



Topical Steroid Damaged/Dependent Skin: A Prospective Study on Its Source and Its Effects

Dr Mariet Zacharias*, Dr Sowmya C.S., Dr Deepali Sharath

Department of Dermatology, Venereology and Leprosy, Kempegowda Institute of Medical Sciences and Research Institute, KR Road, VV Puram, Bangalore, Karnataka, India

***Corresponding Author:**

Dr Mariet Zacharias

Department of Dermatology, Venereology and Leprosy, Kempegowda Institute of Medical Sciences and Research Institute, KR Road, VV Puram, Bangalore, Karnataka, India

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ABSTRACT

Background

Topical corticosteroids (TCs) provide rapid symptomatic relief in almost all inflammatory dermatoses. Increase incidences of abuse and misuse of topical corticosteroids lead to serious local, systemic, and psychological side effects. Such misuse occurs more with topical corticosteroids of higher potency and on softer areas of the body particularly the face and groin. The term TSDS or topical steroid damaged skin is relatively new and have recently gained importance.

Objectives

To understand the demographics and clinical features of topical corticosteroids misuse on the skin among the dermatology outpatient department (OPD) attendees

To analyze the source of the topical corticosteroids

Material and Methods:

A prospective study was conducted between March 2020 to October 2020, among outpatients in the department of dermatology, venereology and leprosy in a tertiary care hospital. Ethical clearance was obtained from the institutional ethical committee.

Results:

Face was the most common body sites affected 54.4% (n = 136) followed by groin and gluteal region 40.0% (n = 100). The most common indication was for dermatophytosis 44.4% (n = 111) where the sites abused include groin, trunk and limbs. The most commonly used steroid used is Clobetasol Propionate (0.05%) 38.3% (n = 97). The most common reported side effect was tinea incognito, 101 (n = 40.4%).

Conclusion:

From the data obtained by this study, it was observed that the skin damaged by topical steroid was not limited to face. Hence the term topical steroid damaged face should be replaced with topical steroid damaged skin.

Keywords: topical steroids; tinea incognito; TSDS; TSDF

INTRODUCTION

Topical corticosteroids (TCs) provide rapid symptomatic relief in almost all inflammatory dermatoses. That is why it is one of the most widely prescribed topical drugs, which have been in use for

about six decades till date. It was first introduced by Sulzberger and Witten in 1952 as compound F (hydrocortisone).¹

In the Indian market, different corticosteroid molecules, ranging in potency and activity from low to super potent, are available for topical use.

Increase incidences of abuse and misuse of topical corticosteroids lead to serious local, systemic, and psychological side effects. Such misuse occurs more with topical corticosteroids of higher potency and on softer areas of the body particularly the face and groin.²

Easy availability of topical corticosteroids and poor access to dermatologist make the situation worse in India. The situation is further complicated by the inadequate control on medicine shops by the authorities, whereby each and every medicine, whether OTC or not, can be sold without any prescription.

Earlier most commonly affected area was the face and the term TSDF was coined (in 2008).³ TSDF is defined as the semi-permanent or permanent damage to the skin of the face precipitated by the irrational, indiscriminate, unsupervised, or prolonged use of topical corticosteroids resulting in a plethora of cutaneous signs and symptoms and psychological dependence on the drug.³

Current clinical scenario has shown that abuse of topical corticosteroids in other body parts can bring about irreversible damage.

Cutaneous damage secondary to topical corticosteroids abuse is characterized by erythema, monomorphic acne, steroid atrophy, steroid rosacea, telangiectasia, perioral dermatitis, striae, tinea incognito, steroid rebound phenomenon, hypertrichosis, infections, ulceration, post inflammatory hyperpigmentation/hypopigmentation and severe addiction.⁴

Pal et al. found that 36.23% of patients with facial dermatoses had already been using TCs when they had contacted a specialist.² A large study conducted by Saraswat et al., reported it to be 15%.⁵

However, studies pertaining to topical steroid damage over other areas of the body is limited. The term TSDS or topical steroid damaged skin is relatively new and have recently gained importance.

Awareness against abuse of topical corticosteroids (TC), especially, has been going on for more than 7

years in India. In spite of this there are lots of cases in a daily OPD practice.

AIMS AND OBJECTIVES:

- To understand the demographics and clinical features of topical corticosteroids misuse on the skin among the dermatology outpatient department (OPD) attendees
- To analyze the source of the topical corticosteroids

MATERIALS AND METHODS:

A prospective study was conducted between March 2020 to October 2020, among outpatients in the department of dermatology, venereology and leprosy in a tertiary care hospital. Ethical clearance was obtained from the institutional ethical committee.

Sample size was estimated to be 250 patients based on a formula:

$$N = \frac{Z^2_{(1-\alpha)} \times P \times Q}{\delta^2}$$

$Z_{(1-\alpha)} = 1.96$ (For 95% Confidence Interval)

$P = 0.20$ [Based on the probability, that approximately 20% of the out-patient attendees would consult dermatologists for using Topical steroids [based on the results of previous literature findings of Raju G Chaudary et al, 2018]

$Q = 1 - P$

δ (Margin of Error) = 0.05

$N = 245.86$, rounded off to 250

Inclusion criteria:

1. Age ≥ 18 years
2. Patients using topical corticosteroids incorrectly (i.e. for conditions where topical corticosteroids were either not indicated or if indicated, the dose, frequency of application and/or the duration of application was not appropriate) and presenting with at least one of the following adverse effects as chief complaint: acne, facial hypertrichosis,

plethoric face and telangiectasia, cutaneous atrophy, stretch marks, hyper/hypo pigmentation, tinea incognito, perioral dermatitis, steroid rosacea and ulceration

Exclusion criteria:

1. Patients not willing to give informed consent.
2. Patients with comorbidities that resembled/could cause changes similar to TC side effects (e.g., polycystic ovaries/Cushing's syndrome/thyroid disorders)

Study design:

The study is a prospective study. After obtaining approval and clearance from the institutional ethics committee, the patients fulfilling the inclusion criteria will be enrolled for the study after obtaining informed consent.

Patients will be interviewed using a self-prepared questionnaire covering their personal details such as age, gender, employment, marital status, education level, duration and frequency of application of topical corticosteroid and the reasons for using the drug, awareness of proper dosing and adverse effects. Patients will also be asked about who had prescribed/recommended the remedy. A full skin examination was performed to detect any condition related to abuse of topical corticosteroids. Data collected was analysed using Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0. Released 2013. Armonk, NY: IBM Corp. Descriptive analysis includes expression of the responses to the study questionnaire frequency and proportions.

RESULTS:

Among 250 patients presenting to our outpatient department (OPD) over a 6-month period of study duration, 57.6% (n=144) subjects were females, and 42.4% (n=104) were males. The study included, 8.4% (n = 21) were ≤ 20 years, 38.0% (n = 95) were 21-30 years, 32.8% (n = 82) were 31-40 years, 18.0% (n = 45) were 41-50 years and 2.8% (n = 7) were > 50 years. Face was the most common body sites affected 54.4% (n = 136) followed by groin and gluteal region 40.0% (n = 100), trunk 12.4% (n = 31), lower limbs 12.0% (n = 30) and upper limbs 10.0% (n = 25), respectively. Here the total frequency accounts to N=322 instead of N=250, since few patients were affected with more than one site.

The most common indication was for dermatophytosis 44.4% (n = 111) where the sites abused include groin, trunk and limbs. However, for the face, three main indications were observed acne 22.0% (n = 55), skin lightening 21.6% (n = 54) and pigmentation 12.0% (n = 30).

As in table 1 the most common used steroid combination is Hydroquinone, Tretinoin, Mometasone Furoate 25.1% (n = 64) followed by Betamethasone Valerate 16.5% (n = 42), Clotrimazole, Beclomethasone Dipropionate 11.8% (n = 30), Clobetasol Propionate, Neomycin Sulphate, Miconazole Nitrate 10.6% (n = 27), Ofloxacin, Ornidazole, Terbinafine Hydrochloride, Clobetasol Propionate 9.0% (n = 23), Clobetasol Propionate, Gentamicin, Tolnaftate, Clotrimazole, Idochlorhydroxyquinoline 5.5% (n = 14) and the rest of combination accounts to be 24.7%. The total frequency accounts to N=255 instead of N=250, since few patients were given more than one combination of topical steroids. Commonly used brand names were Betnovate C, Betnovate N, Cosvate G, Cosvate GM, Lobate GM, Cloben G, Panderm, Quadriderm, Fourderm, Skinlite, Melacare, Melalite, etc.,

Table 2 shows the content/type of corticosteroid formulation used in such creams. Contents of the cream used were noted down from the tube cover/used tube directly when patient had bought it. The most commonly use steroid used is Clobetasol Propionate (0.05%) 38.3% (n = 97).

All patients in the study were those who had obtained the topical steroids either from a prescription by a general practitioner or from an unprescribed source. 37.6% (n = 94) of the participants obtained it from friends and relatives, 31.2% (n = 78) directly bought it from pharmacy, with pharmacists advising the cream. 28.8% (n = 72) received prescription for the topical steroid agent from a general practitioner and 2.4% (n = 6) of the patients reported that they found the topical agents from internet sources.

Another factor considered was the duration for which patients used the topical steroid before they sought out a dermatological consultation. 22.8% (n = 57) used it for less than 6 months, 50.4% (n = 126) used it for more than 6 months but less than a year. The remaining 26.8% used the topical steroids for more than a year. The longest time period used to be 7 years.

Table 3 depicts the distribution of different side effects caused by Topical Steroid drug use among study patients. The most common reported side effect was tinea incognito, 101 (n = 40.4%). It was noted over the groin, gluteal area predominantly, also over the trunk, mainly the flexures and also over the upper limb and lower limb flexures. Over the face, the multiple side effects noted including photosensitivity 34.8% (n = 87), steroid acne 32.4% (n = 81), erythema 28.8% (n = 72), hypertrichosis 12.0% (n = 30), telengectasia 15.2% (n = 38) and hyperpigmentation 6.0% (n = 15). Other commonly noted were striae 19.2% (n = 48), atrophy 10.8% (n = 27) and hypopigmentation 6.4% (n = 16). Easy bruisability, steroid rebound and ulceration were seen in 0.4% of the participants. The total frequency accounts to N=518 instead of N=250, since many patients were presented with more than one side effect.

DISCUSSION:

Corticosteroids are one of the most widely prescribed topical drugs. It has been already established that the rampant misuse and abuse in the face through years lead to plethora of symptoms and signs which is known as topical steroid-damaged/dependent face (TSDF).³

However, we find that this misuse is not limited to the face.

In our study we found that the most common dermatoses secondary to topical steroid abuse was tinea incognito 40.4%. This highlights the need to accept the new terminology of topical steroid damaged/dependent skin (TSDS).

In our study, 57.6% of the patients were females and most of the users fell into the age group of 21-30 years which was 38%. 50.4% used the topical agents for an average of 7-12 months before they consulted a dermatologist for the side effects of topical steroid.

In an Iraqi study by Al- Dhalimi et al it was found that most TC abusers were in the 10–19 years of age group, whereas in a study by Pal et al, it was found that most patients were in the 20–29 years of age group which is similar to a study of Saraswat et al. However, Pal et al and Saraswat et al.'s data were limited to facial use, whereas the Iraqi study reported TC abuse anywhere on the body.^{2,5,6}

Similar to the Iraqi study, in our study we found that the most commonly abused agent was either in the potent or super potent category. In our study the most common agent that was abused was Clobetasol Propionate (0.05%) around 38.3% and Mometasone Furoate (0.1%) 25.3%. The most used combination of both the agents were Hydroquinone, Tretinoin, Mometasone Furoate and Clobetasol Propionate, Neomycin Sulphate, Miconazole Nitrate. However, many patients had misused more than one agent.

In the Iraqi study and in our study, it was found that topical steroids were most often recommended by the patient's friends and relatives. We also found that 2.4% of the patients claimed that they found the topical agent on the internet for various indications.

CONCLUSION:

From the data obtained by this study, it was observed that the skin damaged by topical steroid was not limited to face. Hence the term topical steroid damaged face should be replaced with topical steroid damaged skin. Also, when the source of the topical steroids in the participants was analysed, it can be concluded that several measures like making topical steroids a scheduled drug and legislative measures to ensure that topical steroids may be dispensed only with prescription from a dermatologist should be made mandatory to tackle the root cause of this misuse. Another important measure would be patient education regarding the side effects of misusing topical steroids. Following this it is imperative that we encourage them to disseminate this information into the society.

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Table 1: Distribution of different Topical Steroid Combination used among study patients

Distribution of different Topical Steroid Combination used among study patients			
Variable	Category	n	%
Topical agent	Hydroquinone, Tretinoin, Mometasone Furoate	64	25.1%
	Betamethasone Valerate	42	16.5%
	Clotrimazole, Beclomethasone Dipropionate	30	11.8%
	Clobetasol Propionate, Neomycin Sulphate, Miconazole Nitrate	27	10.6%
	Ofloxacin, Ornidazole, Terbinafine Hydrochloride, Clobetasol Propionate	23	9.0%
	Clobetasol Propionate, Gentamicin, Tolnaftate, Clotrimazole, Iodochlorhydroxyquinoline	14	5.5%
	Clobetasol Propionate, Salicylic Acid	10	3.9%
	Chlorhexidine Gluconate, Clobetasol, Miconazole, Neomycin	10	3.9%
	Betamethasone Valerate and Clioquinol	8	3.1%
	Clobetasol Propionate	8	3.1%
	Clobetasol Propionate, Neomycin Sulfate	6	2.4%
	Betamethasone Dipropionate, Gentamycin, Neomycin	5	2.0%
	Fluocinolone Acetonide	4	1.6%
	Miconazole Nitrate, Fluocinolone Acetonide	3	1.2%
	Nadifloxacin, Mometasone Furoate, Miconazole	1	0.4%

Table 2: Distribution of different Steroid agents present in the drug used by study patients

Distribution of different Steroid agents present in the drug used by study patients			
Variable	Category	n	%
Steroid Agent	Clobetasol Propionate (0.05%)	97	38.3%
	Mometasone Furoate (0.1%)	64	25.3%
	Betamethasone Valerate (0.122%)	51	20.2%
	Beclomethasone Dipropionate (0.025%)	30	11.9%
	Fluocinolone Acetonide (0.01%)	7	2.8%
	Betamethasone Dipropionate (0.05%)	4	1.6%

Table 3: Distribution of different side effects caused by Topical Steroid drug use among study patients

Distribution of different side effects caused by Topical Steroid drug use among study patients			
Variable	Category	n	%
Side Effects	Tinea Incognito	101	40.4%
	Photosensitivity	87	34.8%
	Steroid acne	81	32.4%
	Erythema	72	28.8%
	Striae	48	19.2%
	Telengectasia	38	15.2%
	Hypertrichosis	30	12.0%
	Atrophy	27	10.8%
	Hypopigmentation	16	6.4%
	Hyperpigmentation	15	6.0%
	Easy Bruisability	1	0.4%
	Steroid Rebound	1	0.4%
	Ulceration	1	0.4%

FIGURES

Figure 1: Scarring with nodulocystic acne worsened by topical steroid application



Figure 2: Easy bruisability with striae over forearm



Figure 3: Tinea pseudo imbricata



Figure 4: Striae, ulceration and atrophy with tinea incognito over inguinal area due to prolonged topical steroid abuse

