated tinea pedis and found 86% improvement.

J. Schuller et al.¹⁴ studied and found 63% improvement with 400mg/day for 1 week with itraconazole and 75% in 100mg/day with itraconazole for 1 month at the end of 6 weeks follow up period.

Gupta, A. K. et al.¹⁵ found 81% improvement of tinea pedis with 400mg/day for 1 week and 75% with 100mg/day for 4 weeks with itraconazole at the end of 6 weeks follow up period.

E. Van Hecka et al.¹⁶ experienced 85% cure rate with 100mg/day of itraconazole in tinea pedis for 1 month after 2 weeks of end of treatment.

E.M. Difonzo et al.¹⁷ studied and concluded 82.2% cured with itraconazole 100mg/day for 30 days in tinea pedis.

R. Savin.¹⁸ treated tinea pedis with 125mg of terbinafine twice daily for 6 weeks and found 88% improvement after 2 weeks follow up period.

Tausch I et al.¹⁹ studied with a course of itraconazole 200mg twice daily for 07 days and terbinafine 250mg daily for 14 days in tinea pedis and revealed clinical improvement 80% in terbinafine group and 79% itraconazole group after follow up period of 6 weeks end point. So in comparing the other studies with our study revealed some of the studies are almost consistent with our result and some of the studies are slightly differing from our study.

The issue of recurrence versus reinfection must always be considered in patients with relapse. Our findings of 12.5% had relapse at 1 year, 16.07% at 2 year and 17.86% at 3 year in group A and in group B at 1 year, 2 year and 3 year had relapse 17.30%, 21.15% and 23.07% respectively suggest that reinfection is more likely than recurrence.

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