

RESEARCH ARTICLE

Efficacy of 1% terbinafine and 1% luliconazole in the management of tinea corporis and tinea cruris

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ABSTRACT

Background: Tinea or dermatophytosis is a fungal infection that commonly affects stratum corneum of the skin and its other appendages. Topical antifungal agents are the first-line treatment choice for dermatophytosis among them terbinafine, luliconazole, amorolfine, and sertaconazole are more effective. **Aim and Objective:** The aim of the study was to assess the efficacy and safety of topical luliconazole with topical terbinafine in tinea corporis and tinea cruris management. **Materials and Methods:** Study conducted on 180 cases diagnosed clinically and confirmed mycologically with tinea cruris and tinea corporis between age group of 21 and 60 years were recruited. Study consists of two groups, that is, Group 1 administered with 1% terbinafine and Group 2 with 1% luliconazole. Clinical signs such as pruritus, erythema, scaling and mycological culture, and KOH mount were assessed at the beginning, end of 1st, 2nd, and 4th weeks. **Results:** The comparison of mean pruritus score at the beginning, at the end of 1st week and 2nd week was statistically significant ($P < 0.05$). The mean erythema score was statistically significant between two study groups from the beginning to the 4th week. The reduction of mean scaling score was statistically significant at the end of 1st week. The KOH values between two study groups showed significant difference at the end of the 1st week ($P = 0.028$). **Conclusion:** The status of clinical signs, mycological culture, and KOH values was better in Group 1 than Group 2. Hence, 1% luliconazole is more efficacious than 1% terbinafine in the management of tinea corporis and tinea cruris for 2 weeks.

KEY WORDS: 1% Luliconazole; 1% Terbinafine; Tinea Cruris; Tinea Corporis; Erythema; Pruritus**INTRODUCTION**

Tinea usually limited to superficial layers of the skin, especially to stratum corneum and in keratin rich appendages such as hair and nails.^[1] Tinea cruris and tinea corporis are most common dermatophytic infections caused by *Trichophyton mentagrophytes*, *Trichophyton rubrum*, and

Microsporum canis.^[2] The prevalence of dermatophytic infections is 20–25% globally and 36.6–78.4% in India.^[3] Topical antifungals of various groups such as allylamines, benzylamines, and morpholine were available. Drugs such as terbinafine, luliconazole, amorolfine, and sertaconazole are the treatment choice for the lesions of dermatophytosis.^[4]

Terbinafine hydrochloride is a drug of allylamine group with an effective antifungal activity. It has good efficacy and tolerability with less treatment duration.^[5] Luliconazole is an imidazole antifungal agent, which is more effective in inhibition of ergosterol biosynthesis, and its reservoir property in the stratum corneum is greater than terbinafine.^[6,7] The present study was designed to assess the efficacy of topical luliconazole with topical terbinafine in tinea corporis and tinea cruris management.

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MATERIALS AND METHODS

The present prospective comparative study was conducted in the Department of Pharmacology in association with the Department of Dermatology at Kamineni Academy of Medical Sciences and Research Centre, Hyderabad, from April 2019 to December 2020. A total of 180 cases attending the outpatient department (OPD) of the dermatology department with chief complaints of tinea cruris and tinea corporis between age group of 21 and 60 years were recruited. Cases clinically and mycologically diagnosed with tinea corporis and tinea cruris and willing to participate in the study were included in the study. Cases with fungal infections such as tinea capitis and tinea barbae, with pregnancy, in the lactating period, with diabetes mellitus, intolerance to imidazole, and not willing to participate were excluded from the study. Written informed consent was obtained from all the study participants and the study protocol was present and got approval from the institutional ethics committee.

Study participants were randomly divided into two study groups, that is, Group 1 was administered with 1% terbinafine topical cream once daily at bed time for 2 weeks and were followed up for a next 2 weeks and Group 2 was administered with 1% luliconazole topical cream once daily at bedtime for 2 weeks. All the participants were asked to report to the OPD on the 1st day of 1st and 2nd weeks and the 1st day of 4th week. The SPSS version 23 software was used to carry out statistical analysis relevant to the study. Descriptive statistics were used to represent mean values and percentages. Study variables were analyzed by Chi-square test. $P < 0.05$ was considered statistically significant. Mann–Whitney U-test was used to assess the significant difference between bivariate samples in two study groups.

RESULTS

Majority cases were between 3rd (36.6% in Group 1 and 38.8% in Group 2) and 4th decades (41.1% in Group 1 and 35.5% in Group 2) in both the study groups. In both study groups, males were more than females. The age and gender difference between two study groups was not statistically significant. Tinea corporis was seen 64.4% in Group 1 and 62.2% in Group 2, whereas, tinea cruris was seen 35.5% in Group 1 and 37.8% in Group 2. The difference was statistically not significant ($P = 0.257$) [Table 1].

The comparison of mean pruritus score at the beginning, at the end of 1st week and 2nd week was statistically significant ($P < 0.05$). The mean erythema score was statistically significant between two study groups from the beginning to the 4th week. The reduction of mean scaling score was statistically significant at the end of 1st week [Table 2].

The KOH values between two study groups showed significant difference at the end of 1st week ($P = 0.028$). There is no statistical significance in the KOH values at the end of 2nd week and at the beginning of 4th week. *T. rubrum* is seen in majority cases followed by *Epidermophyton floccosum* and *T. mentagrophytes*. The incidence of adverse effects in Group 1 (6.67%) was more than Group 2 (4.44%) and difference between the groups were statistically not significant ($P > 0.05$) [Figure 1].

DISCUSSION

Tinea is the surface fungal epidemics typically originated by dermatophytes and represents scaling and inflamed lesions.^[8,9] *T. rubrum*, *E. floccosum*, and *T. mentagrophytes*

Table 1: Demographic details of study participants

Variables	Group 1 (n=90)		Group 2 (n=90)		Significance
	Number	Percentage	Number	Percentage	
Age (In years)					
21–30	33	36.6	35	38.8	0.188
31–40	37	41.1	32	35.5	
41–50	11	12.2	13	14.4	
51–60	09	10	10	11.1	
Gender					
Male	59	65.6	49	54.4	0.564
Female	31	34.4	41	45.6	
Disease distribution					
Tinea cruris	32	35.5	34	37.8	0.257
Tinea corporis	58	64.4	56	62.2	
Duration of the lesion					
<2 weeks	29	32.2	28	31.1	0.382
2–3 weeks	52	57.8	52	57.8	
>3 weeks	09	5.55	10	11.1	

Table 2: Mean pruritus score comparison between two study groups

Variables	Group 1	Group 2	Mann-Whitney test
	Mean±SD	Mean±SD	
Mean pruritus score			
At the beginning	1.99±0.364	1.87±0.558	0.284
At 1 st week	1.12±0.452	0.91±0.476	0.031
At 2 nd week	0.64±0.412	0.28±0.482	0.048
At 4 th week	0.21±0.228	0.10±0.348	0.136
Mean erythema score			
At the beginning	1.84±0.524	1.74±0.286	0.293
At 1 st week	1.06±0.438	0.99±0.482	0.029
At 2 nd week	0.42±0.366	0.22±0.264	0.042
At 4 th week	0.22±0.381	0.09±0.334	0.030
Mean scaling score			
At the beginning	1.82±0.554	1.76±0.726	0.668
At 1 st week	0.88±0.516	0.54±0.565	0.025
At 2 nd week	0.26±0.425	0.22±0.398	0.453
At 4 th week	0.13±0.367	0.10±0.331	0.487

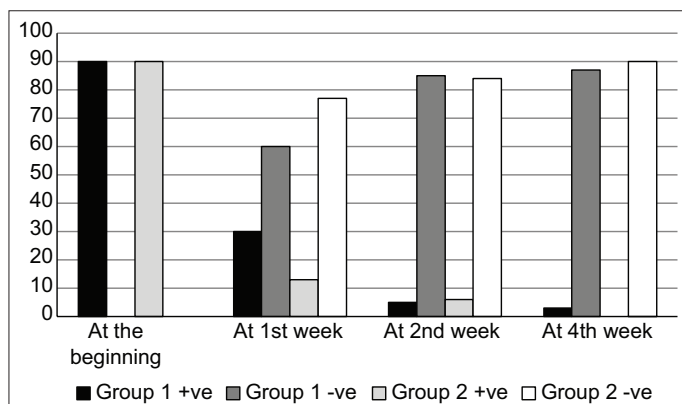


Figure 1: Comparison of KOH values between study groups

are the common causative agents.^[10] Antifungal agents are the preferable drug choice in mild and moderate tinea infection.^[8] The present study was designed to assess the efficacy of topical luliconazole with topical terbinafine in tinea corporis and tinea cruris management. In this study, majority cases were between 3rd (36.6% in Group 1 and 38.8% in Group 2) and 4th decades (41.1% in Group 1 and 35.5% in Group 2) in both the study groups. In both study groups, males were more than females. The age and gender difference between the two study groups was not statistically significant. A study by Jerajani *et al.* included 83 cases with tinea corporis and tinea cruris between 18 and 70 years.^[11] Tinea corporis was seen 64.4% in Group 1 and 62.2% in Group 2, whereas, tinea cruris was seen 35.5% in Group 1 and 37.8% in Group 2. The difference was statistically not significant ($P = 0.257$).

The comparison of mean pruritus score at the beginning, at the end of 1st week and 2nd week, was statistically significant

($P < 0.05$). The mean erythema score was statistically significant between two study groups from the beginning to the 4th week. The reduction of mean scaling score was statistically significant at the end of 1st week [Table 2]. A study by Jerajani *et al.* noticed that during the follow-up, 95.5% of cases in terbinafine and 100% of cases in luliconazole showed the absence of pruritus. The resolution of erythema was 90.9% in the terbinafine group and 85% in luliconazole group.^[11] A study by Selvan *et al.* stated that the cases administered with the luliconazole had a significant decrease in signs and symptoms but not in the terbinafine groups.^[12] A study by Sumitha *et al.* found complete cure in terbinafine group at the end of 2nd week.^[4] A study by Sumyuktha *et al.* achieved complete cure in 71.4% and 90.9% cases at the end of 2nd and 4th weeks respective in terbinafine group.^[13]

A study by Jerajani *et al.* noticed at the end of treatment and 2nd week post-treatment follow-up all the study cases had KOH negative.^[11] A study by Sumitha *et al.* stated that at the end of the 2nd week KOH mount is negative in terbinafine group.^[4] Jones *et al.* evaluated the efficacy and safety of luliconazole on 256 cases with tinea cruris found complete clinical and mycological cure at the end of day 28.^[14] *T. rubrum* is seen in majority cases, followed by *E. floccosum* and *T. mentagrophytes*. In this study, KOH values between two study groups showed a significant difference at the end of 1st week ($P = 0.028$). There is no statistical significance in the KOH values at the end of 2nd week and the beginning of 4th week. The incidence of adverse effects in Group 1 (6.67%) was more than Group 2 (4.44%) and differences between the groups were statistically not significant ($P > 0.05$). The present study limited to tinea cruris and tinea corporis, further studies are required to study the drug efficacy in other tinea infections. This study limited with less number of patients. This study recommends to study the drug efficacy with more samples in other tinea infections.

CONCLUSION

The reduction of mean pruritus score, mean erythema score, and mean scaling score was more in luliconazole group than terbinafine by the end of 2nd week. The KOH values between two study groups showed a significant difference at the end of the 1st week. Hence, 1% luliconazole is more efficacious than 1% terbinafine in the management of tinea corporis and tinea cruris for 2 weeks.

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