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CLINICAL EPIDEMIOLOGICAL AND DERMOSCOPIC STUDY OF TOPICAL STEROID DAMAGED FACE: A CROSS-SECTIONAL STUDY

Dermatology

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ABSTRACT

Background: Face is the index of one's personality, which brings a lot of consciousness about being fair and so people tend to use Topical Corticosteroids (TCS) recommended by peer, pharmacists, and often qualified medical practitioners for symptomatic relief. They are used as anti-inflammatory, anti-proliferative, immunosuppressive, anti-pruritic, and anthropogenic medications on the skin, their potency on prolonged use can lead to adverse effects like acne, erythema, perioral dermatitis, pseudo stellate scars, hirsutism, steroid induced rosacea, telangiectasia, epidermal atrophy, etc. **Aim and Objectives:** To estimate the effects of Topical Corticosteroid misuse and analyze various factors promoting its use on the face and characterize dermoscopic features of TDSF. **Materials and Methods:** This Cross-sectional study was conducted at Dermatology OPD, SUBBAIAH INSTITUTE OF MEDICAL SCIENCES, SHIMOGA who fulfilled the inclusion criteria were counseled about the study and informed written consent was obtained. A detailed history of steroid use and duration of application was taken. Clinical and dermoscopic evaluation with photography will be done. Two dermoscopic images were taken from each patient using a manual 2 dermoscope (DermLite DL4 X 10 4th gen) and attached to an Android phone (ONE PLUS 9R. All the pictures were evaluated for the presence of specific morphological patterns. **Results:** The mean age of subjects was 30.86 ±7.533 respectively and a maximum of 144(96%) were females of age group 21-30. A maximum of 71(47.3%) were from < 1 years. Among the subjects of examination features, a maximum of 35(23.3%) had Erythema and fine scales. Among the subjects' total of 83(100%) were super potent, with a maximum of 22(26.5%) having fine scales. Among super potent maximum 27(32.5%) had erythema and among mild potent 13(19.4%) had papules. **Conclusion:** The cream formulation was the most used by female patients upon recommendation. Redness followed by itching was the predominant complaint with more than one side effect induced by steroids. Dermoscopy has opened a new page in the examination of PSLs and, especially in the early identification of cutaneous melanoma.

KEYWORDS

Topical Corticosteroid, Dermatology, Pigmentation, Dermoscopy

INTRODUCTION

The introduction of the first topical corticosteroid (TCS) in 1952 marked the beginning of a new period in therapeutic dermatology which was introduced by Sulzberger as "Compound F" (hydrocortisone). Some immensely beneficial with anti-inflammatory, antiproliferative, immunosuppressive, anti-pruritic, anthropogenic, sex-hormone-like effects on the skin melanogenic action, topical corticosteroid (TCS) has proved to be a double-edged sword.[1,2]Often misused to various degrees by pharmacies and pharmaceutical firms, prescribers and the general public leads to a series of side effects clubbed under the entity "topical steroid damaged face" as suggested by Lahiri and Coondoo in 2008. Reports of steroid addiction were first noticed by Kligman in 1976 and the parameters were given by Frosch in 1979 topical steroid dependent or damaged face (TSDF) is an alarming upcoming entity rampant in India due to over-the-counter availability of topical corticosteroids containing products leading to misuse and addiction of same.[1] Topical steroid-damaged face is a relatively new entity, described in 2008, defined as "semi-permanent or permanent damage to face precipitated by indiscriminate, unsupervised, irrational or prolonged use of TCs resulting in a plethora of cutaneous signs and symptoms and psychological dependence on the drug."[3] The face is commonly affected in TSDF and the facial epidermis (0.12 mm) is comparatively thinner than the rest of the body (0.60 mm), which results in increased percutaneous absorption of drugs.[4]

Topical steroid-damaged face not only causes local side effects but also it affects the patient systemically and psychologically. Abstaining from long-term use leads to recurrence of erythema, burning, and scaling. The other adverse noticed are hypertrichosis, steroid rosacea, telangiectasia, perioral dermatitis, tinea incognito, demodicosis, and acneiform eruptions. These effects are due to the multimodal effect of topical steroids owing to sex-hormone-like and melanopenic effects.[5,6]

Dermoscopy may help in the early detection of subclinical changes caused by topical steroid use and, thereby, tailor the treatment specific to every patient.[7]

As topical steroid abuse is rampant in our country[8] it is important to fill some of these gaps in the data. There are very few studies conducted in relation to the dermoscopic features of TSDF, thus the present study has been undertaken to evaluate the pattern of topical steroid abuse among patients attending the dermatology OPD, to characterize the clinical and dermoscopic findings in patients with TSDF and, to correlate them with the duration of steroid use.

MATERIALS AND METHOD

This current 18-month Cross-sectional study was conducted on 150 patients at Dermatology OPD, SUBBAIAH INSTITUTE OF MEDICAL SCIENCES, SHIMOGA who fulfilled the inclusion criteria were counseled about the study, and informed written consent was obtained. A detailed history of steroid use and duration of application was taken. Clinical and dermoscopic evaluation with photography will be done. Two dermoscopic images were taken from each patient using a manual dermoscope (DermLite DL4 X 10 4th gen) and attached to 66 an Android phone (ONE PLUS 9R). Confidentiality of the patients was maintained. All the pictures were evaluated for the presence of specific morphological patterns.

The sample size calculation was performed using following formula: N = Z2 (1-α/2) pq d 2 n = expected proportion p = 100- expected proportion Z 2 (1-α/2) = statistical table value d = absolute precision for 5% of α error, 1.962 pq = 3.8pq D 2 D 2 3.8 X 90 X 10 = 139 5 2 From the previous studies3 expecting a prevalence of 90% Topical steroid damaged face among TS users with 5% absolute precision and 95% confidence interval, the minimum sample size calculated was 139.

Inclusion Criteria:

- Patients presenting with clinical symptoms and signs suggestive of TSDF (redness, itching, acne, burning, swelling, photosensitivity, pigmentation and atrophy).
- Patients with a positive history of topical steroid application on the face for a period of more than a month.

Exclusion Criteria:

- Patients with pre-existing comorbidities (Cushing syndrome, thyroid disorder, polycystic ovaries).

Statistical Analysis

Data analysis was carried out using the SPSS software (version 20.0, Armonk, NY, USA: IBM Corp.) and a comparison of dermoscopic findings with clinical examination, gender, and potency of TCS was done using Chi- Square Test.

RESULTS

Among the subjects, maximum 144(96%) were females and only 6(4%) were males. A maximum 64(42.7%) were aged from 21-30 years of age, 61(40.7%) were between 31-40 years, 12(8%) were from 41-50 years of age, 11(7.3%) were from 15-20 years of age and only 2(1.3%) were from 51-60 years of age.(Graph-1)

Among the subjects of examination features, maximum 35(23.3%) were having Erythema, 21(14%) having papules, 26(17.3%) having erthematous plaque, 22(14.7%) having hyper pigmentations, 20(13.3%) having pustules, 12(8%) having hirustism, 4(2.7%) having telengiectasia, 4(2.7%) having tinea incognita, 4(2.7%) having acneiform eruptions and 2(1.3%) having atrophy.(Graph-2)

Among the subjects, maximum 37(24.7%) having source of skinlite, 31(20.7%) betnovate, 18(12%) clobteam, 16(10.7%) becrim-N, 4(2.7%) relysal, 14(9.3%) voderm, 14(9.3%) terbic ad, 6(4%) soulderm+, 4(2.7%) hisone and 6(4%) reclo. (Table-1)

Among the subjects total 71(100%) were from 4 years 78 brown pigmentations, follicular plugs, Y shaped vessels, and white area and none having micro papules, polygonal vessels, and papules. Among the subjects, a total of 2(100%) were from >4 years of duration of which, a maximum 2(100%) had telangiectasia and none had fine scales, hypertrichosis, unpatterned brown pigmentations, follicular plugs, Y-shaped vessels, white area, micro papules, polygonal vessels, and papules. Results were found to be highly significant when comparing dermoscopic features with duration of application of topical corticosteroids.(Table 2)

Among the subjects total 83(100%) were from super potent in which, maximum 27(32.5%) were having erythema, 20(24.1%) were having erythematous plaque, 10(12%) were having hyperpigmentation and pustules, 8(9.6%) were having papules, 4(4.8%) were having hirustism , 2(2.4%) were having telengiectasia and tinea incognita and none having acneiform eruptions and atrophy. Among the subjects total 67(100%) were from mild potent in which, maximum 13(19.4%) were having papules, 12(17.9%) were having hyper pigmentation, 10(14.9%) were having pustules, 8(11.9%) were having erythema and hirustism, 6(9%) were having erythematous plaque, 4(6%) were having acneiform eruptions, 2(3%) were having telengiectasia , tinea incognita and atrophy. Results were found to be highly significant when comparing examination features with the potency of the application of topical corticosteroids. (Table-3)

Table-1: Distribution of Source

Source	Frequency	Percent
SKINLITE	37	24.7
BETNOVATE	31	20.7
CLOBTEAM	18	12.0
BECRIM-N	16	10.7
RELYSAL	4	2.7
VODERM	14	9.3
TERBICAD	14	9.3
SOULDERM+	6	4.0
HHSONE	4	2.7
RECLO	6	4.0
Total	150	100.0

Table-2: Evaluation of Dermoscopic Features of TSDF with Duration of Application of Topical Corticosteroids.

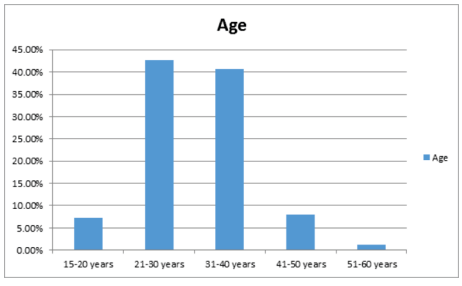
Dermoscopic-features	DURATION				Total	Chi-value	p-value
	<1 Years	1-2 Years	2-4 Years	>4 Years			
Telangiectasia	5 7.0%	8 14.0%	4 20.0%	2 100.0%	19 12.7%	71.999	<0.001***
Micropapules	14 19.7%	7 12.3%	0 0.0%	0 0.0%	21 14.0%		
Finescales	22 31.0%	4 7.0%	4 20.0%	0 0.0%	30 20.0%		
Unpatterned brown pigmentations	6 8.5%	14 24.6%	2 10.0%	0 0.0%	22 14.7%		
Follicular-plugs	14 19.7%	2 3.5%	2 10.0%	0 0.0%	18 12.0%		
Hypertrichosis	2 2.8%	6 10.5%	4 20.0%	0 0.0%	12 8.0%		
Y shapedvessels	6 8.5%	10 17.5%	2 10.0%	0 0.0%	18 12.0%		
Poly-gonalvessels	2 2.8%	2 3.5%	0 0.0%	0 0.0%	4 2.7%		
Papules	0 0.0%	4 7.0%	0 0.0%	0 0.0%	4 2.7%		
Whitearea	0 0.0%	0 0.0%	2 10.0%	0 0.0%	2 1.3%		
Total	71 100.0 %	57 100.0 %	20 100.0 %	2 100.0%	150 100.0 %		

Chi square test, p<0.001*** highly statistically significant.

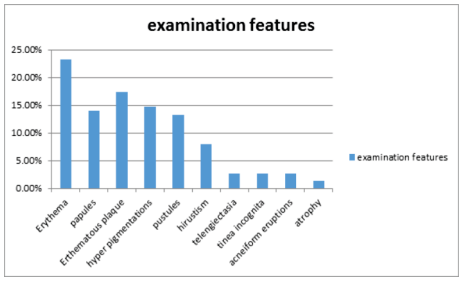
Table-3: Evaluate Examination Features of TSDF with Potency of Application of Topical Corticosteroids

Examination-features	Potent		Total	Chi-value	p-value
	Superpotent	Mildpotent			
Erythema	27 32.5%	8 11.9%	35 23.3%	25.138	0.003***
Papules	8 9.6%	13 19.4%	21 14.0%		
Erthema-tousplaque	20 24.1%	6 9.0%	26 17.3%		
Hyper pigmentations	10 12.0%	12 17.9%	22 14.7%		
Pustules	10 12.0%	10 14.9%	20 13.3%		
Hirustism	4 4.8%	8 11.9%	12 8.0%		
Telengiectasia	2 2.4%	2 3.0%	4 2.7%		
Tineaincognita	2 2.4%	2 3.0%	4 2.7%		
Acnei-formeruptions	0 0.0%	4 6.0%	4 2.7%		
Atrophy	0 0.0%	2 3.0%	2 1.3%		

Chi square test, p<0.001*** highly statistically significant.



Graph-1. Age- Wise Distribution of Study Subjects.



Graph-2: Distribution of Examination Features

DISCUSSION

This 18-month cross-sectional study conducted on 150 patients at Dermatology OPD, SUBBAIAH INSTITUTE OF MEDICAL SCIENCES, SHIMOGA on study subjects with a detailed history pertaining to steroid used and duration of application was taken. Clinical and dermoscopic evaluation with photography was done. In our study, females predominated the males. Among our study subjects, maximum 64(42.7%) were from 21-30 years of age, while most of the subjects (56%) belonged to the age group of 16-30 years, followed by (27.5%) in the age group 31 -40 years in a study by Skandashree BS et al(2020)[11] and Ravindran et al (2021)[12], Mamtha et al(2023)[10] showed 18–30 years 52(65%) to be affected.

Among the subjects, maximum 37(24.7%) having the source as skinlite, 31(20.7%) betnovate, 18(12%) clobteam, 16(10.7%) becrim-N, 4(2.7%) relysal, 14(9.3%) voderm, 14(9.3%) terbic ad, 6(4%) soulderm+, 4(2.7%) hisone and 6(4%) reclo. Skandashree BS et al. (2020)[11] found the most commonly abused steroids were mometasone cream 0.1% (50%), beta-methasone valerate cream 0.1% (24.5%) followed by clobetasol propionate 0.1% (21.5%).

Rather et al(2022)[14] reported that 40.3% patients used clobetasol propionate. Majority (68%) showed two side effects.

In our study, subjects of dermoscopic features showed maximum 30(20%) had fine scales, 22(14.7%) having unpatterned brown pigmentations, 21(14%) having micro papules, 19(12.7%) having telengiectasia, 18(12%) having follicular plugs and Y shaped vessels, 12(8%) having hypertrichosis, 4(2.7%) having polygonal vessels and papules and only 2(1.3%) having white area. Skandashree BS et al. (2020)[11] found most common adverse effects with steroid abuse was found to be acneiform lesions 27%. A maximum ie. 35 patients had Perilesional hypopigmentation, atrophy as studied by Ravindran et al (2021).[13]

TCs been misused for photodermatoses and facial xerosis, common in Kashmiri population due to high altitude, increased UV exposure, poor sun protection, minimal use of sunscreens, and dry weather conditions of the valley.[14]

The main symptom noted in our study group was erythema 74% cases, followed by photosensitivity in 49%, hypertrichosis In 47%, telangiectasia in 42%, acneiform eruption in 33%, contact dermatitis in 21% pigmentary changes in 11%, papulopustular rosacea in 5%, atrophy in 5%, steroid-induced folliculitis in 4%, tinea incognito in 3%, and perioral dermatitis in 2.1% as observed by Rather et al(2022).[14]

Mamtha et al(2023)[10] found redness as predominant presenting complaint (60; 75%), followed by itching (50; 62.5%). Most patients had more than one clinical finding or side effect induced by steroids.

The findings of our study showed that among the subjects total 57(100%) were from 1- 2 year of duration in which, maximum 14(24.6%) were having unpatterned brown pigmentations. Among the subjects total 20(100%) were from 2-4 year of duration in which, maximum 4(20%) were having telengiectasia, fine scales and hypertrichosis. Among the subjects total 2(100%) were from >4 year of duration in which, maximum 2(100%) were having telengiectasia and none having fine scales, hypertrichosis, unpatterned brown pigmentations, follicular plugs, Y shaped vessels, white area, micro-papules, polygonal vessels and papules. In a study by Mamtha et al(2023)[10] various types of vasculature, linear, polygonal, Y-shaped, and serpentine vessels. Linear vessels without branches were the most common in our study. Polygonal vessels were seen in patients with long-standing use of steroids.

According to the literature, the common clinical findings observed in patients with TSDF are erythema, dyspigmentation, and papulopustular lesions. Hypertrichosis and atrophy were also observed in addition to the above findings. Most of the patients presenting with erythema may have been due to rebound vasodilation.[10]

As the our findings, total 83(100%) subjects were from super potent in which, maximum 22(26.5%) having fine scales and among the subjects total 67(100%) were from mild potent in which, maximum 13(19.4%) were having papules. Rather et al(2022)[14] found that among 200 patients subjected to dermoscopic evaluation revealed an irregularly dilated, branching, tortuous vessels almost interconnecting with each other in 79.78% of the cases.

A maximum subjects 27(32.5%) in super potent were having erythema and among total 67(100%) from mild potent in which, maximum 13(19.4%) were having papules, Rather et al(2022)[14] found that the main dermoscopic features were consistent to our study, in which prominent telangiectasias, ivory-white-to-strawberry-colored patches, and lesional hypertrichosis were seen. The white structureless areas correspond to areas of dermal atrophy. Also, features of melasma and exogenous ochronosis on dermoscopy were observed in 14% and 3.5% of the patients, respectively, However, in a recent study 89 done in India, dermoscopy of TSDF revealed brown globules (96.2%), followed by red, diffuse areas (92.4%), and vessels (87.1%) as the most common findings, which could represent the melasma for which the patient applied TCs.

According to Mamtha et al(2023)[10] with dermoscopy, the most common findings observed were telangiectasia or vessels (90%), observed in the following patterns: linear vessels without branches (60%), polygonal vessels with multiple branches (30%), Y-shaped vessels with bifurcations (25%), and serpentine vessels (15%)The other features noted were white, structureless areas (37.5%), Demodex tails (25%), scaling (15%), pustules (10%), comedones (20%), and the breaking of the pseudo-reticular network (22.5%). Erythema, polygonal vessels, and white, structureless areas were seen more frequently in patients with long- standing use of topical steroids. Brown globules were mostly observed in patients with a background of hyperpigmentation, such as melasma.

A few limitations to our study include the topographical location and climate of area studied, the indications or choices for which TCs were used in our study group varied and thus, this harnesses the generalizability of results among females. Thorough knowledge of the pattern of side effects with the need to increase awareness among practitioners and prevent the sale of TCs as over-the-counter medications will help to bring down the side effects associated with the misuse and abuse of Tcs.

CONCLUSION

The cream formulation was used by most patients compared to ointments and lotions upon recommendation for the use by relatives and friends. Redness followed by itching was the predominant presenting complaint with one or more side effect induced by steroids. The commonest were erythema, hyperpigmentation, hypertrichosis, acneiform eruption, telangiectasia and atrophy. Dermoscopy may play a vital role in improving the diagnostic accuracy of TSDF and help differentiate it from close mimics.

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