

Original Article

Comparative efficacy of griseofulvin and fluconazole in the treatment of tinea capitis

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Abstract *Background* Tinea capitis is caused by different species of dermatophytes particularly *Microsporum* and *Trichophyton*. Children are affected predominantly. Many systemic drugs e.g. griseofulvin, fluconazole, itraconazole, terbinafine, ketoconazole etc are available for the treatment of tinea capitis.

Objectives To compare the efficacy of griseofulvin and fluconazole in the treatment of tinea capitis.

Patients and methods A total of 50 patients of age group 2-15 years were selected for the study. The cases were diagnosed clinically and confirmed by Wood's lamp examination, KOH microscopy and culture. The patients were divided into two equal groups. Group A was given griseofulvin and group B was given fluconazole for a period of two months. Topical adjuvant therapy econazole nitrate was given in both groups. The patients were followed up at 2 weekly interval for clinical response and Wood's lamp examination and finally KOH microscopy and culture.

Results In group A clinical response was 84% and mycological response was 68% whereas in group B clinical response was 68% and mycological response was 56%.

Conclusion The present study showed that griseofulvin is more effective in the treatment of noninflammatory type of tinea capitis than fluconazole.

Key words

Tinea capitis, griseofulvin, fluconazole.

Introduction

Tinea capitis is dermatophytosis of scalp and associated hair caused by different

species of genera *Microsporum* and *Trichophyton*.¹ It occurs mainly in children although it may be seen at all ages. Boys are affected more frequently than girls. The tinea infection of scalp is more common in Latin American children.^{2,3,4}

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Tinea capitis may be inflammatory or noninflammatory. The noninflammatory type of tinea capitis may have a variety of clinical presentations including “grey patch” scaling, seborrheic dermatitis-like scale, hair thinning without significant scaling and distinct patches of “black dot” alopecia.^{5,6,7} Inflammatory tinea capitis also may have multiple clinical forms including localized pustules that are similar to impetigo and kerion. Established tinea capitis cannot be treated topically, systemic drugs are always necessary. Griseofulvin, although a weak fungistatic drug, is very effective in the management of all varieties of tinea capitis. Recently the azoles - ketoconazole, fluconazole, itraconazole and terbinafine have become available for systemic use.^{8,9,10}

Griseofulvin remains the treatment of choice in a dose of 10-15mg/kg body weight and continued for as long as is necessary, which is often 4 months. Fluconazole, fungistatic triazole antifungal is also effective in a dose of 6mg/kg body weight for a period of 2-4 months.^{8,11,12}

Patients and methods

An experimental study was done to compare the efficacy of griseofulvin and fluconazole in the treatment of tinea capitis (noninflammatory type). The study was conducted in 50 patients of tinea capitis aged 2-15 years in the Department of Dermatology in different hospitals i.e. Combined Military Hospital, Dhaka Cantonment, Dhaka; Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka; Shahid Suhrawardi Hospital, Shere-Bangla Nagar, Dhaka and community Based Medical College Hospital, Mymensingh.

Cases having only noninflammatory type of tinea capitis were included. All the cases were treated as outdoor patients. Diagnosis of the cases was based on history, clinical findings, and Wood’s lamp examination and confirmed by KOH microscopy and culture.

Patients selected were randomly allocated into two equal groups- group A (given griseofulvin) and group B (given fluconazole). Each group was followed up every 2 weeks interval for clinical evaluation and Wood’s lamp examination for 2 months. In group-A griseofulvin was given at a dose of 15mg/kg body weight preferably at night as single dose and in group-B fluconazole was given 6mg/kg body weight daily as single dose in liquid and tablet form according to age of the patients. Adjuvant therapy was given in both the groups, topical econazole nitrate cream twice daily on the affected area. Improvement was noted on the basis of clinical findings, Wood’s lamp examination and finally KOH microscopy and culture.

X² was used to evaluate the results and a *p* value of <0.05 was considered significant.

Results

The result as shown in **Table 1** revealed that the age range in group-A and group-B was 2 to 15 years. The mean age of group-A was 6.08 ±3.39 years and in group-B was 6.32 ±3.15 years. In both the groups the maximum number of patients was in the age group of 2-6 years. 28 (56%) were male and 22 (44%) were female with a ratio of 1:27. The duration of the disease ranged from less than 1 month to 6 months and the mean duration of the disease was found to be

Table 1 Age, sex and duration of disease in group A (griseofulvin) and group B (fluconazole).

	Group A n=25	Group B n=25
Male	15 (60%)	13 (52%)
Female	10 (40%)	12 (48%)
Age		
2-6 years	15 (60%)	14 (52%)
7-11 years	7 (28%)	9 (36%)
12-15 years	3 (12%)	2 (8%)
Duration of disease		
<1 (months)	18 (72%)	20 (80%)
1-3 (months)	5 (20%)	4 (16%)
3-6 (months)	2 (8%)	1 (4%)

Table 2 Clinical and mycological response in group A (griseofulvin) and group B (fluconazole).

	Group A n=25	Group B n=25
Clinical cure*	21 (84%)	17 (68%)
Mycological cure*	17 (68%)	14 (56%)

* $p < 0.05$

27.84±21.55 days in group A and 29.16±30.61 days in group B. Each group of patients under the study was observed separately.

Efficacy of two drugs in terms of clinical and mycological cure is represented in **Table 2**. In group A, clinical response was found in 84% cases and mycological cure in 68% cases whereas in group B, clinical response was found in 68% cases and mycological cure in 56% cases.

During the study, no gross side effects were noted in either group.

Discussion

In the present study, the mean age of patients in group A was 6.08±3.39 years and in group B 6.32±3.15 years. The cases included in the study varied in age from 2-15 years. Out of total 50 cases, 29 (58%)

was in the age group of 2-6 years. The findings regarding age-wise distribution in the present study are in accordance with the study of Williams *et al.*⁹ With regard to sex distribution in the study population 28 cases were male (56%) and 22 (44%) female. In group A a total of 15 (60%) cases were male and 10 (40%) cases were female. On the other hand in group B, 13 (56%) cases were male and 12 (44%) cases were female. Thus both the groups revealed male preponderance. Similar male preponderance was found by Fuller *et al.*¹³

In the present study mean duration of the disease in group A was 27.84 ± 21.55 days whereas in group B it was 29.16 ± 30.61 days. The duration of the disease varied from less than 1 month to 6 months. The result was well consistent with the study of Ghannoum *et al.*¹⁰ Although Tinea capitis may be inflammatory and noninflammatory¹⁴, but in our research only noninflammatory type was taken into consideration.

For the treatment of tinea capitis, topically applied drugs are not effective, systemic drugs should always be considered. There are many systemic drugs available e.g. griseofulvin, itraconazole, fluconazole, ketoconazole, terbinafine etc. Griseofulvin and fluconazole are easily available and these are less costly drugs for the treatment of tinea capitis.^{8,15-18} The present study compared the efficacy of griseofulvin and fluconazole in 50 patients of tinea capitis. Caceres-Rios *et al.*¹ found that griseofulvin was effective with a cure rate of 76%. In our study cure rate with griseofulvin was 68%. The study conducted by Gupta *et al.*⁵ with fluconazole in the treatment of tinea capitis

showed a cure rate of 74%. In the present study the cure rate with fluconazole was 56%.

Griseofulvin has a narrow spectrum of antimycotic activity. It disrupts microtubule mitotic spindle formation, thereby causing mitotic arrest at the metaphase stage. Fluconazole inhibits the cytochrome P-450 enzyme lanosterol 14- α demethylase with resultant inhibition in the conversion of lanosterol to ergosterol. Ergosterol is the primary sterol and essential component of fungal cell membrane.^{8,19-24}

It has been clearly proved and can well be concluded that both griseofulvin and fluconazole could be used effectively for the treatment of tinea capitis (noninflammatory type). Griseofulvin has been found superior to fluconazole.

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