Original Article

Comparative Study of Topical Oxiconazole Cream (1%) Versus Ketoconazole Cream (2%) in the Treatment of Inguinocrural Dermatophytoses

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Abstract

A clinical trial was carried out for the duration of six months from September' 2012 to February' 2013 in the Department of Dermatology and Venereology, Shaheed Monsur Ali Medical College, Uttara Dhaka and patients attending private clinical chamber. To evaluate the effectiveness of oxiconazole cream in comparison to the ketoconazole cream for the treatment of inguinocrural dermatophytoses.A total number of 60 patients with inguinocrural dermatophytoses were included in the study of which 30 patients were treated with oxiconazole (Group A) and the rest 30 patients were treated with ketoconazole (Group B)once daily for 21 days and weekly the outcome of lesions were clinically evaluated and recorded.In group A, male and female were 17 (56.7%) cases and 13 (43.3%) cases respectively. In group B, male and female were 16 (53.3%) cases and 14 (46.7%) cases respectively.The mean age with SD in group A and group B were 28.93 ± 8.29 years and 31.36 ± 8.36 years respectively. The mean scoring with SD in group A and group B were 6.26 ± 2.22 minutes and 6.53 ± 1.81 minutes respectively at the time of observation and 4.23 ± 1.50 minutes and 5.13 ± 1.45 minutes respectively after 1 week and 2.00 ± 1.22 minutes and 3.25 ± 1.07 minutes respectively after 2 weeks. The difference between the mean score of the two group is significant (p=0.006). The mean scoring with SD in group A and group B were 0.00 ± 0.00 minutes and 1.75 ± 0.95 respectively after 3 weeks.Sotopical treatment oxiconazole has revealed itself to be as efficient as ketoconazole and it seems more effective and better tolerated than ketoconazole.

***Key words** : Inguinocrural dermatophytoses, Oxiconazole, Ketoconazole.*

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Introduction

Dermatomycoses is the most common mycotic infections caused by dermatophyte infecting humans across the world, with widely varying frequency and epidemiology.[1] Although not life threatening, they may produce significant symptoms which interfere with the quality of life.[2] They are particularly widespread in tropical countries because of warm and humid climate, crowded living conditions, and other socio-economic factors.[3] There has been a steady rise in the incidence of cutaneous fungal infections and an increasing rate of treatment failure or relapse among mycotic patients undergoing treatment.[2] Many factors are responsible for this development. Certain conditions and habits closely related to the modern way of life together with some endogenous predisposing influences play a major role in raising the incidence rate.[4] Nonetheless, treatment methods are similar across the world, and modern antifungal medications can provide effective treatment for most presentations of dermatophytosis.A wide variety of topical agents is available, in cream, gel, lotion, and shampoo formulations for dermatophyte infection.[1] Most agents remain within the two main antifungal drug families like the azoles and the allylamines; another class, the echinocandins, is used only for systemic Candida or Aspergillus infection.[5] A majority of the agents are of the 'azole' antifungal family like clotrimazole, miconazole, econazole, oxiconazole,

tioconazole. Terbinafine and naftifine represent the 'allylamine' family of agents. Innovation in dermatophyte treatment has involved marketing of wide-spectrum topical agents, use of topical agents with anti-inflammatory as well as antifungal actions, and use of a combination of existing oral antifungal agents, or oral/topical anti-fungal agents, in attempts to improve on monotherapy cure rates[6]. Both families of drugs are known for their high efficacy against the dermatophytes. In addition, amorolfine and butenafine are popular antifungals classed as morpholine derivatives. Cure rates of tinea corporis, tinea cruris and tinea pedis are high, with infections resolving with 2-4 weeks of topical therapy. Safety of therapy is less of a concern for topical medications than oral medications, as serum absorption tends to be minimal with topical dermatophytosistherapy[1]. In India, superficial infections of the skin, nails and hair account for 8-10% of all skin outpatient attendance[7]. Tinea cruris and corporis are the commonest varieties seen in India, followed by tinea pedis, capitis, barbae, unguium and manum in adescending order of frequency[2]. Several antimycotic agents, including the imidazoles and triazoles, have been used for topical treatment of dermatomycoses. Oxiconazole nitrate is an imidazole antifungal agent intended for topical treatment of superficial fungal infections. Results of in-vitro and in -vivo studies have indicated that oxiconazole nitrate has a broad spectrum of activity against infections caused by dermatophytes, yeast like fungi, moulds and mixed infections due to fungi and Gram-positive bacteria[8,7]. The aim of the present study, therefore, will attempt to evaluate the efficacy and safety of oxiconazole cream over Ketoconazole cream in the treatment of inguinocrural dermatophytoses.

Materials and Methods

This clinical trial was conducted in the Department of Dermatology and Venereology, Shaheed Monsur Ali Medical College, Uttara, Dhaka and patients attending private clinical chamber. Study was conducted between the periods of September' 2012 to February 2013 for duration of 6 months. Patients of inguinocrural dermatophytoses with no identifiable cause who attended in the outpatient department of Dermatology & Venereology at Shaheed Monsur Ali Medical College, Uttara Dhaka and private clinical chamber were undertaken as study population.

A total number of 60 patients with inguinocrural dermatophytoses were recruited of which 30 patients were treated with oxiconazole and the rest 30 patients with inguinocrural dermatophytoses were treated with ketoconazole. The preliminary screening for each patient was done by taking complete history and physical examination. The skin scraping for dermatophytes was examined by wet mount microscopy with 10% KOH to confirm the diagnosis. All patients presented with inguinocrural dermatophytoses who gave the consent and wanted to comply with the study, were included in the study. Pregnant women, severely ill patients and Patients excluded from the study. All inguinocrural dermatophytoses patients were recruited as per inclusion criteria which were divided into two groups. Group A were treated with oxiconazole and Group B were treated with ketoconazole once daily for 21 days and weekly the out come of lesions were clinically evaluated and recorded.

All the relevant collected data were compiled on a master chart first and then statistical analysis of the results were obtained by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-17) (SPSS Inc, Chicago, IL, USA). The data was analyzed using Chi square test and paired 't' test. The results have been presented in tables, figures, diagrams. Significant value of 'p' was decided to be at a level of 0.05 in two tailed tests.

Results

Table I shows the distribution of patients according to sex. In group A male was predominant than female which was 17 (56.7%) cases and 13 (43.3%) cases respectively. In group B male was predominant than female which was 16 (53.3%) cases and 14 (46.7%) cases respectively. The difference between these two group was not statistically significant (p=0.795)

Table-I: Distribution of patients according to sex

Sex	Group		p value
	Group A (Oxiconazole)	Group B (Ketoconazole)	
Male	17 (56.7)	16 (53.3)	0.795
Female	13 (43.3)	14 (46.7)	
Total	**30 (100.0)**	**30 (100.0)**	

Chi-square test was done to measure the level of significance

Figure within parentheses indicates in percentage

Table II shows the distribution of patients according to age group. In group A majority of the patients were in the age group of 21 - 30 years which was 13 (43.3%) cases followed by >30 years and <21 years which were 11 (36.7%) cases and 6 (20.0%) cases respectively. In group B majority of the patients are in the age group of >30 years which was 15 (50.0%) cases followed by 21 - 30 years and <20 years which were 12 (40.0%) cases and 3 (10.0%) cases respectively. The mean age with SD in group A and group B were 28.93 ± 8.29 years and 31.36 ± 8.36 years respectively. The difference between the age of the two group was not significant (p=0.262).

Table-II: Distribution of patients according to age group

Age	Group		p value
	Group A (Oxiconazole)	GroupB (Ketoconazole)	
<21	06(20.0)	03(10.0)	
21 - 30	13(43.3)	12(40.0)	
>30	11(36.7)	15(50.0)	
Total	**30(100.0)**	**30(100.0)**	
Mean ± SD	28.93 ± 8.29	31.36± 8.36	0.262

T test was done to measure the level of significance

Figure within parentheses indicates in percentage.

Table-III shows the distribution of patients according to occupation. In group A and group B service was the most common occupation which were 13 (43.3%) cases and 10 (33.3%) cases respectively. In group A, other occupations were housewife, student, business, loabourer which were in 4 (13.3%) cases, 4 (13.3%) cases, 2 (6.7%) cases, 2 (6.7%) cases and 5 (16.7%) cases respectively. In group B, other occupations were housewife, student, business, loabourer which are in 7 (23.3%) cases, 6 (20.0%) cases, 3 (10.0%) cases, 2 (6.7%) cases and 2 (6.7%) cases respectively.

Table-III: Distribution of patients according to occupation

Occupation	Group		p value
	Group A (Oxiconazole)	Group B (Ketoconazole)	
Service	13(43.3)#	10(33.3)	0.685'
Housewife	04(13.3)	07(23.3)	
Student	04(13.3)	06(20.0)	
Business	02(06.7)	03(10.0)	
Labourer	02(06.7)	02(06.7)	
Others	05(16.7)	02(06.7)	
Total	**30(100.0)**	**30(100.0)**	

*Chi-square test was done to measure the level of significance

#Figure within parentheses indicates in percentage

Table-IV shows the distribution of patients according to clinical findings of integumentary system, In group A, Erythema was present in 29 (96.7%) cases, Scaling was present in 28 (93.3%) cases, Central clearing was present in 22 (73.3%) cases, Papule was present in 22 (73.3%) cases, Vesicles was present in 14 (46.7%) cases, Maceration was present in 5 (16.7%) cases, Pruritus was present in 30 (100.0%) cases. In group B, Erythema was present in 30 (100.0%) cases, Scaling was present in 30 (100.0%) cases, Central clearing was present in 29 (96.7%) cases, Papule was present in 25 (83.3%) cases, Vesicles was present in 17 (56.7%) cases, Maceration was present in 5 (16.7%) cases, Pruritus was present in 28 (93.3%) cases.

Table- IV: Distribution of patients according to clinical findings of integumentary system

Clinical findings of integumentary system	Group		p value
	Group A (Oxiconazole)	Group B (Ketoconazole)	
Erythema	29(96.7) #	30(100.0)	0.313
Scaling	28(93.3)	30(100.0)	0.150
Central clearing	22(73.3)	29(96.7)	0 011
Papule	22(73.3)	25(83.3)	0.347
Vesicles	14(46.7)	17(56.7)	0.438
Maceration	05(16.7)	05(16.7)	1.000
Pruritus	30(100.0)	28(93.3)	0.150

*Chi-square test was done to measure the level of significance

#Figure within parentheses indicates in percentage

Table-V shows the distribution of patients according to side effect. In group A, burning was absent in all cases but in group B, burning was present in 7 (23.3%) cases and burning was absent in the rest 23 (76.7%) cases. The difference between these two group was statistically significant (p=0.011).

Table-V: Distribution of patients according to side effect

Burning	Group		p value
	Group A (Oxiconazole)	Group B (Ketoconazole)	
Yes	0(0.0)#	07(23.3)	0.011
No	30(100.0)	23(76.7)	
Total	**30(100.0)**	**30(100.0)**	

*Fisher's exact test was done to measure the level of significance

#Figure within parentheses indicates in percentage.

Table-VI shows the distribution of patients according to scoring. The mean scoring with SD in group A and group B were 6.26 ± 2.22 minutes and 6.53 ± 1.81 respectively at the time of observation. The difference between the mean score of the two group is not significant (p=0.613). The mean scoring with SD in group A and group B were 4.23 ± 1.50 minutes and 5.13 ± 1.45 respectively after 1 week. The difference between the mean score of the two group is significant (p=0.022). The mean scoring with SD in group A and group B were 2.00 ± 1.22 minutes and 3.25 ± 1.07 respectively after 2 weeks. The difference between the mean score of the two group is significant (p=0.006). The mean scoring with SD in group A and group B were 0.00 ± 0.00 minutes and 1.75 ± 0.95 respectively after 3 weeks. The difference between the mean score of the two group is significant (p=0.011).

Table- VI: Distribution of patients according to scoring of follow up & observation

Follow up & observation	Group		p value
	Group A (Oxiconazole)	Group B (Ketoconazole)	
Base line	6 26 ± 2.22	6.53 ± 1.81	0.613
After 1 week	4.23 ± 1.50	5.13 ± 1.45	0.022
After 2 week	2.00 ± 1.22	3.25 ± 1.07	0.006
After 2 week	0.00 ± 0.00	1.75 ± 0.95	0.011

*t- test was done to measure the level of significanc

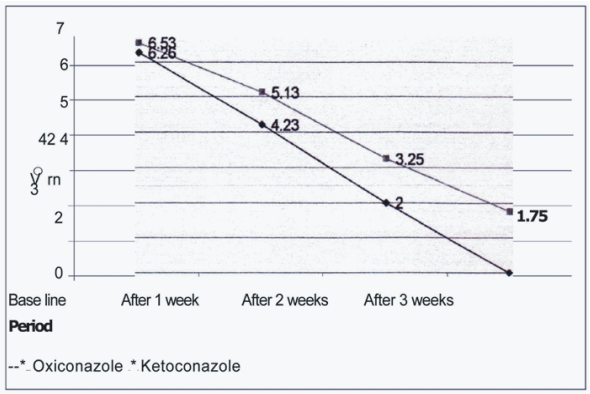

Figure-I: Graph shows the distribution of patients according to scoring of follow up and observation

Discussion

Dermatomycoses, the most common of mycotic infections, occur worldwide. Although not life threatening, they may produce significant symptoms which interfere with the quality of life. They are particularly widespread in tropical countries because of warm and humid climate, crowded living conditions, and other socio-economic factors[2]. The management of dermatophytosis begins with topical agents. These agents should penetrate the skin and remain there in order to suppress the fungus. In the last 50 years numerous drugs have been introduced for the treatment of superficial infections. The choice of treatment is determined by the site and extent of the infection, the species involved as well as by the efficacy and safety profile, and kinetics of the drugs available. For localised non-extensive lesions caused by dermatophytes topical therapies with an imidazole, allylamines, tolnaftate, morpholine derivates, etc is generally used[14]. There has been a steady rise in the incidence of cutaneous fungal infections and an increasing rate of treatment failure or relapse among mycotic patients undergoing treatment. Many factors are responsible for this development. Certain conditions and habits closely related to our modern way of life together with some endogenous predisposing influences play a major role in raising the incidence rate. The clinical efficacy and safety of once daily topical administration of 1% oxiconazole cream and lotion was assessed in an open label, non comparative trial in tinea cruris, tinea corporis and tinea pedis patients[2]. Oxiconazole is an imidazole antifungal agent with a broad spectrum including yeasts and dermatophytes in vitro[2].

The present study was conducted in the Department of Dermatology and Venereology, Shaheed Monsur Ali Medical College, Uttara Dhaka and patients attending private clinical chamber between the periods of September' 2012 and February 2013 for duration of 6 months. The study was conducted to find out the effectiveness of Oxiconazole cream to compare with Ketoconazole cream for the treatment of inguinocrural dermatophytoses. A total number of 60 patients with inguinocrural dermatophytoses were recruited of which 30 patients were treated with oxiconazole (group A) and the rest 30 patients were treated with ketoconazole(group B) .

In the present study in group A, male and female were 17 (56.7%) cases and 13 (43.3%) cases respectively. In group B, male and female were 16 (53.3%) cases and 14 (46.7%) cases respectively. The difference between these two group was not statistically significant (p=0.795) (Table I). Abanmi et al[15]. (2008) in their study reported that the prevalence of SFI was twofold greater in females than males and clearly shows that SFIs are of concern in both genders and in all age groups. Adefemi et al[16]. (2010) in their study found male to female ratio of clinical lesions was 1: 1.5. Abia-Bassey and Utsalo[17] (2006) in their study reported that the prevalence was significantly higher in women (14.7%) than in men (1.4%) ($P < 0.05$). Zaini et al[18]. (2009) studied 549 patients where 359 were females and 190 males. In group A majority of the patients were in the age group of 21 to 30 years which was 13 (43.3%) cases followed by >30 years and <21 years which were 11 (36.7%) cases and 6 (20.0%) cases respectively. In group B majority of the patients are in the age group of >30 years which was 15 (50.0%) cases followed by 21 to 30 years and <20 years which were 12 (40.0%) cases and 3 (10.0%) cases respectively. The mean age with SD in group A and group B were 28.93 ± 8.29 years and 31.36 ± 8.36 years respectively. The difference between the age of the two group was not significant (p=0.262) (Table II). Abia-Bassey and Utsalo[17] (2006) in their study the age group 2130 years recorded the highest prevalence of yeast infection (65.2%) followed by age group 11-20 years (16.9%) and > 40 years (9.0%). Zaini et al[18]. (2009) studied 549 patients with age ranging in from 1 to 83 yr with a mean age 39.32±15.6. in their study the commonest affected age group was 31-50 year followed by 21-30year and 51-60 year respectively.

In group A and group B service was the most common occupation which were 13 (43.3%) cases and 10 (33.3%) cases respectively. In group A, other occupations were housewife, student, business, loabourer which were in 4 (13.3%) cases, 4 (13.3%) cases, 2 (6.7%) cases, 2 (6.7%) cases and 5 (16.7%) cases respectively. In group B, other occupations were housewife, student, business, loabourer which are in 7 (23.3%) cases, 6 (20.0%) cases, 3 (10.0%) cases, 2 (6.7%) cases and 2 (6.7%) cases respectively (Table V). In earlier clinical trials by Konzelmann and Graber,[19] (1982) and Parisar and Pariser[20] (1994) oxiconazole cream and lotion have proven to be well tolerated and highly effective against dermatomycoses caused by dermatophytes and or yeasts. Jerajani et al[2]. (2000) in their study reported that oxiconazole cream and lotion have shown statistically significant decline in the symptom scores of erythema, pruritus, scaling and burning in patients treated for T.cruris,T. corporis and T pedis. Tolerance to oxiconazole cream and lotion was found to be good in all the treated patients. No side effects were reported during the conduct of the trial. On the basis

of the results presented, it can be concluded that once daily topical administration of oxiconazole cream and lotion are highly effective in the treatment of dermatomycoses. This formulation was well tolerated by patients for fungal infections. Kalis et al[11]. (1996) in their study concluded that after 3 weeks of topical treatment oxiconazole has revealed itself to be as efficient as ketoconazole, but it seems more rapidly efficient and better tolerated than ketoconazole.

In conclusion, In the present study it has been found that the difference between the mean score of the two groups is significant (p=0.006). Topical treatment oxiconazole has revealed itself to be as efficient as ketoconazole and it seems more effective and better tolerated than ketoconazole.

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