



### Original Article

## An observational study to evaluate the dermatological manifestations of topical corticosteroid abuse on face

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### Abstract

**Background:** Introduction of topical corticosteroids (TC) by Sulzberger and Witten in 1952 led to the emergence of a new therapeutic era in dermatology. But soon the usefulness of these medication became a double-edged sword, owing to their misuse due to easy over the counter availability. The study is aimed at evaluating the range of side effects on the face from misuse of topical steroids.

**Aim and Objectives:** The primary outcome measures were to find out the most common steroid being used and the reason for its use. Secondary outcome measures were to find the age group and the gender most commonly affected, duration of steroid use, source of these prescriptions, source of procurement and whether the patient is aware of these side effects or not.

**Materials and Methods:** A total of 322 patients, diagnosed with topical corticosteroid induced face damage attending the outdoor patient department over a period of one year were included in the study. They were examined thoroughly and data obtained was recorded on designed proformas.

**Results:** Most common steroid being used was Betamethasone vale rate (38.82) mainly for melasma. Most vulnerable age group for TC misuse was between 20 to 39 years and majority (83%) were females. More than half of study group patients (55%) belonged to rural area. Majority were educated population as 34.47% were graduates. In about 64% cases, suggestion for starting TC was given by friends, relatives and neighbors. Steroid induced rosacea (55.59%) was the most common presentation.

**Conclusion:** The main responsibility for the misuse of topical corticosteroids in our study could be attributed to chemists, the patient himself/herself, friends and family. Apart from this strict implementation of the Government policies is the need of the hour.

**Keywords:** Rosacea, Dermatitis, Steroids, Acne Vulgaris.

**Key Message:** Easy availability and rapidity of symptomatic relief that the patient gets in almost any dermatosis remain the root cause behind widespread steroid misuse. Educational and legal approaches need to go hand in hand to curb this rising epidemic of steroid abuse.

## Introduction

Introduction of topical corticosteroids (TC) by Sulzberger and Witten in 1952 is considered to be the most significant landmark in the history of dermatology.<sup>1</sup> This historical event was gradually followed by the introduction of a large number of newer TC molecules of varying potency rendering the therapy of various inflammatory cutaneous disorders more effective and less time consuming. The easy availability of glucocorticosteroids and their potent anti-inflammatory, anti-proliferative effects further added to their widespread use in dermatology and thus led to the emergence of a new therapeutic era in dermatology. Although, the usefulness of this topical medication has become a double-edged sword. The same mechanisms of action responsible for the improvement of dermatologic inflammatory conditions can cause adverse effects when used inappropriately and for longer duration. The excessive and prolonged use of topical corticosteroid on the face is a common problem, often producing an array of cutaneous complications apart from the systemic side effects, including cutaneous atrophy, telangiectasia, striae, purpura, easy bruisability, steroid aggravated acne, perioral dermatitis, steroid rosacea, hypertrichosis and disorders of pigmentation, collectively described as topical steroid damaged facies (TSDF).<sup>2,3</sup> Despite of the widely prevalent steroid phobia, misuse of topical corticosteroid on face still continues to occur. The facial skin is thinner than the skin of most other parts of the body. This results in increased percutaneous absorption of drugs.<sup>2,3</sup> The sebaceous glands on the face are larger than elsewhere,<sup>4</sup> and there is an increased tendency to sweating particularly in hot and humid climates as is prevalent in most parts of India. The face is also the most visible part of the human body making it vulnerable to the ill-effects of beauty treatments, and injudicious use of various substances like TC and cosmetics.<sup>5</sup> The abuse of topical steroids in India is occurring at various levels and includes misuse at manufacturing and marketing level, prescription misuse and misuse by lay person. Thus both educational and legal

approaches need to go hand in hand to curb this evil. In January 2007 the IADVL Central Council and General Body in Chennai unanimously passed the landmark proposal to “Stop OTC supply of potent topical steroids”. But till the moment, the end users of steroid are not aware, these steps are in vain. Through our study we tried to counsel the patients about TC misuse, and the need to adhere strictly to the dermatologist’s prescription if they have been prescribed for specific dermatosis. We also discouraged them for self-application of these topical drugs.

## Material and Method

It was an observational study, conducted in a case study mode using convenience sampling to evaluate the dermatological manifestations of topical corticosteroid abuse on face among patients attending the outdoor patient department, in the department of Dermatology, Venereology & Leprosy, Indira Gandhi Medical College, Shimla after obtaining approval by institutional review board and obtaining written informed consent from the patients.

The study was conducted over a period of one year. All diagnosed patients of topical corticosteroid induced face damage were included. Patients on systemic corticosteroids, patients with rosacea, patients with comorbidities that can cause changes similar to TC side-effects (e.g., polycystic ovaries/Cushing’s syndrome) were excluded.

All patients suspected of facial dermatoses reporting to the investigator were asked the following screening question: “Are you currently using any cream on your face?” In case of a positive answer, the investigator ascertained whether the cream in question contain a corticosteroid by seeing the prescription, used medication container, by showing samples of popularly used preparations or naming commonly available TC preparations.

Clinical details regarding age, sex, occupation, educational status, area of residence (rural/urban), reason for steroid application, duration of use, frequency of use, awareness of usage and side

effects, source of such prescriptions/suggestions and common brand used, were recorded.

A detailed examination for the site, erythema, scaling, telangiectasia, hyper or hypopigmentation, atrophy, comedones, papules, pustules, nodules and hypertrichosis was performed. Additional symptoms and signs of skin diseases were noted. Common presentations were recorded. Counselling and treatment of TC adverse effects was started.

## Results

A total of 322 patients, diagnosed with topical corticosteroid induced face damage attending the outdoor patient department of dermatology of our institution were included in the study. Most of patients were in the age group of 20 to 39 years that is 215 (66.77%) (Table 1). Females 266 (82.61%) outnumbered males 56 (17.39%). The urban-rural ratio was 145:177, most of them were graduates 111 (34.47%), followed by patients with education upto senior secondary 73 (22.67%), matriculation 64 (19.88%) and middle 39 (12.11%). Twenty (6.21%) were post graduates and 15 (4.66%) had education upto primary level. Most common reason for use of steroid was melasma 167 (51.86%) and rest are highlighted in table 2.

Duration of application was from 1 month to <6 months in majority (Table 3). We also ascertained the suggestion or recommendation regarding the misuse of these creams and found that in majority of the patients, these were prescribed by friends, relatives and neighbours in 206 (64%), by self in 32 (9.94%), chemists in 29 (9.01%), RMPs in 26 (8.07%), MBBS doctors in 21 (6.52%), interestingly in 8 (2.48%) patients it was from MD/MS doctors including dermatologists. All the 322 (100%) patients were unaware about the side effects of topical steroid.

In 300 (93.17%) cases source of procurement was from chemists, in 20 (6.21%) from Registered medical practitioners and in 2 (0.62%) from dispensary. The popular TCs brands are shown in Table 4, and different formulations used by the patients are highlighted in Table 5. The common clinical presentations are highlighted in Table 6,

which also include 63(19.57%) patients with combined presentations. All the patients were educated about side effects of steroid and TCS was tapered off or replaced with mild steroid and stopped completely.

**Table 1:** Age distribution of patients

Age (years)	Number(n)	Percent (%)
<13	0	0
13-19	51	15.83
20-39	215	66.67
>40	56	17.39
Total	322	100

**Table 2:** Reason for use

Reason for use	Number	Percent
Melasma	167	51.86
Acne	113	35.09
Skin lightening/Fairness	20	6.22
Miscellaneous*	22	6.83
Total	322	100

\*For freckles, wrinkling, allergic contact dermatitis, post varicella scarring, facial erythema and sunburn.

**Table 3:** Duration of use

Duration	Number	Percent (%)
< 1month	113.42	3.42
1-6 months	162	50.31
6- 12 months	24	7.45
1 year -5 years	92	28.57
5- 10 years	17	5.28
>10 years	16	4.97
Total	322	100

**Table 4:** Common brands used

Brands	No.	Percentage (%)
Betnovate N	59	18.32
Betnovate	41	12.73
Betnovate C	10	3.11
Panderm	46	14.29
Panderm plus	33	10.25
Melanorm MS	6	1.86
Fourderm	8	2.48
Terbovate	7	2.18
Miscellaneous	51*	15.84
	61	18.94
Total	322	100

\*Betasallic, Betnovate M, Noscar, Candid B, Clobate G, Fusibet, Elocone, Dipsalic, Ultrason, Lobate, Lobate GM, Candiderm plus, Getlite, Momate, Tenovate, Melacare forte.

**Table 5:** Common steroid used

Steroids	Number	Percent (%)
Betamethasone valerate	125	38.82
Clobetasol propionate	123	38.20
Mometasone furoate	26	8.07
Hydrocortisone acetate	9	2.80
Fixed dose combination preparations	39	12.11
Total	322	100

**Table 6:** Common clinical presentations

Presentations	Number	Percent (%)
Steroid Induced Rosacea	179	55.59
Steroid Induced Rosacea	44	13.66
Hypertrichosis	15	4.66
Combined presentations	63	19.57
Perioral dermatitis	5	1.55
Tinea incognito	16	4.97
Total	322	100

## Discussion

The lure for TC is on the rise owing to the rapidity of symptomatic relief that the patient gets in almost any dermatosis. Moreover, TC have acquired a reputation as anti-acne, anti-blemish and fairness creams in the general population, especially in countries with darker-pigmented races.<sup>6</sup> In India, the problem is even more complex, wherein anyone can easily get a class I or II TC without the need to get it prescribed by a physician. In our study we found that most vulnerable age group involved was between 20-39 years (66.77%) and 266 (82.61%) patients were females emphasising the fact that most TC misuse is occurring in the age group most concerned for facial appearance thus falling victims of the beauty and fairness craze. That is why ever since the invention, face has remained the commonest site of such misuse.

About 177 (54.97%) patients belonged to rural area. Absence of qualified dermatologists, and poorer access to health facilities may be held responsible for this figure in rural areas. But still we found that about 34.47% of patients were graduates followed by about 22.67% who had education up to higher secondary level. These figures are eye opener, proving that even educated youth in this part of our country are falling victim to this problem. Basic purpose of starting the steroid cream in 167 (51.86%) patients was for treatment of melasma, to

get free of so called “blemishes” followed by their use for treating acne in 113 (35.09%). Kumar Dey<sup>7</sup> (50.39%) and Sarswat et al<sup>8</sup> (29%) also have reported melasma as the most common reason for TC use in their studies while Samina et al<sup>9</sup> (51.5%) and Ambika and colleagues<sup>10</sup> (41%) have reported acne as the most common reason for use of TC. Most of the patients 162 (50.31%) have used TC for an average duration of one to six months and maximum duration was upto 10 years.

We observed in the present study that the suggestions to use them were given by friends, relatives and neighbours in 206 (64%), self-use in 32 (9.94%), chemists in 29 (9.01%), RMPs in 26 (8.07%), MBBS doctors in 21 (6.52%), interestingly in 8 (2.48%) patients it was from MD/MS doctors including dermatologists. The inappropriate use of TC for varied dermatological disorders like acne, bacterial and fungal infections, undiagnosed skin rash and as fairness cream by practitioners of alternative medicine (RMP) in 26 (8.07%) or on the advice of pharmacist in 29 (9.01%) at chemist shops is of more serious concern as these people are not qualified and competent to treat dermatological disorders and prescribe topical steroids which often provide quick but temporary symptomatic relief without treating the underlying pathology of the disease.

But important aspect here is that even MBBS doctors in 21 (6.52%) have prescribed it without specific indications emphasising the need of the hour to have a special mention regarding usage of TC in medical undergraduate curriculum. A prescription by a dermatologist must also be complete in terms of duration and quantity to be used, and must be followed by proper counselling.

In 300 (93.17%) patients, source of procurement was from chemist and in 20 (6.21%) cases it was from RMPs. The main reason for this is that these creams and ointments are available over the counter and are sold without a prescription, which is not the case in most parts of the world. Ineffective implementation of regulations or laws by regulatory authorities and poorly developed pharmacovigilance practices in India has helped in the past to allow the

manufacture and the sale of these fixed-dose combinations (FDCs), which continue to harm skin health. Recently an important step in this regard has been taken by Ministry of Health and Family Welfare of the Government of India through Gazette notification on March 10, 2016, wherein orders have been issued that certain fixed-dose combinations of drugs has the potential to cause a risk to human beings and the said drugs were found to have no therapeutic justification and thus prohibiting the manufacture of certain FDCs with immediate effect.<sup>11</sup>

Unfortunately, we found that most of the subjects were using potent TC in our study, which is in concordance with prior studies from other countries.<sup>6,12,13,14,15,16</sup> Most previous authors have reported Betamethasone as the most common steroid misused on face<sup>7,10,17</sup> but in our study we found both Betamethasone valerate (38.82%) and Clobetasol propionate (38.2%) as the commonly used topical corticosteroid with almost equal percentage. One reason for this can be that most newer preparations, contain clobetasol propionate in combination with antifungal and anti-bacterial and are rapidly gaining popularity.

In our study, most common clinical presentation thus was steroid induced rosacea in 179 (55.6%), followed by steroid aggravated acne in 44 (13.66%). In our study, the main responsibility for the misuse of topical corticosteroids can be attributed to the pharmacists, paramedical personnel, patient himself/herself, friends and family members. Responsibility can also be attributed to the general physicians and even some dermatologists to the extent that they did not emphasize the adverse effects and proper dosing of topical corticosteroids to the patients. This may also bring into focus the insufficient knowledge among medical/paramedical personnel about the proper use of topical corticosteroids. The Government has already taken legal steps in this regard but these steps alone are not sufficient. As a dermatologist we need to pledge that every steroid prescription is followed by proper counselling of the patient regarding TC usage so that a clear message is spread in the society and at

the same time, patient should also be warned against self-medication and usage of these drugs.

### Conclusion

In conclusion, the main responsibility for the misuse of topical corticosteroids can be attributed to chemists, the patient himself/herself, friends and family. Responsibility can also attributed be to general physicians and even some dermatologists to the extent that they did not emphasize the adverse effects and proper dosing of topical corticosteroids to the patients. Apart from this strict implementation of the Government policies is the need of the hour. Thus, educational and legal approaches need to go hand in hand to curb this rising epidemic.

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