

Misuse of Topical Corticosteroids over Face: A Clinical Study

Abstract

Introduction: Topical corticosteroids (TCS) have been widely used in various dermatological diseases. However, because of inadvertent use, TCS misuse has become a common problem faced by dermatologists in various parts of the world. Prolonged use over the face can cause various side effects such as steroid rosacea, acneiform eruptions, and hypertrichosis. **Aim:** To study the effects of TCS misuse and analyze various factors promoting its use on face. **Materials and Methods:** A total of 100 patients presenting with various facial dermatoses following the misuse of TCS on the face were studied. Detailed history was noted and the various side effects were recorded. **Results:** Majority of the patients (70%) were females with maximum number of patients belonging to the age group of 11–20 years. Eighty-five percent of the patients were applying TCS for medical conditions, with acne being the most common indication, and the rest were applying as a general face cream. Pruritus and acneiform eruptions were the most common side effects observed and the other reported were erythema, photosensitivity, steroid dependent face, and telangiectasia. **Conclusion:** TCS misuse especially over the face can lead to a multitude of side effects. It is high time to create awareness among the patients as well as doctors regarding the proper usage of this wonder drug.

Keywords: Face, misuse, topical corticosteroids

Introduction

Topical corticosteroids (TCS) are among the most commonly prescribed medication in dermatology. They have been in use for treating skin diseases for over half a century following the introduction of “compound F” or hydrocortisone (cortisol) in 1952.^[1] Corticosteroids mediate clinical effects due to their anti-inflammatory, vasoconstrictive, antiproliferative, and immunosuppressive properties.^[2] With the introduction of higher potent topical steroids, side effects of TCS have become more prevalent. In general, side effects are noticed after 3–4 weeks of daily application and are usually reversible.^[3] TCS also have potent antipruritic, atrophogenic, melanopenic, immunosuppressive, and ex-hormone like effect on the skin.^[4]

Use of TCS over the face produces peculiar adverse effects such as steroid rosacea, acneiform eruption, hypertrichosis, and demodicidosis. Some of the side effects on the face have also been termed as steroid addiction dermatitis, rosaceaformis steroidica, and red face syndrome.^[5] Steroid-induced rosacea is characteristically seen on centrofacial, perioral, and periocular

regions and present with monomorphic inflammatory papules and pustules.

Material and Methods

The study was conducted in the outpatient clinic of Dermatology at Swami Dayanand Hospital, Delhi during September 2013 to February 2014 after obtaining informed patient consent. Patients of all ages and both sexes were recruited for the study.

Patients’ details were noted by a dermatologist according to a pre-planned questionnaire. It included age, gender, qualification, social background, type of TCS used, duration of application, source of prescription, indication, total amount applied, and adverse effects of TCS application.

The various entities described in the side effects included steroid dependent face (SDF) (defined as rebound flares of itching, redness, pustulation, and scaling on treatment withdrawal, predisposing the patient to depend on topical steroids), steroid-induced rosacea (characterized by diffuse facial erythema, telangiectasias along with papulonodular lesions and scaling over the face).

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Results

A total of 100 patients were included in the study, out of which 70 were females and 30 were males. Age of the patients in our study varied from 5 to 48 years. Maximum number of patients (55) were from the age group of 11–20 years, followed by 31 patients in the age group of 21–30 and 12 in the group of 31–40 years. The youngest patient was a 5-year-old child.

Forty-five of the patients belonged to urban areas whereas 28% were from suburban and 27% from rural areas. Majority (75%) of the patients were educated.

Combination formulations (i.e., along with antibacterial, antifungal agents) were used by majority of patients (58%). Most common TCS used by our patients was betamethasone valerate and its combinations. Details of TCS used by patients, along with their composition and potency are mentioned in Table 1.

Duration of TCS application in our study ranged from 20 days to 8 years. Nearly 75% of the patients were using it on a daily basis while the remaining (25%) in an intermittent manner. Amount of TCS used roughly ranged from <10 g to 70 g. Nearly, 21% of the patients gave a history of using >50 g of total TCS.

Majority of patients (85%) were applying TCS for medical conditions with underlying acne being the most common indication. Other indications included melasma, tinea, fairness cream, general face cream, and undiagnosed dermatosis [Table 2].

Details regarding the source of prescription were noted; 72% of the patients received recommendations from nonphysicians, out of which 30% followed advice of relatives [Table 2].

Fifty-seven percent of the patients were applying TCS on a specific area over the face, while 43% were applying it all over the face. Various side effects encountered are enumerated in Table 3 and Figures 1-7.

Subgroup analysis of patients below the age of 18 years revealed that majority were females ($n = 28$). Most of the patients ($n = 26$) were using it for acne vulgaris and some of them ($n = 6$) were using it as a fairness cream.

Discussion

TCS are of significant importance in treating various dermatological diseases. A new therapeutic era in dermatology has emerged since their introduction in 1951.^[4] TCS are misused both by the prescribing doctors and the patients themselves because it gives instant relief to most of the signs and symptoms. TCS abuse has become a common problem faced by dermatologist in different parts of the world.^[2,5,6] As reported by Nnoruka *et al.* in 2006, topical TCS has been commonly used as depigmenting agents over the face in dark-skinned individuals, and their availability over the counter in most Asian and African countries added to this misuse.^[6]

The first case series on TCS abuse in India was published in 2006, and since then, various authors have published numerous case studies on TCS application over face.^[7] In our study females outnumbered males, which was in accordance with other studies.^[5,6,8-11]

Hameed, Bhat *et al.*, and Saraswat *et al.* reported maximum number of patients in the age group of 21–30 years.^[5,9,11] In our study, maximum number of patients belonged to the age group of 11–20 years, out of which 41 were below 18 years of age. Acne was the most common indication of steroid application, hence, the predominance of younger age group in our study.

Number of patients using TCS without any underlying dermatosis was less (15%) in our study as compared to others (28.5% and 29%).^[5,12] It has been reported by various authors that majority of the patients use it as a general face cream. Majority of our patients (72%) were using TCS as prescribed and suggested by nonphysicians, out of which 30% were following relatives.

Saraswat *et al.* observed the use of potent and superpotent steroid in majority, and our study demonstrated maximum use of upper mid-potent steroid (Class 3, USA Classification). Patients are routinely prescribed potent TCS for instant and better results for various dermatosis. Because of the initial satisfying results, majority of the patients continue to use them chronically without further consultation from a dermatologist. Withdrawal of TCS results in rebound erythema due to release of

Table 1: Different TCS used by the patients along with their potency

| Composition | Potency | Number of patients |
|---|-----------|--------------------|
| Betamethasone valerate 0.1% | Class III | 41 |
| Betamethasone valerate 0.1% + neomycin sulphate 0.5% | Class III | 32 |
| Mometasonefuroate 0.1% + hydroquinone 2% + tretinoin 0.025% | Class IV | 10 |
| Betamethasone valerate 0.1% + gentamycin 0.1% + tolnaftate + clioquinol | Class III | 9 |
| Clobetasol propionate 0.05% + gentamycin 0.1% + miconazole nitrate 2% | Class I | 6 |
| Betamethasone valerate 0.1% + gentamycin 0.1% + miconazole nitrate 2% | Class III | 5 |
| Betamethasone valerate 0.1% + clioquinol 3% | Class III | 4 |
| Clobetasol propionate 0.05% | Class I | 1 |

cytokines, along with vasodilatation and accumulation of nitric oxide, resulting in erythema, pruritus, and burning sensation.^[9]

Chronic use of TCS often produces numerous side effects including steroid dermatitis, which at times become difficult to distinguish from rosacea. Adverse effects are usually seen after 6 months or more of continuous use of steroids but it can vary with potency.^[7]

Initial phase of TCS abuse may demonstrate erythematous papules to papulopustular eruptions. This is followed by inflamed, edematous lesions with papules, pustules, and nodules.^[7] Discontinuation of TCS after prolonged use results in severe rebound erythema, burning sensation and scaling on the face.^[5,10,11]

TCS-induced rosacea-like dermatitis (TCIRD) is defined as a condition arising from prolonged use and the rebound phenomenon, which appears after discontinuation of TCS on the face.^[10] Various other terms have been used by authors describing this entity such as topical steroid dependent face (TSDF), red face syndrome, steroid dermatitis resembling rosacea (SDRR), and steroid rosacea.^[11,5,9] Persistent use of TCS can also lead to complications such as epidermal atrophy, degeneration of dermal structure with decrease collagen synthesis, rosacea, and susceptibility to superficial infections.^[11]

In the present study, majority of the patients were using TCS for treatment of underlying acne. Prolonged use led to monomorphic pigmented papules in some of

Table 2: Indication and the source of TCS used by patients

| Indication of steroid application | Number of patients |
|--|--------------------|
| Acne | 62 |
| Melasma | 10 |
| Tinea | 9 |
| General face cream | 8 |
| Fairness cream | 8 |
| Undiagnosed | 3 |
| Source of drug | |
| Relative | 30 |
| Practitioner of alternative system of medicine | 23 |
| Friends | 14 |
| Pharmacist | 15 |
| Neighbour | 13 |
| Non-dermatologist | 4 |
| Dermatologist | 1 |



Figure 1: Prolonged use of topical steroids for melasma causing persistent facial erythema

Table 3: Side effects encountered in our study in comparison with various other Indian studies

| Side effects | Hariharasubramony <i>et al.</i> , 2014 (%) ^[8] | Bhat <i>et al.</i> , 2011 (%) ^[11] | Saraswat <i>et al.</i> , 2011 (%) ^[5] | Rathi <i>et al.</i> , 2011 (%) ^[10] | Jha <i>et al.</i> , 2016 (%) ^[13] | Our study (%) |
|--------------------------------------|---|---|--|--|--|---------------|
| Aceniform eruption | 52 | 35 | 57.5 | Not mentioned | 42.9 | 74 |
| Pruritus | Not mentioned | 36.5 | Not mentioned | 76.4 | | 89 |
| SDF | 36 | 66 | 15 | Not mentioned | 10.9 | 46 |
| Erythema | Not mentioned | 74.5 | Not mentioned | 60.9 | 8.2 | 50 |
| Telangiectasia | 0.01 | 56.5 | 14.8 | 4.5 | 7.3 | 8 |
| Hyperpigmentation | Not mentioned | 51 | Not mentioned | Not mentioned | Not mentioned | 17 |
| Photosensitivity | Not mentioned | 48.5 | Not mentioned | 100 | Not mentioned | 39 |
| Perioral dermatitis | Not mentioned | 10.5 | 8.4 | Not mentioned | 5.1 | 5 |
| Rosacea | Not mentioned | 51 | 7 | Not mentioned | 6.8 | 5 |
| Infections (such as Tinea incognito) | 0.05 | Not mentioned | 6.7 | Not mentioned | 4.1 | 2 |
| Hypopigmentation | Not mentioned | Not mentioned | 9 | Not mentioned | 14.1 | 2 |
| Striae | Not mentioned | Not mentioned | 3 | Not mentioned | Not mentioned | Nil |
| Hypertrichosis | 0.06 | 16 | 6.3 | 4.5 | 2.9 | 7 |
| Xerosis | Not mentioned | 21.4 | Not mentioned | 56.4 | Not mentioned | Nil |
| Wrinkles | Not mentioned | 21 | Not mentioned | Not mentioned | Not mentioned | Nil |
| Atrophy | Not mentioned | 34.5 | 13.4 | Not mentioned | 5.1 | 25 |

SDF: steroid dependent face



Figure 2: Perioral dermatitis presenting multiple small erythematous papules that are localized to the perioral skin

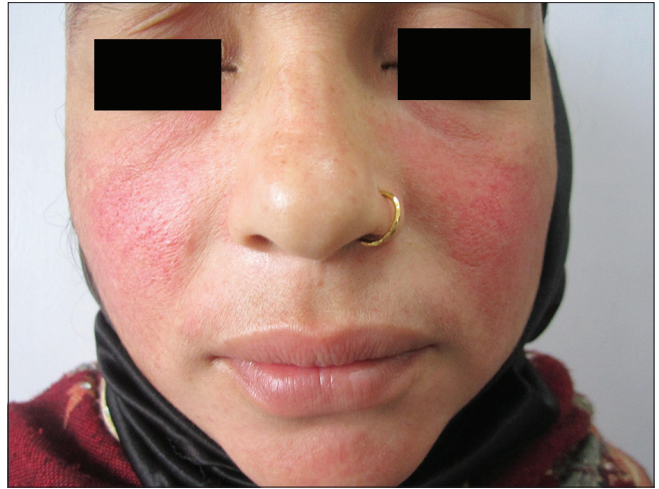


Figure 3: Persistent facial erythema with telangiectasias over the central face following application of potent topical corticosteroids



Figure 4: Multiple skin coloured to erythematous, firm, monomorphic papules over the face in a young girl presenting as steroid acne



Figure 5: Steroid acne presenting as multiple erythematous papules and pustules over the face

the patients. Pruritus was the most common side effect encountered in our study, and many of the patients presented with combination of features such as acneiform eruptions, rosacea, telangiectasia. Acneiform eruptions were the most common side effect encountered in our study, whereas Bhat *et al.* observed steroid-induced

rosacea to be the most common. Other side-effects observed in our study included pruritus, erythema, photosensitivity, SDF, telangiectasias, hyperpigmentation, hypertrichosis, perioral dermatitis, tinea incognito, and atrophy.

Systemic side effects such as adrenal axis suppression, diabetes, and hypertension have been reported after topical

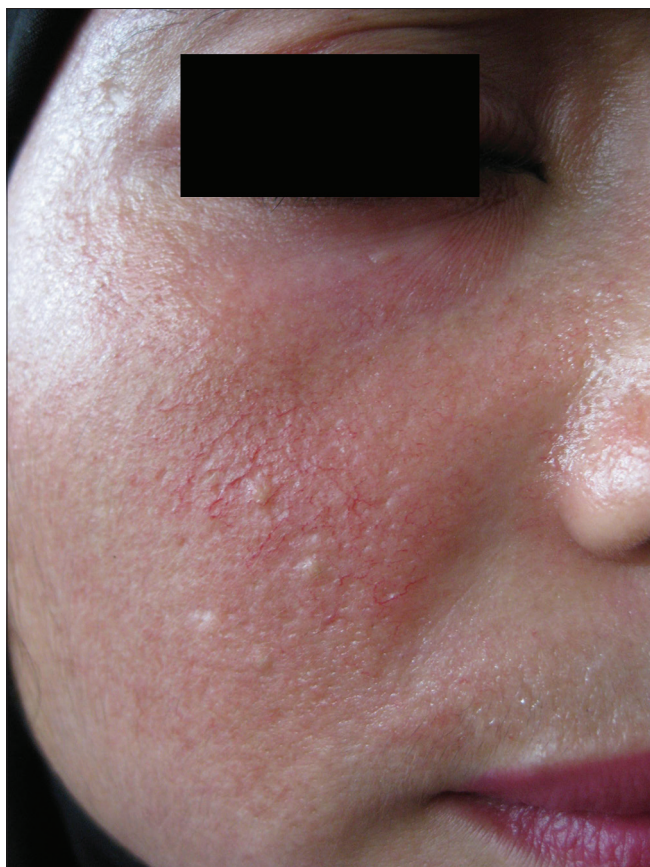


Figure 6: Multiple telangiectasias over the face



Figure 7: Tinea incognito as a result of application of steroid over the face

application over larger area of the body, and these are rarely seen with only facial applications.^[7]

According to the study by Saraswat *et al.*, the problem of TCS misuse is already significant, and unless urgent steps are taken on all possible fronts, the situation will only get worse and we may soon be facing an avalanche of these unfortunate patients in our clinics.^[5]

Conclusion

TCS misuse on the face has become a major problem for the patients as well as dermatologists, especially in India. These are commonly used as general face cream and as fairness cream by most of the people in our society because of less stringent laws against the sale of over-the-counter drugs. This injudicious use of TCS over the face has resulted in numerous complications, which we encounter on a day to day basis. Strict laws along with proper education of patients and doctors should be given prime importance to prevent the epidemic.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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