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Efficacy of Topical Terbinafine and Topical Clotrimazole in the treatment of Dermatophytosis and Skin Candidiasis; an Observational Study

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Abstract

Objective: To compare the efficacy of Topical Clotrimazole and Topical Terbinafine in topical Fungal infection clinically.

Study Design: It is a Cross sectional observational study.

Place and Duration of study: The study was conducted in Altribi Medical College and Hospital, from December 2016 to June 2017.

Materials and Methods: The study was carried out in 105 patients of all age groups. Diagnosis was done on clinical grounds. Informed consent was taken from all the patients. All the patients were followed for 6-7 weeks and were observed for clinical improvement of sign and symptoms. Statistical analysis of the data which includes the numbers and percentages was done for all the categories via SPSS ver 22.

Results: Among 46 patients of Tinea Corporis, 21 were given Topical Terbinafine and 19(90.4%) improved in 2 weeks. 25 patients were given Topical Clotrimazole and 22(88%) improved in 2 weeks. Among 23 patients of Tinea Cruris 13 patients were given Topical Terbinafine, 11(84.4%) treated in 2 weeks. 10 patients were given Clotrimazole Topical, 8(80%) patients treated in 2 weeks. Among 11 patients of Vaginal Candidiasis, 6 patients were given topical Clotrimazole, 3(50%) treated completely in 2 weeks, 5 were given Topical Terbinafine, 4(80%) treated in 2 weeks. This shows that Topical Terbinafine is slightly more effective than Topical Clotrimazole. Among 25 patients of Tinea Pedis, 11 were given Topical Terbinafine, 7(63.6%) improved in 2 weeks, 14 were given Topical Clotrimazole but no one improved in 2 weeks, 9(64%) responded in 6 weeks, 3(21%) in 4 weeks, 1(7%) in 5 weeks and 1(7%) didn't responded well in 6 weeks and treatment was extended for 7 weeks. This shows that Topical terbinafine is more effective than Topical Clotrimazole in the treatment of Tinea Pedis.

Conclusion: Topical Terbinafine and Topical Clotrimazole are of almost equal in their efficacy for the treatment of Tinea Corporis, Tinea Cruris and Vaginal Candidiasis with Topical Terbinafine is slightly more effective than Clotrimazole. In Tinea Pedis Topical Terbinafine is more effective than Topical Clotrimazole in terms of shorter duration of treatment requiring only 2-3 weeks of treatment while Clotrimazole takes 4-6 weeks for treatment.

Keywords : Clotrimazole; Terbinafine; Dermatophytosis; Candidiasis

Introduction

Fungal skin infection also called ringworm is a red, circular itchy rash. It is known as Tinea or Dermatophytosis [1]. It is referred by other names according to the part of the body affected. For example, Tinea on head is called Tinea Capitis, it is called Tinea Cruris if it involves the groin, it is called Tinea Pedis if it involves the feet, fungal infection of nails is Tinea Unguim or Onychomycosis and fungal infection of the body is Tinea Corporis [2-4]. Fungi reproduce by spreading microscopic spores. These spores are often present in air and soil. They can be inhaled or they come in contact with surface of the skin.

Consequently fungal infection begins in lungs or skin [4]. Fungus candida is a naturally occurring microorganism in the vaginal area. Lactobacillus keeps its growth in check. If there is an imbalance in the defence system it grows and causes Candidiasis [5]. These infections are treated with topical antifungals [6]. In this study topical Terbinafine and topical Clotrimazole are compared with each other in their efficacy to treat Dermatophytosis [6-8].

Terbinafine is an allylamine derivative that has fungicidal properties [9]. It is by development of high intracellular squalene concentrations, which are believed to interfere

with fungal membrane function and cell wall synthesis. In case of candida albicans, growth inhibition with terbinafine appears to result from ergosterol deficiency. Clotrimazole is an Imidazole derivative with a broad spectrum of antimycotic activity [10]. It alters the permeability of the fungal cell wall. It binds the phospholipids of cell membrane and inhibits the biosynthesis of ergosterol and other sterols required for cell membrane production. So it has 'Fungistatic' effect [10]. Topical preparations are used for superficial fungal skin infections and oral preparations are used for deep and systemic fungal infections [6,10].

Materials and Methods

The study was carried out in 105 patients of all age groups. Patients of all age groups with Dermatophytosis and Skin Candidiasis were selected for this study. Patients of Onychomycosis and Tenia Capitis were excluded from this study because Onychomycosis and Tenia capitis is treated by oral antifungals. Diagnosis was done on clinical grounds. Informed consent was taken from all the patients. A detailed history including age, sex, and occupation, duration of disease and family history of the patients was obtained. A dermatological examination was done, taking care to note the morphology and distribution of the fungal infection. All the cases were diagnosed clinically. All the patients were followed for 6-7 weeks and were observed for clinical improvement of sign and symptoms. Statistical analysis of the data which includes the numbers and percentages was done for all the categories via SPSS ver 22.

Results

Among 46 patients of Tinea Corporis, 21 were given Topical Terbinafine and 19(90.4%) improved in 2 weeks. 25 patients were given Topical Clotrimazole and 22(88%) improved in 2 weeks. Among 23 patients of TineaCruris 13 patients were given Topical Terbinafine, 11(84.4%) treated in 2 weeks. 10 patients were given Clotrimazole Topical, 8(80%) patients treated in 2 weeks. Among 11 patients of Vaginal Candidiasis, 6 patients were given topical Clotrimazole, 3(50%) treated completely in 2 weeks, 5 were given Topical Terbinafine, 4(80%) treated in 2 weeks. This shows that Topical Terbinafine is slightly more effective than Topical Clotrimazole. Among 25 patients of TineaPedis, 11 were given Topical Terbinafine, 7(63.6%) improved in 2 weeks, 14 were given Topical Clotrimazole but no one improved in 2 weeks, 9(64%) responded in 6 weeks, 3(21%) in 4 weeks, 1(7%) in 5 weeks and 1(7%) didn't responded well in 6 weeks and treatment was extended for 7 weeks. This shows that, Topical terbinafine is more effective than Topical Clotrimazole in the treatment of TineaPedis.

Discussion

105 patients were selected, with distribution of patients as follows:

46 (43.8%) had TineaCorporis, 23(21.9%) had TineaCruris, 25(23.8%) had TineaPedis and 11(10.5%) had Vaginal

Candidiasis (Table 1). Among 46 patients of TineaCorporis 21 was given Terbinafine. 19(90.4%) patients treated completely in 2 weeks [11], 1(4.7%) responded in 1 week and 1(4.7%) didn't responded in 2 weeks and the treatment is extended to 3 weeks. 25 patients were given Topical Clotrimazole, 22(88%) treated in 2 weeks and 3(12%) didn't responded in 2 weeks and treatment was extended for 3 weeks. Among 23 patients of Tinea Cruris, 13 patients were given Topical Terbinafine, 11(84.4%) treated in 2 weeks and 2(15.6%) responded in 1 week [12]. 10 patients were given Clotrimazole Topical, 8(80%) patients treated in 2 weeks and in 2(20%) in treatment needed to extend for 3 weeks [13,14]. Among 25 patients of TineaPedis, 11 were given Topical Terbinafine, 7(63.6%) treated in 2 weeks, 2(18.2%) in 3 weeks and 2(18.2%) in 4 weeks [15,16]. 14 patients were given Topical Clotrimazole, 9(64%) responded in 6 weeks, 3(21%) in 4 weeks, 1(7%) in 5 weeks and 1(7%) didn't responded well in 6 weeks and treatment was extended for 7 weeks [17,18]. That shows terbinafine takes less time than Clotrimazole to show clinical improvement in Tinea Pedis [19].

Table 1: Distribution of 105 patients of Dermatophytosis with respect to area involved and given drug.

	Tinea Corporis	Tinea Cruris	Tinea Pedis	Vaginal Candidiasis
Patients Treated with Topical Clotrimazole	25	10	14	6
Patients Treated with Topical Terbinafine	21	13	11	5
Total No. of Patients	46	23	25	11

Among 11 patients of Vaginal Candidiasis, 5 were given Topical Terbinafine, 4(80%) treated in 2 weeks and 1(20%) treated was needed to extend for 3 weeks. 6 patients were given topical Clotrimazole, 3(50%) treated completely in 2 weeks and 3(50%) didn't responded well in 2 weeks and treatment was extended for 3 weeks [20,21]. This data clearly indicates that Topical Terbinafine is effective for superficial dermatophytosis and vaginal candidiasis and takes on average 1-2 weeks for clearance of fungal infection [22], with some cases of Tineapedis requiring 2 to 4 weeks as shown in Table 2 [23].

Table 2: Efficacy of Terbinafine with respect to time of treatment.

Column 1	Tinea corporis	Tinea cruris	Tinea Pedis	V.Candidiasis
1 week	4.75%	15.60%	-	20%
2 weeks	90.50%	84.40%	63.60%	80%
3 weeks	4.75%	-	18.20%	-
4 weeks	-	-	18.20%	-
5 weeks	-	-	-	-
6 weeks	-	-	-	-

This table shows that most of the patients responded in 2-3 weeks while patients of TineaPedis took 4-6 weeks. Above data shows that, topical terbinafine is more effective than Topical Clotrimazole [23-25]. The Cochrane Database of systemic review reported 72 placebo controlled trials of topical agents that yielded the following cure rates: undecenoic acid, 72%; allylamines (terbinafine, naftifine, butenafine), 70%; tolnaftate, 64%; azoles (clotrimazole, miconazole, ketoconazole, econazole, oxiconazole), 47% [26]. A meta-analysis of 11 RCTs suggests that Allylamines are slightly more effective than Azoles. Oral antifungals are expensive and can cause systemic side effects. Ketoconazole and Griseofulvin are approved for oral therapy but product labels clearly state that they should be used only after topical agents have failed (Table 3).

Table 3: Efficacy of Clotrimazole with respect to time of treatment.

Column 1	Column 2	Column 3	Column 4	Column 5
	Tinea Corporis	Tinea Cruris	Tinea Pedis	V.Candidiasis
1 week	-	-	-	-
2 weeks	88%	80%	-	50%
3 weeks	12%	20%	-	50%
4 weeks	-	-	21%	-
5 weeks	-	-	7%	-
6 weeks	-	-	64%	-
7 weeks	-	-	7%	-

Conclusion

According to this study Topical Terbinafine and Topical Clotrimazole are of almost equal in their efficacy for the treatment of Tinea Corporis, Tinea Cruris and Vaginal Candidiasis, but Topical Terbinafine is slightly more effective than Clotrimazole. In Tinea Pedis Topical Terbinafine is more effective than Topical Clotrimazole in terms of shorter duration of treatment requiring only 2-3 weeks of treatment while Clotrimazole takes 4-6 weeks for treatment.

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