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# Pattern and Predictors of Topical Corticosteroid Abuse on Face: A Study from Western Nepal.

**Ajay Kumar[1], Saraswoti Neupane[1], Prassana Raj Shrestha[1], Jenny Pun[1], Pratichya Thapa[1], Merina Manandhar[1], and Brijesh Sathian[2]*.**

[1]Department of Dermatology, Manipal College of Medical Sciences, Pokhara, Consultant dermatologist, Fish tail hospital and research center, Pokhara
[2]Department of community medicine, Manipal College of Medical Sciences, Pokhara.

**ABSTRACT**

Misuse of topical corticosteroids on face lead to facial dermatitis. Aim of this study was to evaluate various manifestations of topical corticosteroid induced facial dermatitis, and to analyze factors contributing it. Total of 95 cases taken for this cross sectional study over a period of two years, excluding those with the disorders where topical steroids indicated. Data regarding source, types, duration along with demographic profile and clinical presentations were recorded. The patients were educated about misuse. There were 21 males and 74 females with mean age 35.78 ± 10.29 years. Duration of topical steroid use ranged from five to forty-two months with mean of 15.70± 7.45 months. Common purpose of using topical steroids was to look fairer/considering it as skin whitening cream (52/95), to treat acne/acne-like lesions and pigmentations (34/95). The most common clinical presentation was diffuse erythema with inflamed papules and pustules over face (46/95) and many patients had rebound phenomenon after discontinuation. Mean time duration to notice symptoms after starting steroid was 9.29 ± 3.09 months. The most common topical steroid used was beclomethasone dipropionate. Odds ratio (OR) of duration of use of steroid explained to patients by doctors compared to other professionals was statistically significant with p value <0.005. Most of the patients were unaware of side effects. Misuse of topical steroids can lead to variety of clinical manifestations. Its use over face should strictly be under supervision of a dermatologist/clinician. The awareness among public, pharmacists, beauticians as well as doctors is essential.

**Keywords:** Corticosteroid, Facial dermatitis, Rebound phenomenon, Western Nepal.

***Corresponding author***

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## INTRODUCTION

Topical corticosteroids were first introduced for clinical use in 1951; they are of great value in managing various dermatological disorders. Probably Since its introduction they are misused by paramedics, pharmacists, beauticians prescribing doctors and patients, as it gives instant relieve to signs and symptoms. (1) Face is one of the common site of misuse as the action is cosmetically appreciable and it is often misused as fairness cream.(2) Despite the fact that this condition is commonly seen in the clinical settings, it is not properly addressed and different terminologies used by different authors for this entity like steroid induced facial dermatitis, rosacea like dermatitis, acne form eruptions and so on. (3,4,5,6,) These dermatoses is characterized by facial hotness, erythema, monomorphic inflammatory papules and pustules distributed in areas that have been chronically/intermittently exposed to offending corticosteroids. If not managed properly, skin atrophy, hypertrichosis and telangiectasia can result. Management of this entity is challenging and involves proper explanation, discontinuation of the steroid and administration of oral antibiotics and non-steroidal anti-inflammatory topical preparations. Once therapy is begun, initially there may be flaring of skin lesions, patient may complain a severe skin reaction and clearing of the lesions may take several weeks to months. Multiple pathways including rebound vasodilatation and pro-inflammatory cytokine release have been proposed as the mechanism for such reactions. Most of the patients are unknowingly dependent on topical steroids. The aim of this study was to explore the various reasons for using topical corticosteroids, other than the known primary disease where steroids are indicated and the various clinical presentations of the disease entity along with the contributory factors.

## METHODS

Total of 95 consecutive cases were enrolled for this cross sectional study over a period of two years from March 2012 February 2014 presenting in department of dermatology at Gandaki Medical College and Teaching Hospital and Fishtail Hospital and Research Centre, Pokhara. History regarding duration and type of skin lesions/symptoms, types of topical steroid used continuously or intermittently and its duration, source and the purpose of steroid use, along with socio-demographic data were recorded. If the patient was using combination products having antibiotics and antifungal, only steroid was recorded. The diagnosis was established by a dermatologist on clinical basis. Patients who were having signs and symptoms suggestive of topical corticosteroid induced dermatitis, where steroid was used to get rid of melasma, pigmentations, acne or acne like lesions or as skin whitening cream and for other nonspecific reason, were included. Patients with primary skin disorders where steroids are indicated were excluded from the study. Collected data were analyzed using 19.0 version of SPSS software. Ethical clearances were taken.

## RESULTS

Ninety five cases comprised of the study population with mean age35.78 ±10.29 years (min=14; max=67 years), among them majority (74/95) were female compared to male (21/95). The minimum duration, after steroid use, to notice some skin rashes and discomfort over face was 5 months and the maximum was up to 22 months with a mean of 9.29 ±3.09 months. We measured the odds ratio of duration of use of steroid explained to patients by doctors compared to other professionals, which was found to be statistically significant with p value <0.005.Odds ratio of other factors contributing to steroid misuse are shown in table 1. Among these 95 patients, topical steroid was suggested to 16 by doctors other than dermatologist, while two were advised by dermatologist, 32 were suggested by pharmacists, 33 by beauticians/beauty centers and to 12 by friends and relatives. Basic reason of visiting dermatology OPD, duration of steroid use before seeking skin consultation and various signs and symptoms recorded by dermatologists at time of first clinical visit and general description of study population are shown in table 2, and table 3, table 4, table 5. The most common topical steroid misused was beclomethasone dipropionate by 26/95 patients, other topical corticosteroids misused are shown in table 6. Most of the cases had exacerbation of symptoms after sun exposure, use of cosmetics and use of face wash. Rebound phenomenon on stopping the steroid was noticed in almost all. General physical and systemic examinations including ocular examination were normal in all. Routine laboratory parameters where indicated were within normal limits.

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**Table 1: odds ratio of various factors related with steroid use/misuse:**

| | Odds ratio | 95% confidence interval | P value |
|---|---|---|---|
| 1.Duration of use of steroid explained to patients by doctors compared to other professionals | 41.41 | 10.32-166.10 | <0.005 |
| 2.Steroid suggested to treat acne or pigmentations or as a fairness cream by doctors compared to other professionals | 1.26 | 0.45-3.53 | 0.65 |
| 3.Effeat of literacy on awareness of adverse effects of steroids | 0.56 | 0.05-5.36 | 0.49 |

**Table 2: Common complains/features at first dermatology OPD visit**

| Reason/complain for visiting dermatology OPD | Number |
|---|---|
| 1.Rednes with papule and pustules | 46 |
| 2.Itching | 42 |
| 3.Photosensitivity | 38 |
| 4.Dryness | 28 |
| 5. Difuse redness. | 28 |
| 6. Burning sensation | 12 |
| 7.Hotness | 40 |

Note: many patients had more than one complain

**Table 3: Duration of steroid use at first dermatology OPD visit**

| Sl No. | Duration of steroid use (n=100) | Number | Percentage | 95% C I |
|---|---|---|---|---|
| 1. | 0-6 months | 1 | 1.1 | 0.0-5.7 |
| 2. | 6-12 months | 44 | 46.3 | 36.0-56.8 |
| 3. | 12-24 months | 43 | 45.3 | 35.0-55.8 |
| 4. | 24-36 months | 4 | 4.2 | 1.2-10.4 |
| 5. | >36 months | 3 | 3.2 | 0.7-9.0 |

**Table 4: Signs and symptoms recorded at first dermatology visit.**

| Sl No. | Signs and symptoms | Number |
|---|---|---|
| 1. | Erythema | 45 |
| 2. | Rebound phenomena | 38 |
| 3. | Xerosis | 37 |
| 4. | Flushing | 31 |
| 5. | Photosensitivity | 28 |
| 6. | Acneform eruptions | 28 |
| 7. | Telangiectasia | 14 |
| 8. | Pruritus | 12 |
| 9. | Atrophy | 8 |
| 10. | Wrinkles | 7 |
| 11 | Premature ageing | 5 |
| 12. | Hirsutism | 2 |
| 13. | Perioral dermatitis | 1 |

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**Table 5: General description of study subjects.**

| **Gender** | Number | Percent | 95% C.I |
|---|---|---|---|
| Male | 21 | 22.1 | 14.2-31.8% |
| Female | 74 | 77.9 | 68.2%-85.2% |
| **Age group** | | | |
| 0-35 years | 52 | 52.6% | |
| 35-50 years | 34 | 37.9% | |
| >50 years | 9 | 9.5% | |
| **Domicile** | | | |
| Rural | 10 | 10.5 | 5.2-18.5 |
| Semi urban | 68 | 71.6 | 60.3-79.4 |
| Urban | 17 | 17.9 | 10.8-27.1 |
| | | | |
| **Literacy** | | | |
| Illiterate | 06 | 6.3 | 2.4-13.2 |
| Up to std 10 | 66 | 69.5 | 59.2-78.5 |
| >std 10 | 23 | 24.2 | 2.1634.1 |
| | | | |
| **Profession** | | | |
| Student | 9 | 9.5 | 4.4-17.2 |
| Housemakers | 34 | 35.8 | 26.2-46.3 |
| Farmers | 42 | 44.2 | 34.0-54.8 |
| Job holders | 10 | 10.5 | 5.2-18.5 |
| **Socioeconomic status** | | | |
| Lower | 23 | 24.2 | 16.0-34.1 |
| Middle | 62 | 65.3 | 54.8-74.7 |
| Upper | 10 | 10.5 | 5.2-18.5 |

**Table 6: Types of steroid misused.**

| **Name of steroids** | **number** | **percentage** | Potency (USA classification) |
|---|---|---|---|
| 1. Beclomethasone dipropionate | 26 | 27.4 | I |
| 2. Mometasone furoate | 20 | 21.1 | IV |
| 3. Clobetasole propionate | 6 | 6.3 | I |
| 4. Fluticasone propionate | 10 | 10.5 | V |
| 5. Betamethasone valerate | 5 | 5.3 | I |
| 6. Flucinolone acetonide | 5 | 5.5 | IV |
| 7. Hydrocortisone butyrate | 7 | 7.4 | VI |
| 8. Clobetasone | 5 | 5.3 | VI |
| 9. Chinese/Korean cream/others | 11 | 11.6 | |

## DISCUSSION

Topical corticosteroids are one of the oldest and commonly prescribed treatments for cutaneous disorders. The first topical steroid introduced was hydrocortisone in 1951, probably, since then they have been misused by patients/clients and medical practitioners. Due to prolonged or repeated use/misuse of topical steroids various annoying symptoms and signs over skin are noticed. They have been described as acne like eruptions, perioral dermatitis, steroid dependent face and corticosteroid induced facial dermatitis. Introduction of super potent topical steroids added more problem to this existing dermatitis.(3,4,5,) Most of the patients had good response initially for the reasons steroids were started but after prolong use, they started to develop undesired symptoms like burning sensation, itching, exfoliation and so on. Once the patient tried another cosmetic or stopped the culprit topical steroid there was rebound phenomenon described as recurrence of symptoms. Rebound phenomena is probably, due to release of inflammatory mediators like, cytokines and nitric oxide leading to vasodilatation. (1,3) As an attempt to manage this problem , patients restarted the use of same steroid. Patients usually seek dermatologist advice once they notice various undesired symptoms, like burning sensation, itching and exfoliation of facial skin. Due to tachyphaylaxis,

efficacy of steroid decreases and patients also notice decreased response of steroid to the skin lesions for which they were started. (5)

Purpose of using topical steroid in most of our patients was to look beautiful (54.7%), similar results were seen in a study by Al Dhalimi MA (65.7%)(7) in Iraqi patients and in Indian patients by Saraswat et al (1) where it was used as fairness/general purpose or as after shave in 29 % of patients. In our society fair skin is considered a sign of beauty, and various cosmaceutical advertisements claim their roles behind the beauty/fairer skin of celebrities. The mean time duration to have some discomfort was 9.29+_ 3.09 months similar time period was reported by Rathi(5)

We have seen in our study that the suggestions of steroid use was given mainly by beauticians (34.7%), whereas in Iraqi patients(7) it was mainly by paramedics (27.1%) and in study by Rathi et al, it was friends in 55.5% of cases.( 6) others were suggested by friends, relatives, pharmacists and doctors. Doctors recommendation of steroid on face in our study was in 18.9% compared to 59.3 % in study by Saraswat et al (1).

In our study beclomethasone dipropionate(27.9%) was the most commonly misused topical corticosteroid, may be due to easy availability of one popular brand which contains beclomethasone dipropionate along with antifungal and antibiotic, whereas in Iraqi patients in was clobetasole propionate(42.1%) Al Dhalimi MA (7) and in Indian by Rathi (6) it was betamethasone dipropionate in (64/110) patients.

The most common adverse effect reported in our study was diffuse erythema with inflamed papules and pustules over face (46/95), where as in study by Saraswat et al(1) it was acne or exacerbation of acne. In present study eleven out of ninety five patients reported using some Chinese/Korean cosmetic creams, where the mentioned ingredients have some type of steroid; we grouped them in separate category.

Most of clients had exacerbation of symptoms upon exposure to sun, excessive light or cosmetics; reasons could be skin atrophy, telangiectasia and vasodilatation. Present study couldn't find any difference in clinical manifestation and type of topical steroid used. None of the patient had any ocular complain.

Steroids inhibit the release of endothelium derived relaxing factor, a potent vasodilator, leading to vasoconstriction which in turn leads to accumulation of nitric oxide, causing rebound vasodilatation, characterized by exacerbation of erythema, rashes, burning sensation, itching and discomfort(3). It has been reported that population of *Demodex* mites over skin is more in these patients, which by blocking openings of hair follicles causes chains of inflammatory reactions or act as vectors for other pathogens. (8, 9, 10)

Management of this clinical entity is a difficult challenge to a dermatologist, requiring detailed explanation, good doctor patient relationships, compliance and complete cessation of the offending agent in a tapering manner along with sun protection and emollients. In severe cases, an oral antibiotic, like doxycycline, minicycline, topical metronidazole and or topical calcineurin antagonists such as tacrolimus are suggested. ( 11, 12,13) The prescriber should be aware of diagnosis, type, potency, delivery vehicle, frequency of administration, side effects and duration of treatment.

The Indian Association of Dermatologists, Venereologists and Leprologists have already launched a 'Movement against topical steroid abuse/misuse, to create awareness among the public, patients, clinicians, pharmacists and paramedics about the problems of steroid abuse. Indian academy of dermatologists, venereologists and leprologists (IADVL) have formed a task force named "Task force against topical steroid abuse (ITATSA)and requested the directorate general of health services, ministry of health, government of India to stop indiscriminate over the counter sale of topical steroid without prescription.(14)

## CONCLUSIONS

Prolonged and continuous use of topical steroid on face can cause facial dermatitis which presents clinically as diffused erythema with or without papules, vesicles, pustules and nodules with telangiectasia. Management is challenging due to rebound phenomenon and poor compliance. Use of topical corticosteroids

over the face should be carefully monitored by a dermatologist/medical practitioner. Public awareness programs/health educations regarding topical steroid addiction are expected in near future in Nepal too.

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