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Original Article

Adverse effects of steroid use in dermatophytic infections: a cross sectional study

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ABSTRACT

Background: Dermatophytosis is a type of superficial fungal infection which is a cause of significant morbidity especially in the Indian subcontinent. One of the major causes of the rising trend in the incidence of dermatophytosis is the unwarranted use of steroids in the management of fungal infection.

Methods: A cross sectional study of dermatophytic fungal infections was carried out with research question of 'Is steroid formulation abused in dermatophytic infections? What are their effects and side effects?'All patients of dermatophytic infection were primarily selected over period of six months of which patients who had history or findings of some form of steroid use were further analyzed. Quantitative and qualitative data were collected in regards to steroid formulations about type, duration of use, route of administration and their availability by prescription or "over the counter". Dermatological signs of steroid use were noted.

Results: Of total 180 patients of dermatophytosis, 72 patients (40%) had used steroid formulations either topical (52), intralesional (9) or injectable (11) and 108 did not. Most patients (50 of 72) (69%) were from rural background and had long mean duration of illness (24 ± 3 weeks). Multiple site infection of dermatophytosis was present in 60 of 72 (83%) and in 51of 108 (47.22%) in steroid misuse and in non-steroid use patient group respectively. Cutaneous adverse effects were common in steroid modified dermatophysis patients. Unauthorized use of steroid was in form of self application, over the counter availability, use of steroid preparation of relatives and others.

Conclusions: Misuse of steroid formulations in dermatophytic infections may lead to adverse effect as well as chronicity. Awareness of this problem is needed for prevention of steroid modified dermatophytosis, which is a rising menace.

Key words: Steroids, Dermatophytic infections, rational use

INTRODUCTION

Dermatophytic infections have shown a rising trend across India.[1]One of the major causes could be the increasing misuse of topical and systemic steroids for this condition.[2] Easy over the counter availability of topical steroids at some places in India is also the cause of its abuse. Topical and

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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.[3] In this study we aimed to highlight the adverse effects of steroid abuse and also its effect on the fungal infection itself.

METHODOLOGY

This cross sectional study was carried out at teaching hospital attached to multispecialty tertiary care Dhiraj Hospital, affiliated to Sumandeep Vidyapeeth which is one of the Health University of Gujarat. It caters services to Vadodara City, nearby villages of Piparia village and Waghodia taluka. Patients also come from neighbouring districts of Gujarat and from neighbouring states like Madhya Pradesh and Maharashtra. Many referred patients from Madhya Pradesh attend our hospital having indoor strength of 1068 and daily medicine and dermatology OPD of around 600-800 patients. All patients diagnosed to have dermatophytic fungal infections (new as well as old) from May 2017 to October 2017 (six months) were included in the study. In old patients, detail inquiry of past treatment was made. If proper history of past treatment were not available, such cases were excluded. The diagnosis was done clinically and when in doubt by KOH mounts. Present study aimed to find out abuse and subsequent effect of topical and/or systemic steroids in dermatophytic infections. Past records of treatment were examined. Patients were asked to bring used drugs or topical preparations, containers and old prescriptions. Information regarding steroid formulations in regards to type, route of administration, duration, their availability as over the counter or by prescription was collected.

Dermatological signs of steroid use such as atrophy, striae, talengiectasia 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, intralesional or injectable were analyzed separately.

Patients were asked about situations and phenomenon which leads to steroid formulation use and their reaction and effect was noted down in their own words.

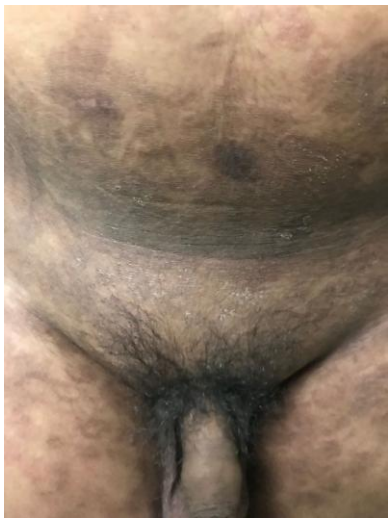
RESULTS

A total of 180 patients were enrolled in the study having dermatophytosis of which 117 were male and 63 were female (M: F, 1.86:1).Of 180 patients, 72 patients (40%) had used steroid formulation either topical, intralesional or injectable and 108 did not. Out of these 72 patients, 52 had used topical, 9 had been given intralesional and 1 had been given injectable steroids. Interlesional and injectable steroids were used by medical practioners of various pathies. Unauthorized use of steroid was present in 32 patients while in 40, it was prescribed.

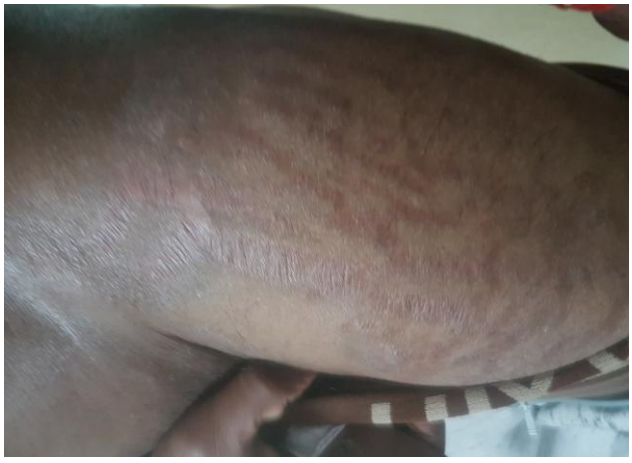
Out of the 72 patients who had used steroid formulations, 50 patients (69%) were of a rural background. The mean duration of illness at time of presentation in patients who had used steroids was 24 ± 3 weeks. Of these, the patients who had used intralesional and injectable steroids had longer duration of illness. One patient who was on injectable steroid had duration of illness of 15 months. (Case photo 1) The higher duration of illness may be attributed to the fact that topical steroids mask the immune response against the fungus .[4]

The most common site of fungal infection in our study of 180 patients was the groin (130), followed by buttocks (97), trunk (41), extremities (22) and face (14).Of patients in whom steroid

formulation was misused (n=72), 60(83%) patients had involvement of multiple sites. In comparison, 108 patients who did not misuse steroid, 51(47.22%) had fungal infections at multiple sites. We encountered one patient who had involvement of around 70 percent of body surface area with dermatophytes. This patient was on treatment with intralesional steroid treatment since 2 months.

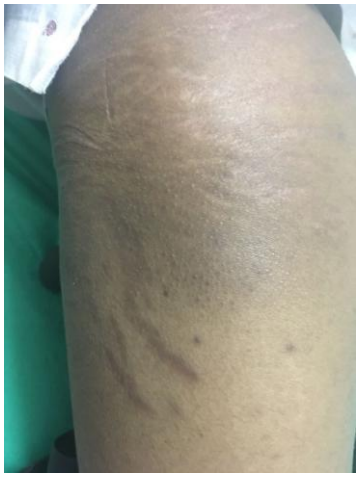


Case Photo 1. Patient having Tinea cruris, multiple hyperpigmented annular scaly plaques over groin and lower abdomen. The lesions appear eczematous due to steroid modification.

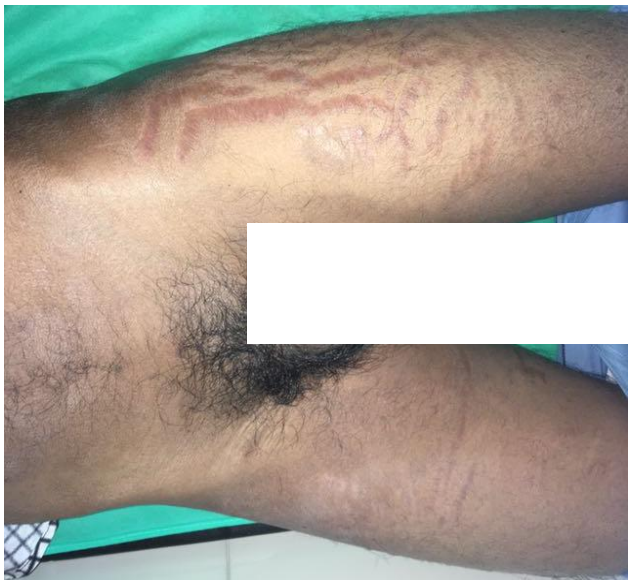


Case Photo 2. showing striae due to use of intralesional steroids.

Cutaneous adverse effects observed were noticeable in 52 of the 72 patients who had used topical steroids. Out of the 52 patients 47 patients had duration of steroid use greater than one month. This suggests that the duration of steroid use correlates with the adverse effects.22 patients had more than one cutaneous adverse effect. The common adverse effect seen was striae (34), atrophy (15), acneform eruptions (13) and post inflammatory hypopigmentation (6). (Clinical Photos 2 to 5). All nine patients who had been given intralesional steroids developed striae. Out of the 13 patients who had acneform eruptions, nine had history of use of injectable steroids.



Case Photo 3. showing plaque of Tinea corporis along with striae beneath it due to intralesional steroid use.



Case Photo 4. Intralesional steroid induced extensive striae in patient with Tinea corporis

The main systemic adverse effect was iatrogenic Cushing's syndrome diagnosed on clinical criteria. It was seen in four patients all of whom had used inject able steroids. Out of five newly detected cases of Diabetes, three patients had history of use of injectable steroids.

Table 1. Phenomenographic analysis in form of patient quotes and utterances for use/abuse of steroid formulations

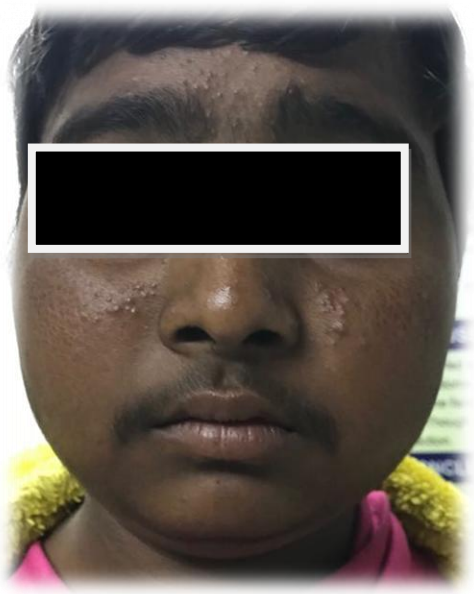
I had itchy skin lesion, went to pharmacy shop and asked for a tube which can alleviate my discomfort. Pharmacist told me that this can work for any skin problem
Female patient: I had skin problem in the private parts. I sought advice of my sister in law (Jethaniji/Husband's elder brother's wife) who gave me her half used skin tube and said to me that this tube was prescribed by my doctor, I got well, half tube is remaining, you could use it.
This tube I had used previously and I not only use it but give to others for skin problems. It reduces itching and redness and is very good
I was told that skin application tubes do not have side-effects.

Unauthorized use of steroid was present in 32 patients while in 42, it was prescribed. Interesting fact emerged was about self application of steroid formulations or use of topical steroid dispensed by pharmacist. In 32 patients in whom unauthorized, non-prescription and self use steroid abuse was present, over the counter availability of steroid preparation, pharmacist's recommendation and use of family member and friend's steroid preparation was found to be the contributor.

Few interesting situations and phenomenon which lead to steroid formulation use is noted down in form of quotes in table no.1.

DISCUSSION

There is a rising epidemic of superficial fungal infections in India. One of the major causes could be the rising trend of misuse of potent topical steroids by medical and non medical fraternities



Case Photo 5. Acneform eruptions and Cushingoid features in patients with Tinea cruris who was given injectable steroids

including misuse in form of self use[5].There is wide variety of irrational topical formulations available in India containing high potency steroids in combination with antifungal and antibacterial. The commonest formulation available is a combination of clobetasol propionate, ornidazole, terbinafineand ofloxacin.[5]

Topical, injectable and intralesional steroids tend to cause a prompt symptomatic relief and thus the patients have a false security of efficacy of medication. This could be the reason behind the greater duration of illness in patients with steroid misuse in our study. Also many patients in our study especially patients suffering from Tinea cruris were engaged in self medication to avoid the embarrassment of going to the doctor.

Prevalence of dermatophytosis is high in rural area.[6] Lack of awareness and inadequate availability of quality care in rural areas could be the reason behind the higher steroid use among the rural patients.

Mean duration of dermatophytic infection was higher in steroid formulation group.[5] Patients, in whom steroid abuse was noted, had dermatophytosis at multiple sites which could

mean that use of steroids can also worsen the disease course in patients with superficial fungal infections. Diagnosis of fungal infections may be delayed in such patients due to the atypical morphology of the lesions resulted because of application of topical steroids.[7]Steroid modified tinea is less scaly, lacks raised margins ,may be more extensive and be associated with pustules.[8]

Adverse effects of steroids include atrophy, striae, rosacea, perioral dermatitis, acneform eruptions, purpura and pigment alteration, perioral dermatitis, hypertrichosis, delayed wound healing, and exacerbation of skin infections, some of which were present in our patients. In our study cutaneous adverse effects were most severe with intralesional steroids while systemic adverse effects were more with injectable steroids. In fact one of the patients of iatrogenic Cushing's disease presented directly to the department of medicine and was referred to us for a skin rash. On taking history and on further examination we found that the patient was given injectable steroids for Tinea cruris by a local doctor. Literature do mention about systemic side effects like iatotrogenic Cushing's syndrome, hyperglycemia, glaucoma, Catarcts, hypothalamic-pituitary-adrenal axis suppression, femoral head avascular necrosis and others due to topical steroids. As they are easily available, have relative low cost and ease of application they are often misused.[9,10] A study done in Ambajogai, Maharashtra, India at Outpatient Dermatology Department of a Rural Tertiary Care Teaching Hospital, revealed that 28% prescriptions had very potent topical steroid formulations and only 15% of cases, there was rational basis of prescribing them.[11,]

Phenomenography, one of the domain of qualitative research was used in this study.[12] It was to find out experience and phenomenon in patient which led to steroid misuse. It was noted down in patient's own words in form of quotes and utterances. This study approach gave us more insight and understanding of steroid misuse. In chronic illness, phenomenographic studies may give a broader perspective which was the case in our study where many social as environment factors play and important role.[12]

The menace of steroid modified fungal infection and its adverse effects is well documented in literature. This study highlights clinical profile of steroid modified fungal infection. One of the major effects of steroid misuse may be epidemic spread of superficial fungal infections across the country. 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).[13] 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. There is a need to health educate community and medical professional that topical steroids are also dangerous.

CONCLUSION

Misuse of steroid formulations in dermatophytic infections may lead to adverse effect as well as chronicity. Multiple site infection, dermatological and systemic side effects and delay in diagnosis may result due to steroid misuse. Awareness of this problem is needed for prevention of steroid modified dermatophytosis, which is a rising menace.

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