

Comparison of itraconazole and griseofulvin for treatment of tinea corporis in Bac Ninh Dermatology Hospital

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Summary

Objective: To compare the efficacy of oral itraconazole with griseofulvin for tinea corporis treatment at Bac Ninh Dermatologic Hospital. **Subject and method:** A randomized, comparative and prospective study was conducted to compare 66 patients with tinea corporis at Bac Ninh Dermatologic Hospital. These patients were divided into 2 groups: Group 1: Consisted of 31 patients treated with oral Itraconazole (Kbat), and Group 2: Had 35 patients treated with oral Griseofulvin. **Result:** The result of tinea corporis treatment both clinically and microscopically was the same in two groups. The adverse effects were most seen in the group treated with oral Itraconazole, and the cost for treatment in the Itraconazole group was 7 times higher than in the Griseofulvin group. **Conclusion:** Oral griseofulvin for tinea corporis was effective and not too pricey.

Keywords: Tinea corporis, itraconazole, griseofulvin.

1. Background

Cutaneous fungal infection is one of the common skin diseases, especially in tropical and subtropical countries, Southeast Asia, and it accounts for 40 - 60% of skin diseases. In Vietnam, the incidence of cutaneous fungal infection ranges from 5% to 10% in the population depending on the regions, especially in the factories, in the hot and humid environment, the rate of cutaneous fungal infections increase to 30 - 45% [1].

Tinea corporis (Ringworm) is easily visible in the superficial fungal infection. There are 3 different genera that cause tinea corporis such as *Trichophyton*, *Microsporum*, and

Epidermophyton. Although it is not harmful to health, the disease is usually persistent or relapses which causes itch and discomfort for patients and has the impact on quality of life.

Over the years, many specific drugs have been tried to treat superficial fungal infection both topically and orally in such groups: As *polyen*, *glyseofulvin*, *azol*, *allylamin*, and *morpholin*.

Griseofulvin is an antifungal drug that has been used in the fifties of the 19th century. Itraconazole is the newer drug which has been approved since 1990. According to many studies in the world, there is no statistically significant difference in the efficacy of oral itraconazole (67 - 88%) and griseofulvin (66 - 76.2%) [2], [3]. However, the average cost of treatment per case in the group treated with griseofulvin (VND 23,469) was much lower than the group treated with itraconazole (VND 238,000) [4]. In the current clinical practice in Bac Ninh, most

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dermatologists use oral Itraconazole for the treatment of tinea corporis, while there is no comparative study on the efficacy of griseofulvin and itraconazole.

Therefore, we conducted the study to compare the efficacy of oral itraconazole and griseofulvin in treating tinea corporis at Bac Ninh Dermatology Hospital.

2. Subject and method

2.1. Subject

66 patients were diagnosed with tinea corporis at Bac Ninh Dermatologic Hospital from Sep. 2018 to Sep. 2019.

Diagnostic criteria

Clinical features: Lesion is usually circular or ovoid in appearance with patches and plaques. These annular lesions demonstrate sharp marginations with a raised erythematous scaly edge which may contain vesicles.

Microscopy: Septate and branching long narrow hyphae.

Inclusion criteria

Tinea corporis was diagnosed both clinically and microscopically.

The patients were over 12 years old.

The the recent patients were not treated with antifungal drugs in 3 months.

The patients agreed to participate in the research.

Exclusion criteria

Pregnancy or lactation.

Diabetes mellitus.

Long-term systemic steroids or immunosuppressants.

Severe liver and kidney diseases.

Allergic to triazoles, griseofulvin.

Taking another drug that may cause interactions with Itraconazole or Griseofulvin.

Noncompliance with treatment.

2.2. Method

This is a randomized, comparative and prospective study, 66 patients with tinea corporis were divided into 2 groups:

Group 1: Oral itraconazole (Kbat) 100mg bid in 2 weeks, and 2-week follow-up after stopping.

Group 2: Oral griseofulvin 500mg bid in 2 weeks, and 2-week follow-up after stopping.

Clinical assessment (Priyanka Sharma 2019) in the Table 1 [5]:

Table 1. Clinical scores

Score	Itchy	Erythema	Scaly
0	No	No	No
1	Mild	Mild	Mild
2	Moderate	Moderate	Moderate
3	Severe	Severe	Severe

The average score was assessed before and after 4 weeks of treatment. The severity of disease was categorized: Mild (0 - 3), moderate (4 - 6), severe (7 - 9).

Evaluating the efficacy in 2 groups at week 2 and 4, at each assessment, the patients were done with SGOT, SGPT, and fungal microscopy.

After 2 and 4-week treatment, the efficacy was assessed according to Priyanka Sharma (2019) in Table 2 [5]:

Table 2. Post treatment assessment

	Complete cure	Partial cure	Failure
Clinical features	Total score ≤ 1	Total score ≥ 2 and ≤ 3	Total score ≥ 4
Microscopy	Negative	Negative	Positive

Adverse effects: Symptoms were listed in the table (headache, fatigue, nausea, anorexia constipation).

The data were analyzed by SPSS 16.0.

3. Result

66 patients were diagnosed with tinea corporis at Bac Ninh Dermatologic Hospital from Sep. 2018 to Sep. 2019, we collected the results:

Table 3. Comparing the results in 2 groups

Results	After 2-week treatment				After 4-week treatment			
	Group 1 (n = 31)		Group 2 (n = 35)		Group 1 (n = 31)		Group 2 (n = 35)	
	n	%	n	%	n	%	n	%
Complete cure	22	71.0	22	62.9	26	83.9	30	85.7
Partial cure	4	12.9	6	17.1	3	9.7	4	11.4
Failure	5	16.1	7	20	2	6.5	1	2.9
Total	31	100	35	100	31	100	35	100
p	>0.05				>0.05			

Comment: After 2 weeks of treatment, the cure rate of the itraconazole group (71%) was higher than that of the griseofulvin group (62.9%). After 4 weeks of treatment, the cure rate of itraconazole group (83.9%) was lower than that of the griseofulvin group (85.7%). Moreover, the rate of no cure in itraconazole group (6.5%) was higher than in the griseofulvin group (2.9%). The difference was not statistically significant with $p>0.05$.

Table 4. Comparing the microscopic results after the treatments in 2 groups

Result	After 2-week treatment				After 4-week treatment			
	Group 1 (n = 31)		Group 2 (n = 35)		Group 1 (n = 31)		Group 2 (n = 35)	
	n	%	n	%	n	%	n	%
Negative	26	83.9	28	80.0	29	93.5	34	97.1
Positive	5	16.1	7	20.0	2	6.5	1	2.9
Total	31	100	35	100	31	100	35	100
p	>0.05				>0.05			

Comment: After 2 weeks of treatment, the percentage of negative fungal test in the itraconazole group (83.9%) was higher than that in the griseofulvin group (80.0%). After 4 weeks of treatment, the percentage of negative fungal test in the itraconazole group (93.5%) was lower than that in the griseofulvin group (97.1%). The difference was not statistically significant with $p>0.05$.

Results of liver function tests did not change before and after treatment in both groups ($p>0.05$).

Table 5. Comparing the clinical adverse effects in 2 groups

Clinical adverse effects	Intraconazol ($n_1 = 31$)		Griseofulvin ($n_2 = 35$)		p
	n	%	n	%	
Yes	6	19.4	1	2.9	<0.05
No	25	80.6	34	97.1	
Total	31	100	35	100	

Adverse effects: Fatigue, nausea, anorexia constipation. These adverse effects had a small impact on the patients and the patients could continue the treatment.

Comment: The patients treated with itraconazole had a higher rate of adverse effects (19.4%), compared with the patients treated with griseofulvin (2.9%). The difference was statistically significant ($p < 0.05$).

Table 6. Comparing the cost for treatment in 2 groups

Drug	Price (VND)/1 tablet	Total tablets per treatment	Price per treatment (VND)
Itraconazol 100mg (Kbat)	17,500	28	490,000
Griseofulvin	2,500	28	70,000

Comment: The cost for treatment in oral itraconazole group was 7 times higher than that in oral griseofulvin group.

4. Discussion

Table 3 shows after 2-week treatment, 71.0% of patients recovered from the disease, and 16.1% did not recover in the itraconazole (Kbat) group, while in the griseofulvin group, 62.9% completely recovered and 20%, did not made any progress ($p > 0.05$). After 4-week treatment, 83.9% and 85.7% of patients were cured in both itraconazole and griseofulvin group, respectively. The failure rate was decreased to 6.5% in the itraconazole group and 2.9% in the griseofulvin group ($p > 0.05$). Therefore, the clinical treatment results in two groups were similar.

Table 4 shows after 2-week treatment, 83.9% of patients had negative fungal test in the itraconazole group, and in the griseofulvin group, 80.0% of patients had negative result. After 4 weeks, the percentage of negative fungal test were higher in the griseofulvin group than in the itraconazole group (97.1% vs 93.5%), but this difference was not statistically significant ($p > 0.05$).

Our results were similar to other authors, both dosmetically and internationally. A study from Panagiotidou D et al (1992) showed that the fungal clearance rate in the itraconazole group was 72.3% and in the griseofulvin group was 76.2%, the difference was not statistically significant ($p > 0.05$) [3]. A study from Bui Van Duc et al (2004) revealed the percentage of fungal clearance were 87% in the itraconazole group and 97.67% in the griseofulvin group. The rate of clinical response was 95.65% in the itraconazole group after 4-week treatment, and 95.34% in the griseofulvin group after 3-week treatment. The difference was not statistically significant ($p > 0.05$) [4].

Goh CL et al (1994) compared the antifungal properties in 3 groups including itraconazole, griseofulvin, ketoconazole on the fungal culture. Results showed that most superficial fungal infection were equally sensitive to these 3 drugs ($MIC < 25$ micrograms/ml), in which the sensitivity in the griseofulvin group was 82%, and in the itraconazole group was 81% [6].

Tables 5 and 6 revealed the adverse effects were commonly seen in the itraconazole group (19.4%), compared to 2.9% in the griseofulvin

group ($p < 0.05$) and the cost for treatment in itraconazole group was 7 times higher than that in griseofulvin group.

5. Conclusion

Oral itraconazole and griseofulvin both are equally effective in treatment of tinea corporis, however griseofulvin is cost effective.

References

1. Nguyen Quy Thai (2012) *Prevention of fungal skin diseases in the northern mountains*. Medical publisher: 2-4.
2. Lachapelle JM, De Doncker P, Tennstedt D, Cauwenbergh G, Janssen PA (1992) *Itraconazole compared with griseofulvin in the treatment of tinea corporis/cruris and tinea pedis/manus: An interpretation of the clinical results of all completed double-blind studies with respect to the pharmacokinetic profile*. *Dermatology* 184(1): 45-50.
3. Panagiotidou D, Kousidou T, Chaidemenos G, Karakatsanis G, Kalogeropoulou A, Teknetzis A, Chatzopoulou E, Michailidis D (1992) *A comparison of itraconazole and griseofulvin in the treatment of tinea corporis and tinea cruris: a double-blind study*. *J Int Med Res* 20(5): 392-400.
4. Bui Van Duc, Nguyen Tat Thang et al (2007) *Compare the efficacy of single dose itraconazole and fluconazole in drug addicts with pityriasis versicolor*. *Journal of Medicine in Ho Chi Minh City* 11: 264-271.
5. Sharma P, Bhalla M, Thami GP, Chander J (2019) *Evaluation of efficacy and safety of oral terbinafine and itraconazole combination therapy in the management of dermatophytosis*. *J Dermatolog Treat*: 1-5.
6. Goh CL, Tay YK, Ali KB, Koh MT, Seow CS (1994) *In vitro evaluation of griseofulvin, ketoconazole, and itraconazole against various dermatophytes in Singapore*. *Int J Dermatol* 33(10): 733-777.