

AN OBSERVATIONAL, COMPARATIVE STUDY TO ASSESS THE EFFICACY AND SAFETY OF TOPICAL CLOTRIMAZOLE CREAM 1% AND MICONAZOLE GEL 2% IN DERMATOPHYTOSIS IN REAL LIFE CLINICAL PRACTICE

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ABSTRACT

To compare the efficacy and safety of topical clotrimazole cream 1% with miconazole gel 2% in dermatophytosis in real life clinical practice. Data of 255 patients, with mean age 34.3 years were available from two centres (clotrimazole= 130 & miconazole = 125). These patients were treated for average 12 days for *Tinea corporis* and *Tinea cruris* and were observed for symptomatic relief (changes in pruritus, erythema, burning / stinging, redness and clearance of lesions) and the time taken for it. The efficacy of treatment was rated on a 5 points scale (1=poor, 3= average and 5= excellent). In dermatophytosis, more number of patients showed greater symptomatic improvement in clotrimazole group as compared to the miconazole group [pruritus relief: 54% vs. 46% ($p<0.05$); improvement in erythema: 45% vs 39% ($p<0.05$); improvement in burning and stinging: 39% vs. 32% ($p<0.05$); clearance of lesion in terms of large improvement and cured: 66% vs 61% ($p<0.05$)]. Clotrimazole cream 1% provided quicker relief than miconazole gel 2% [8 days vs 8.8 days for pruritus ($p<0.05$); 6.9 days vs 7.2 days for burning and stinging ($p<0.05$); 7.2 days vs 7.8 days for improvement in redness ($p<0.05$)]. No adverse events were encountered. Topical clotrimazole cream 1% offers faster and better relief of symptoms than topical miconazole gel 2% in dermatophytosis.

KEYWORDS : Dermatophytosis, Miconazole, Clotrimazole, *Tinea corporis*, *Tinea cruris*

Tinea infections (*Tinea corporis* and *Tinea cruris*) are superficial fungal infections of the skin caused by dermatophytes. A wide range of topical antifungal drugs are used to treat these conditions, but it is unclear which are the most effective.

Dermatophytosis are one of the most common superficial fungal infections which affect millions of people worldwide (Pierard et al; 1996). According to a WHO survey, the estimated lifetime risk of acquiring a dermatophyte infection is as high as 1020% (Marques et al; 2000).

Dermatophyte is a collective term for fungi which causes infection of the skin, nail and hair and poses a major health issue due to associated morbidity particularly in tropical countries like India with hot and humid climate (Crawford et al.; 2009). Dermatophytes comprise a phylogenetically closely related group of genera namely *Trichophyton*, *Microsporum*, and *Epidermophyton* (Weitzman et al; 1995) with numerous species and have the ability to attack and invade keratinized tissues causing a wide spectrum of clinical manifestations varying from mild to severe (Crawford et al; 2009). *Tinea corporis* and *Tinea cruris* are the most common clinical forms of dermatophytosis (Berk et al.; 1976).

Many antifungal drugs are available to treat superficial fungal infections. The cure rates of 80% have been reported for many forms of dermatophytosis. But, due to the increasing number of cases of resistance of fungi to these agents and of immunocompromised patients, the management of dermatophytosis poses a challenge (Fernández-Torres et al; 2001).

Topical preparations are often preferred in current scenario, since they are more economical than orally administered antifungal drugs and cause minimal adverse effects. Moreover, it has been noted that most infections respond well to topical antifungal therapy (Esteban et al; 2005).

An ideal topical antifungal drug for the treatment of superficial fungal infection should be fungicidal, potent, having short duration therapy, with minimal/ no relapses, resulting in high cure rates, offering convenient dosing, possessing a broad spectrum of activity and minimal adverse effects (Crawford et al; 2009).

Antifungal agents such as imidazoles, allylamines, tolnaftate and ciclopirox are the commonly used drugs which fulfil the above mentioned criteria. Amongst imidazoles, clotrimazole and miconazole are effective against a variety of human pathogenic dermatophytes.

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Clotrimazole and miconazole have been widely used topically in Indian patients for the treatment of superficial dermatophytoses for more than 4 decades. Hence, this clinical study was planned to compare the efficacy and safety of clotrimazole cream 1% and miconazole gel 2% in dermatophytoses. The aim of the study was to compare the efficacy and safety of topical clotrimazole cream 1% with miconazole gel 2% in dermatophytoses in real life clinical practice.

MATERIALS AND METHODS

A retrospective, observational comparative study of clotrimazole cream (1%) and miconazole gel (2%) was undertaken in the real life clinical setting in Indian population. Data of 255 patients (clotrimazole = 130 & miconazole = 125) was collected from two centres. The mean age of the patients was 34.3 yrs, 127 were females. The patients were treated for average 12 days for *Tinea corporis* and *Tinea cruris*. These patients were observed for symptom relief (changes in pruritus, erythema, burning / stinging, redness and clearance of lesions). The time taken for symptomatic relief was compared between the two treatment groups. The Efficacy of antifungal therapy was

rated on a 5 points scale (1=poor, 3= average and 5= excellent).

RESULTS

In this retrospective clinical study, it was observed that pruritus was relieved in 54% and 46% ($p < 0.05$) of patients; erythema was improved in 45% and 39% ($p < 0.05$); burning and stinging in 39% and 32% ($p < 0.05$) in the clotrimazole and miconazole groups respectively. When evaluating the clearance of lesions in terms of large improvement and cured, there was a 5% difference between clotrimazole and miconazole groups respectively [66% vs 61% ($p < 0.05$)] (Figure 1). Clotrimazole cream 1% provided a quicker relief than miconazole gel 2% [8.0 days vs 8.8 days for pruritus ($p < 0.05$); 6.9 days vs 7.2 days for burning and stinging ($p < 0.05$) and 7.2 days vs 7.8 days for improvement in redness ($p < 0.05$)] (Figure 2). 65% patients rated efficacy of clotrimazole as good to excellent while 41% of patients ($p < 0.05$) rated miconazole as good to excellent by physician's assessment. (Figure 3)

In a subset group of diabetic patients, ($n=10$) a significantly greater improvement in all the symptoms were observed in the clotrimazole group as compared to the

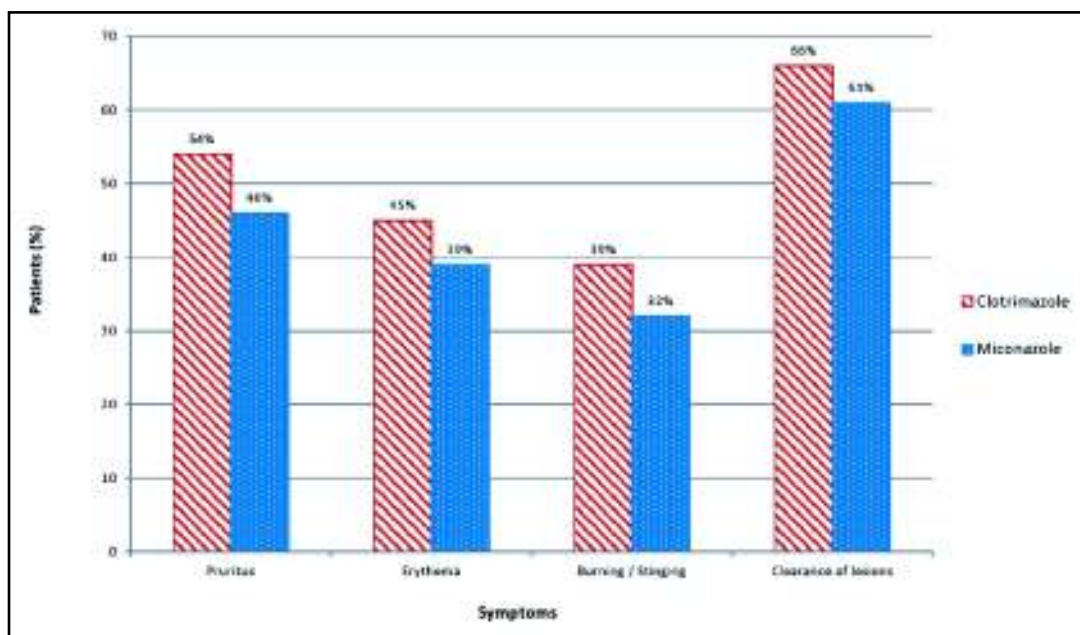


Figure 1 : Relief of Symptoms in Clotrimazole & Miconazole Groups

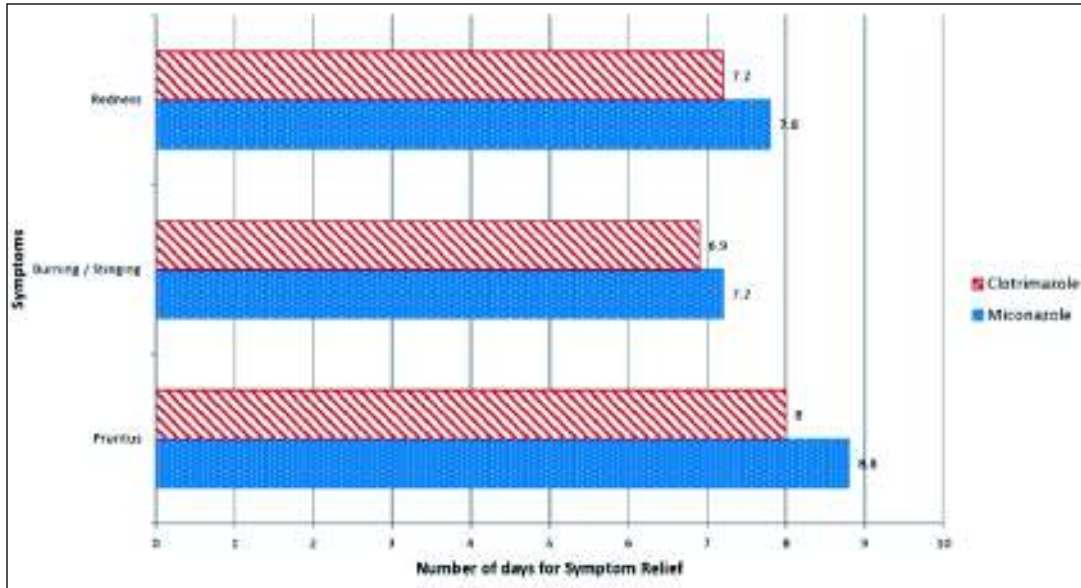


Figure 2 : Average Number of Days for Symptom Relief in Clotrimazole and Miconazole Groups

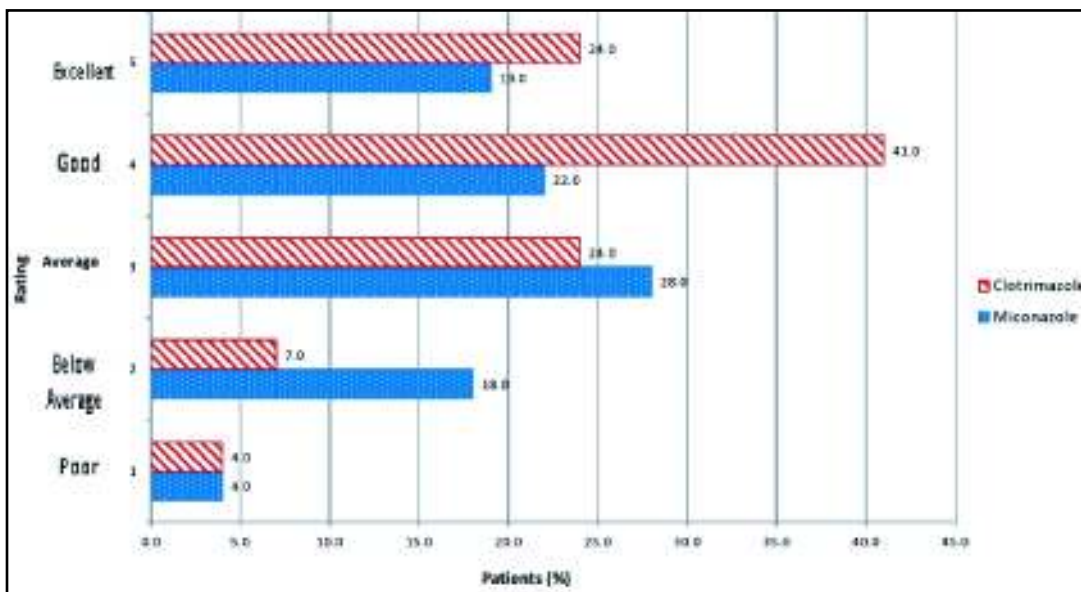


Figure 3 : Rating by Physicians in Terms of Efficacy

miconazole group. Pruritus relief [56% vs 36% ($p < 0.05$)]; improvement in erythema [57% vs 40% ($p < 0.05$)]; improvement in burning and stinging [43% vs 36% ($p < 0.05$)]; clearance of lesion [60% vs 40% ($p < 0.05$)] (Figure 4).

DISCUSSION

Dermatomycoses are the most widespread superficial fungal infections among human beings, being an important cause for morbidity. Although they rarely present risk to the life of patients, they may result in debilitating effects, affecting their quality of life (El-Gohary et al;

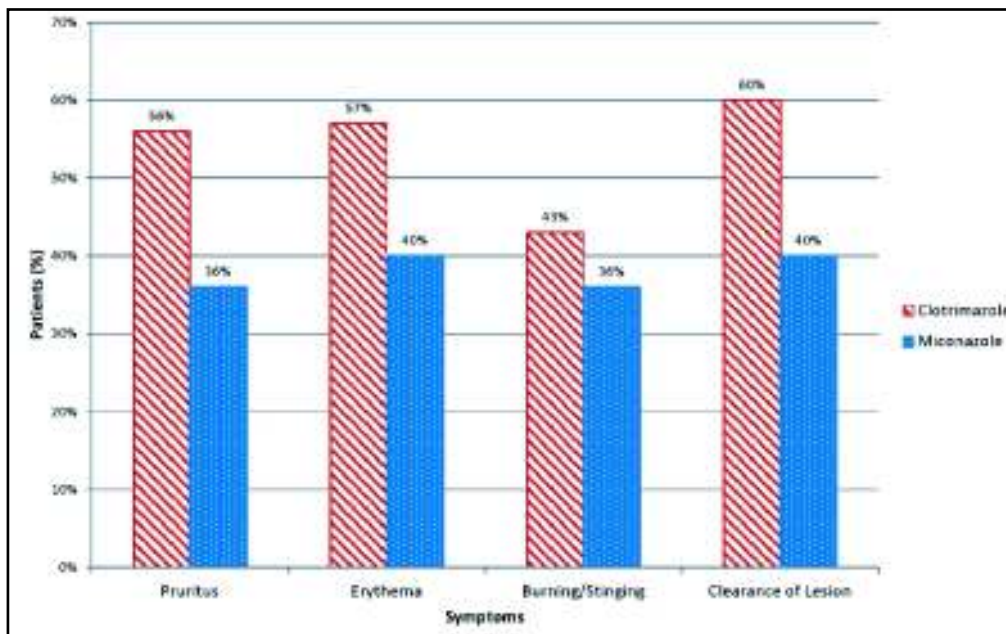


Figure 4 : Relief of Symptoms in Diabetic Patients in Clotrimazole and Miconazole Group

2014). The past two decades have witnessed a rise in the incidence of fungal infections (Shrestha et al; 2013).

Amongst the fungal infections, dermatophytes are keratinophilic fungi that cause dermatophytoses or tinea infections (Díaz Jarabrán et al; 2014). The most common dermatophytes that cause *Tinea corporis* include *T. rubrum*, *T. mentagrophytes*, *M. canis* and *T. tonsurans*. Both healthy and immunocompromised patients may develop these fungal infections. Early diagnosis and proper treatment is important to reduce the associated morbidity and risk of transmission. Mycoses are associated with significant negative social, psychological, occupational and health effects. Persistent infections are known to compromise the quality of life significantly.

In the past 40 years imidazoles have been used extensively in medicine for their antifungal properties. Topical clotrimazole, ketoconazole and miconazole have effectively been used to stop growth of fungus like dermatophytes, candidiasis and pityrosporum (Shrestha S. et al; 2013). The Cochrane analysis to assess the effects of topical antifungal treatments in *Tinea cruris* and *Tinea corporis* indicated that there was a little difference between different classes of treatments in achieving cure. But some interventions may be preferred since they may require fewer applications and a shorter duration of treatment (El-Gohary

et al; 2014). Clotrimazole is commonly and widely prescribed as a topical treatment for tinea infections (Crowley et al; 2014). The recurrence rate after 5 weeks of prophylaxis treatment has been reported to be about 4% in the intervention group at 3 months and 6 months as compared to 40% and 60% at 3 months and 6 months respectively in the placebo treated group (Shrestha S. et al; 2013).

CONCLUSION

The results of the current study in the real life setting corroborate the findings of published literature regarding the efficacy and safety of topical clotrimazole cream in superficial dermatophytoses. The greater and faster symptom relief offered by clotrimazole as compared to miconazole give credence to the reasons for choosing topical clotrimazole cream 1% over other topical antifungal drugs such as topical miconazole gel 2%. Hence, the conclusion of this retrospective, observational study was that topical clotrimazole cream 1% offers faster and better relief of symptoms than topical miconazole gel 2% in dermatophytoses. Therefore, clotrimazole is an effective, safe and well tolerated drug with an unusual chemistry that is widely used in the treatment of fungal infections.

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