

## Cutaneous Side Effects of Steroid Use in Dermatophytosis

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### ABSTRACT

**Background:** Dermatophytosis is a common, superficial fungal infection of the skin. Recently, there has been tremendous increase in the incidence of dermatophytosis attributed mainly to misuse of steroids in the management of fungal infection.

**Methods:** A cross sectional study of 6 months duration was done in patients with dermatophytic fungal infections, diagnosed clinically, with history or findings of some form of steroid use. Both quantitative and qualitative data were collected regarding steroid formulations about type, duration of use, route of administration and their availability by prescription or "over the counter". Various cutaneous and systemic adverse effects of steroids were also observed.

**Results:** Out of the total 200 patients of dermatophytosis, 120 patients (60%) had used steroid formulations either topical(80%), oral(12.5%), intralesional or injectable(7.5%). The mean duration of illness in patients who had used steroids was  $24 \pm 3$  weeks. Multiple site infection of dermatophytosis was present in 65% with steroid misuse and in 40.8% with nonsteroid use patient group. Cutaneous adverse effects were common in patients with steroid misuse, as suggested by relatives, friends, chemist, general practitioners or due to self-medication.

**Conclusions:** Misuse of steroid formulations in dermatophytic infections may result in various cutaneous and systemic side effects. Strict drug control policies and awareness of adverse effects of steroid abuse are truly the need of the hour to control this menace.

**Keywords:** Steroids, Dermatophytic infections, rational use

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## INTRODUCTION

Dermatophytes are fungi that metabolize keratin to produce superficial skin infections of skin, nail and hair known as dermatophytosis. Conventionally, dermatophytes are classified as asexual or imperfect (anamorphic) molds belonging to three genera, namely Trichophyton, Microsporum, and Epidermophyton. Dermatophytic infections have shown a rising trend across India.<sup>1</sup> Once an easily curable infection, its treatment has now become challenging. Patients present with extensive, recurrent, and recalcitrant disease often with atypical lesion morphology of superficial dermatophytosis. Widespread availability of

over-the-counter potent and super-potent topical steroids (alone or in combination with antifungals and antibiotics) and self-medication have led to the evolution of an atypical presentation of dermatophytosis. Topical and systemic steroids are known to suppress the immune response against dermatophytes and also have the potential to produce a wide variety of cutaneous adverse effects.<sup>2</sup> In this study, we aimed to highlight various adverse effects of steroid and also its effect on the fungal infection itself.

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## METHODS

This was a cross sectional study conducted for a period of 6 months in the Dermatology Outpatient Department (OPD) of Rama Medical College. The diagnosis was done clinically. The aim of our study is to observe various adverse effects of topical and/or systemic steroids in dermatophytic infections. Patients were asked to bring previously used drugs or topical preparations, containers and old prescriptions. Information regarding steroid formulations in regard to type, route of administration, duration, their availability as over the counter or by prescription was collected. Various cutaneous side effects of steroid use such as atrophy, striae, telangiectasia etc were looked for in all patients. Detailed history regarding duration of disease, family history as well as history of co-morbid conditions was asked. History of diabetes, hypothyroidism and other endocrinal disorders was asked. History regarding use of systemic steroid for autoimmune, hematological and respiratory disease was inquired. All patients of dermatophytic infection were primarily selected of which patients who had history or findings of some form of steroid use either topical, oral, intralesional or injectable were analyzed separately.

## RESULTS

A total of 200 patients were enrolled in our study having dermatophytosis. The mean age of the patients was 25.5 years (range: 5-55years). There were 135 males and 65 females (M: F, 2:1). Of 200 patients, 120 patients (60%) had used steroid formulation either topical, oral, intralesional or injectable. Out of these 120 patients, 96(80%) had used topical, 15(12.5%) used oral steroids and 9(7.5%) had been given intralesional and injectable steroids.

Maximum patients 74(61.66%) had done self-medication on suggestions from family or friends while steroidal combination creams were prescribed by chemist in 28(23.33%) and by unqualified registered medical practitioners in 18(15%). These patients never visited any Dermatologist for the treatment of their skin disease. Family history of dermatophytosis was present in 44 patients (36.66%). There was history of sharing of clothes and towels in such patients suggesting transmission by fomites.

There was increase in duration of illness in patients who had used steroid in any form for the treatment. In our study, the mean duration of illness at time of presentation in patients who had used steroids was  $24 \pm 3$  weeks. The higher duration may be attributed to the fact that topical steroids mask the immune response against the fungus.<sup>3</sup>

In our study, multiple sites involvement was noticed in 78 out of 120(65%) patients who were given steroids. In comparison, 80 patients who did not misuse steroid, 51(40.8%) had fungal infections at multiple sites. The most common clinical presentation was Tinea corporis (83.33%) followed by Tinea cruris (41.67%) and Tinea faciei (8.3%).

Various cutaneous side effects were noticed in patients with steroid misuse. The most common adverse effect seen was presence of striae in 46(38.33%). Other cutaneous side effects noticed were atrophy in 20(16.66%), acneiform eruptions in 13 (10.88%) and post inflammatory hypopigmentation in 12(10%) patients. All the patients who had been given intralesional steroids developed striae and acneiform eruptions. Total of 108(90%) patients developed

cutaneous adverse effects who had use steroids. Figure 1,2,3



Figure 1: Hypopigmentation due to steroidal cream



Figure 2: Modified morphology due to steroid cream



Figure 3: steroid modified tinea

In our study, none of the patients developed any systemic side effects.

## DISCUSSION

Dermatophytosis is a widely prevalent superficial mycosis in India with a recent upsurge in its incidence and a myriad of atypical presentations due to a complex interplay of agent factors (true resistance, parasitism of vellus hair), host factors (changing clothing habits, ping pong effect within the family, untreated sanctuary sites, casual health-seeking

attitude, lack of adherence to standard therapy) and social factors (hesitation to seek medical advice due to involvement of groins, gluteal region, or the inframammary regions).<sup>4,5</sup> In India, several combination creams are easily available over the counter and are cheaper too. They give quick symptomatic relief to the patients due to the anti-inflammatory properties of steroids. These medicines are widely recommended by general practitioners, quacks, paramedics, pharmacists, friends, and family without adequate knowledge about the diagnosis and management of dermatophytosis. Steroids in any form, be it topical, oral, injectable or intralesional tend to cause a prompt symptomatic relief and thus the patients have a false security of efficacy of medication and they tend to continue it or even reuse it on recurrence of the infection.

Absence of awareness and casual health-seeking attitude of Indian patients is reflected in our study where only one-third (32%) of the patients visit the Dermatologist on developing any skin rash. The data are comparable to the previous studies wherein dermatologists were approached by 14%–40% of patients.<sup>6,7</sup> The major source of advice for the use of combination creams medicines were pharmacists (30.8%) and friends/relatives (29.4%). Pharmacists have been a major source of prescription (20%–78%) in the earlier studies also.<sup>7,8</sup> Hence, spreading awareness among public and educating pharmacists and general practitioners about the adverse effects of irrational use of steroid containing combination creams and medications is crucial.<sup>8</sup>

Patients with use of steroid in any form present with prolonged mean duration of the disease.<sup>9</sup> Also, the patients, in whom steroid abuse was noted, had dermatophytosis at multiple sites implying that use of steroids can change the presentation and worsen the disease course. Diagnosis of fungal infections is often confusing and even delayed in such patients due to the atypical morphology of the lesions resulting from application of topical steroids.<sup>10</sup> Steroid modified tinea is less scaly, lacks raised margins, may be more extensive and may be associated with pustules.<sup>11</sup>

Various adverse effects of steroids may include atrophy, striae, rosacea, perioral dermatitis, acneiform eruptions, purpura, pigment alteration, perioral dermatitis, hypertrichosis, delayed wound healing, and exacerbation of skin infections, some of which were present in our patients. In our study, various cutaneous adverse effects were noted with most severe side effects caused by use of intralesional steroids. Systemic adverse effects were more in patients given injectable steroids. In Literature, various systemic side effects have been mentioned like iatrogenic Cushing's syndrome, hyperglycemia, glaucoma, Cataracts, hypothalamic-pituitary-adrenal axis suppression, femoral head avascular necrosis and others due to topical steroids. In a developing country like India, with low literacy rates and lack of awareness, most of the patients (89%) had neither

heard of steroids nor were aware of their adverse effects. One of the major effects of steroid misuse may be epidemic spread of superficial fungal infections across the country. The growing threat of steroid containing combination creams misuse in India is evident from this study. More awareness regarding adverse effects of steroids in fungal infections is needed among doctors, paramedics and the general population at large. The need is also to regulate marketing of irrational topical cocktail formulations containing a combination of steroid and antifungal. Many active steps are being taken by the IADVL (Indian association of Dermatologists, Venereologists and Leprologists) to tackle this issue including creating a new task force named IADVL Task Force Against Steroid Abuse (ITASTA).<sup>12</sup> However, more such pertinent measures are needed in this direction. There is a need to health educate community and medical professional that topical steroids are also dangerous, have serious side effects and judicious as well as rational use is anticipated to prevent the same.

## CONCLUSION

Misuse of steroid formulations in dermatophytic infections may lead to various cutaneous and systemic adverse effects. In addition, variation in morphology, multiple site infection, prolonged illness, recurrence and delay in diagnosis may result due to steroid misuse. Strict drug control policies, health education and spreading awareness of this problem is needed for prevention of steroid modified dermatophytosis and control this menace.

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