International Journal of Research in Dermatology
Kushwah S et al. Int J Res Dermatol. 2023 Sep;9(5):226-232
http://www.ijord.com

DOI: https://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20232534

Original Research Article

Study of clinicodermoscopic features of topical steroid damaged face patients

Sunayana Kushwah*, Chaitanya Namdeo, Kailash Bhatia

Department of Dermatology, Venereology & Leprosy, SAMC & PGI, Indore, Madhya Pradesh, India

Received: 22 May 2023
Revised: 14 June 2023
Accepted: 19 June 2023

***Correspondence:**
Dr. Sunayana Kushwah,
E-mail: Sunaina.frndz@gmail.com

ABSTRACT

Background: Topical steroid dependent or damaged face is an alarming upcoming entity rampant in India due to over-the-counter availability of topical corticosteroids containing products. The present study aimed to study the clinical and dermoscopic changes in patients with topical steroid damaged face and to correlate them with potency and duration of application of the TCS.
Methods: 80 patients visiting the dermatology OPD & IPD at SAIMS Hospital & PG Institute, Indore, with the chief complains of redness, itching, red raised lesions, burning, swelling, photosensitivity, pigmentation; with a history of application of topical corticosteroids of any potency on face for continuous 7 days or intermittent for 15 or more days were enrolled for the study.
Results: Mean age of the patients was 31.5±8.13 years. Male to female ratio was 1:9. Twelve (15.2%) patients abused TCS for more than one year. Presenting complains of the patients were redness (82.5%), itching (66.3%), hypertrichosis (47.5%), pigmentation (66.3%), burning (38.8%) and acne (28.8%). The most common dermoscopy findings i.e., unpatterned brown pigmentation (86.3%), polygonal vessels (73.8%), fine scales (52.5%), hypertrichosis (53.8%), follicular plugs (32.5%), micropustules (15%) and ivory patches (11.3%) were observed in a statistically higher proportion of cases dermoscopically
Conclusions: Dermoscopy in TSDF can help dermatologists in a multitude of ways from confirming the diagnosis to differentiating from other causes of red face and predicting the approximate duration of TCS abuse.

Keywords: Dermoscopy, Red face, TCS, Topical steroid-dependent damaged face

INTRODUCTION

The introduction of the first topical corticosteroid (TCS) in 1952 marked the beginning of a new period in therapeutic dermatology. Since then, numerous steroid molecules with different potencies; from super potent to those with the least potency have been created, making it possible to treat a variety of inflammatory dermatoses.[1] Although immensely beneficial with anti-inflammatory, anti-proliferative, immunosuppressive, anti-pruritic, atrophogenic, sex-hormone-like effect on the skin melanopenic action, topical corticosteroid (TCS) has proved to be double-edged swords.[2,3] They have been misused to various degrees by pharmacies and pharmaceutical firms, prescribers (who aren't always medical professionals like doctors or dermatologists), and the general public.[1] This overuse/abuse or misuse 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.[1] 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.[4]

The term "TSDF" refers to the semi-permanent or permanent damage to the face's skin that is brought on by the irrational, indiscriminate, unsupervised, or extended use of TCs, which results in a wide range of cutaneous signs and symptoms as well as psychological dependence on the drug.[1] More and more cases were reported following years and various different terms were used to describe it as red skin syndrome, dermatitis rosaceiformis steroidica, and steroid-induced rosacea like dermatitis.[1] Any attempt to stop the long-term use of topical steroids leads to the recurrence of erythema, burning, and scaling. The other adverse noticed are hypertrichosis, steroid rosacea, telangiectasia, perioral dermatitis, tinea incognito, demodicosis, and acneiform eruptions.[5] These effects are due to the multimodal effect of topical steroids owing to sex-hormone-like and melanopenic effects. Topical steroid-damaged face not only causes local side effects but also it affects the patient systemically and psychologically.[6] The easy availability of topical corticosteroids sold as OTC medications under misleading names tricking an alarming number of people into their use and overuse, most frequently in their wish for fairer and glowing skin, is a widespread occurrence in India, especially in women. TCS are applied to the skin as wonder products in the belief that they will eliminate all flaws and imperfections. On the other hand, they eventually cause a red face that is difficult for both patients and dermatologists to address.[7]

Even when the topical CS are prescribed by a dermatologist, patients tend to over use the drug without supervision and regular follow ups for duration more and indications other than what it was intended for. This leads to a myriad of Side effects, some of them permanent, for which then the patients visit our clinic. Management of these side effects, namely erythema, monomorphic acne, steroid atrophy, steroid rosacea, telangiectasia, perioral dermatitis demands patience and compliance, most patients resort to going back to applying the TCS as it provides them with temporary relief. This creates a viscous cycle and makes the patients psychologically dependent on the drug. The onus of addressing this menace behoves on the dermatologists. It's essential to recognise TSDF symptoms early to stop irreparable harm. Dermoscopy can be used as a new method for early detection of preclinical indications of TSDF by emphasising specific features such polygonal vasculature and telengiectasias, structureless white regions (atrophy), hypertrichosis, scales, and erythema.[8]

Dermoscopy has been used in dermatology to uncover structures and features that were previously hidden from view, adding more morphologic details to the clinical assessment of skin lesions. Dermoscopy not only noninvasively confirms the suspicion, but also helps the patient understand the seriousness of topical steroid abuse through the demonstration of pictures explained in patient-friendly language, as the majority of these patients continue to deny their TCS use despite repeated dermatologist inquiries about the same. Most of the time, it also ensures continued steroid abuse and increases treatment adherence.[5] In advent of same, the present cross-sectional study was undertaken to study the clinical and dermoscopic changes in patients with topical steroid damaged face (TSDF) and to compare them to the TCS's efficacy and time of application.

METHODS

Study design, study population, sample size, sampling technique

After approval from the institutional ethical committee, the present cross-sectional study was undertaken for a period of 18 months (1 April 2021 to 30 Sep 2022). 80 Patients who attended the dermatology OPD & IPD at Sri aurobindo hospital & PG Institute, Indore (M.P) with the chief complains of redness, itching, red raised lesions, burning, swelling, photosensitivity, pigmentation; with a history of application of topical corticosteroids of any potency on face for continuous 7 days or intermittent for 15 or more days. Patients who qualified the inclusion criteria were enrolled for the study after taking written informed consent.

Inclusion criteria

All patients attending the SAIMS OPD & IPD who had positive history of topical corticosteroid application, Continuous use for >7 days, Intermittent use >15 days and age more than 18 years were included.

Exclusion criteria

Patients who are Pregnant, breast feeding, have menstrual irregularity, presence of any systemic disease were excluded from the study, Patients unwilling to voluntarily participate in the study, Patients not allowing photography for clinical documentation, Patients having any comorbidities which might cause similar changes such as Cushing syndrome/thyroid disorders and Patients who had history of systemic administration of immunomodulators or immunosuppressants were excluded.

Methodology

After approval from the IEC and obtaining written informed consent from the patient, relevant data such as demographics (age, sex, occupation), strength of steroid used, primary indication and the duration for which it was used, was collected on a pre-structured proforma. Patients were also enquired about the recommender of the remedy. Further, the patients were enquired about their education and was labelled literate if he was able to read and write with understanding in any language, and were compared

on their tendency to consult a dermatologist to their tendency of getting the medications from the pharmacy directly for their skin issues, with respect to their literacy status. The patients were assessed for the features of TSDF, and photographs were taken using iPhone 12 (12 Megapixel, Apple Inc., Cupertino, California). They were informed that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed. Dermoscopic evaluation was done using Dermlite DL4 (10X Magnification) non-polarised mode and photographs of the magnified images were captured using iPhone 12 (12 Megapixel, Apple Inc., Cupertino, California) for documentation purpose. After analysis of all the images, interpretations of the dermoscopic patterns were made and recorded, based on patterns described in literature. The patients were made to understand the harmful effects of the topical steroids with the help of the dermoscopic pictures and were counselling to adopt caution with medications taken OTC.

Statistical analysis

Statistical analysis was carried out using statistical package for Social Sciences version 20 (SPSS software). Comparison of dermoscopic findings with clinical examination, gender, and potency of TCS was done using Chi-square test and Fisher's exact test with a $p<0.05$ considered significant. Comparison of dermoscopic findings on the basis of duration of TCS applied was done using one-tailed Z-test for sample proportion. Written informed consent was obtained from the subjects before enrolling in the study. Confidentiality of patient information was maintained.

RESULTS

A total of 80 patients using topical corticosteroids on their face were taken for the study. Majority of topical steroid abusers were in 30-40 years age group followed by 20-30 years age group. Females were the majority in the study participants (90%, N=72), of which most of them were home makers (51.3%, N=41). Enquiry regarding the indication for which topical corticosteroids were used revealed that majority used it for melasma (47.5%, N=38), treatment of acne (25.1%, N=20) was the second most common reason, followed by Fairness (11.3%, N=9), Tinea Faciei (6.3%, N=5) and dark spots (5%, N=4). Duration of topical corticosteroids application ranged from 1 month to 7 years with 15.2% (N=12) patients having applied TCS for over one year. Steroid induced photosensitivity was seen in 38.8% (N=31) of the total participants. An overwhelming proportion was advised by pharmacist (47.5%, N=38), followed by General Practitioners (21.3%, N=17), Dermatologists (18.75%, N=15) and Friends (18.8%, N=15), relatives (11.3%, N=9) and beauticians (1.3%, N=1). Presenting complains of the patient were redness (82.5%, N=66), itching (66.3%, N=53), hypertrichosis (47.5%, N=38), pigmentation (66.3%, N=53), burning (38.8%, N=31) and acne (28.8%, N=23).

Table 1: Demographic characteristics of study subjects (n=80).

Characteristic	N (%)
Age group (years)	
20-30	32 (40)
31-40	40 (50)
>40	8 (10)
Gender	
Male	8 (10)
Female	72 (90)
Occupation	
Homemakers	41 (51.3)
Unskilled workers	28 (10.1)
Skilled workers	62 (11.4)
With Higher Education	21 (26.4)
Literacy	
Literate	62 (78)
Illiterate	18 (22)
Indication	
Acne	52 (63.3)
Dark spots/ Freckles	4 (5)
Melasma	38 (47.5)
Itching	1 (1.3)
Tinea faciei	5 (6.3)
Fairness	9 (11.3)
Dark circles	1 (1.3)
Post varicella scar	1 (1.3)
Duration of TCS application (months)	
1 to 6	63 (78.9)
7 to 12	5 (6.3)
>1 year	12 (15.2)
Source of recommendation	
Pharmacist	38 (47.5)
Non-dermatologist General Practitioners	17 (21.3)
Relatives and Friends	24(30.1)
Beauticians	1 (1.3)
Corticosteroid Potency	
Class I/II	18 (22)
Class III/ IV	62 (78)
Presenting complains	
Itching	53 (66.3)
Burning	31 (38.8)
Redness	66 (82.5)
Acne	23 (28.8)
Wrinkling/atrophy	7 (8.8)
Steroid Rosacea	8 (10)
Telangiectasia	40 (50)
Melasma	53 (66.3)
Perioral Dermatitis	3 (3.8)
Hypertrichosis	38 (47.5)

Table 2: Dermoscopic findings in patients using topical steroids (n=80).

Dermoscopy findings	N (%)
Unpatterned brown pigmentation	69 (86.3)
Polygonal vessels	59 (73.8)
Fine scales	42 (52.5)
Hypertrichosis	43 (53.8)
Follicular plugs	26 (32.5)
Micropustules	12 (15)
Ivory patches	9 (11.3)

Figure 1: Clinical findings in the study subjects: melasma.

Figure 2: Clinical findings in the study subjects: acne.

The most common topical corticosteroid abused by our patients included mometasone furoate and clobetasol propionate. Based on the potency of TCS used, patients were categorised into two groups. One using class I/II potency and others using class III and above. Comparison of dermoscopy findings with their corresponding clinical finding revealed that Unpatterned Brown Pigmentation was seen in 86.3% (69), Polygonal vessels in 73.8% (59), Fine scales in 52.5%, (42), Hypertrichosis in 53.8% (43), Follicular plugs in 32.5% (26), Micropustules in 15%, (12) and Ivory patches in 11.3% (9), were observed in a statistically higher proportion of cases dermoscopically (Table 2).

Figure 3: Clinical findings in the study subjects: telangiectasias.

Figure 4: Clinical findings in the study subjects : hypertrichosis.

Figure 5: Clinical findings in the study subjects : wrinking.

Figure 6. Clinical findings in the study subjects: melasma, hypertrichosis & acne

Table 3: Comparison between Clinical Findings and Dermoscopic features.

Clinical Findings	N (%)	Dermoscopic Findings	N (%)	P value
Melasma	53 (66.3)	UPBP	69 (86.3)	0.000
Acne	23 (28.8)	Follicular plugs	26 (32.5)	0.000
Telangiectasia	40 (50)	Polygonal vessels	59 (73.8)	0.003
Steroid Atrophy	7 (8.8)	Ivory patches	9 (11.3)	0.129
Hypertrichosis	38 (47.5)	Hypertrichosis	43 (53.8)	0.001

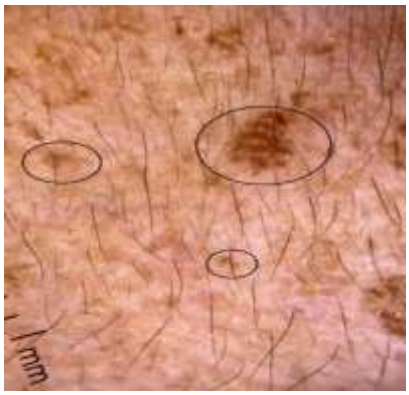

Figure 7: Dermoscopic findings in the study subjects: unpattered brown pigmentation hypertrichosis.

Figure 8: Dermoscopic findings in the study subjects: polygonal vessels.

Figure 9: Dermoscopic findings in the study subjects: C. Follicular plugs (encircled), Fine scales (arrows).

DISCUSSION

Topical corticosteroid (TCS) misuse is prevalent resulting in addiction of steroid defined as damaged or topical steroid-dependent face (TSDF). Triple combination creams with TCS are widely available in the Indian market and sold as over-the-counter items at low prices, tempting consumers to use them without a prescription. Topical corticosteroids are one of the most important and most commonly used topical preparations used for a multitude of dermatosis like psoriasis, contact dermatitis, lichen planus etc. When used for the right indication and duration and in the right amount, CS works wonders for even the most difficult to treat dermatosis. But as appealing as the effects of corticosteroids are, when misused/overused, they can lead to many side effects, some of which are permanent and difficult to revert. The resultant damage if diagnosed late is irreversible and challenging to treat. A multicentric study in India highlighted and confirmed the prevalence of recurrent and long-term TCS usage. It also created the term "TSDF" to denote the usual side effects of persistently using TCS on the face, including dryness, burning, itching, and rebound erythema.[9] Both the patient and the treating dermatologist encounter difficulties when dealing with TSDF.[10] On the advice of friends and family, patients may initially start using TCS for some minor dermatoses like acne or melasma.[11] Because of the anti-inflammatory and vasoconstrictive properties of steroids, primary dermatitis initially appears to be clearing up, but long-term treatment causes collagen degradation, skin structure deterioration, and epidermal atrophy.[10] Various studies have focused upon the diverse clinical symptoms of TSDF. Dermoscopy can aid in early identification of TSDF characteristics in a preclinical stage, enhancing prognosis. The most common age group in the present study was 18-30 years which was in corroboration with the anecdotal studies done by Hameed et al, Saraswat et al, Sethi et al, Inakanti et al wherein the majority of the patients were in this age group.[7-14] The susceptibility of this age group is brought on by reaching marriageable age, beginning new employment, and engaging in social media. Further, youngsters in their wish to attain fairer skin, treat acne and pigmentation with skin are instead of proper medications and their failure to understand that acne is a cutaneous disease which needs treatment. Females were predominant in the present study as compared to males (90%, N=72) with M: F ration of 1:9 which was in concurrence with the studies done by Jain et al, Hameed et al, Dey et al, Pal D et al.[3,7,14-16] The underlying reasons for

this might be a higher cosmetic concern as well as societal pressure prevalent amongst females. Illiteracy is generally regarded as the main cause of unsupervised TCS application in terms of educational qualification. However, majority of patients (78%) in our study were educated. An identical Indian study has concurrent our findings, reaffirming the belief that even well-educated people can be ignorant as well and can get trapped in the morass of tropical corticosteroid use. Similar findings were reported by Al Dhafiri et al in a cross-sectional study done by Saudi Arabia who stated educational level as an important reason for TCS use.[17] Enquiry concerning the indications for the use of topical corticosteroids demonstrated that majority used it for melasma i.e., 47.5%, treatment of acne (25.1%) was the second most common reason, followed by Fairness (11.3%), Tinea Faciei (6.3 %) and dark spots (5%). Other studies have found some variations between the indications the TCS were used for, with Acne, Melasma and Fairness being the most common. This was in contrast with the study done by Pal et al having most patients 32.47% having used it for Acne treatment primarily. Similarly, these findings were also in contrast to the study done by Saraswat et al.[12,18] Duration of topical corticosteroids application ranged from 1 month to 7 years with 15.2% (N=12) patients having applied TCS for over a period of one year. This reflects the widespread and unrestricted sale of TCS as over-the-counter (OTC) products. Similar incidence was reported by Sethi et al, Kar et al, Mahar et al.[17-20] About 47.5% patients used TCS recommendation by Pharmacists followed by non-dermatologist general practitioners (21.3%), relatives & friends30.1%) and Beautician (1.3%). Similar trends were reported by Lu et al from China & Sethi et al.[13,21] OTC accessibility is one of the main causes of rising steroid addiction, necessitating the adoption of strict regulatory measures to outlaw the sale of OTC steroid-containing creams. Mometasone furoate and clobetasol propionate were the most often abused topical corticosteroids by our patients. Presenting complaints in the present research consisted of itching, redness, acne and photosensitivity to pigmentation. The development of erythema, pruritus, and burning pain is thought to be caused by mechanisms including cytokine release, rebound dilation of blood vessels, and nitric oxide accumulation.[7,13] On the basis of the potency of the topical corticosteroids used, patients were categorised into two groups i.e., class I/II potency users and others who used class III and above. According to previous Indian research from other regions, 78% of patients used TCS with potency three or above.[3,7,15] Many of the patients we addressed utilised double- or triple-combination creams that contained TCS, an antifungal, and an antibiotic. These so-called cocktail creams present the biggest obstacle because they are inexpensive and widely available. Melasma and acne are among the most often mentioned signs of TCS overuse. The mistaken notion that TCS is a product that promotes fairness appears to be another persistent factor. Many people use TCS without seeking advice because they believe it to be a cure-all. This might be because creams with such formulas are readily available and reasonably priced. Erythema, dyspigmentation, and papulopustular lesions are typical clinical signs in TSDF patients.[3,7,15] Additionally, we noted hypertrichosis (53.8%) in a high percentage of patients which was similar to finding as observed by Sethi et al.[13]

Dermoscopy has become a superb tool for detecting minute skin changes, and it can be especially helpful for TSDF patients. It can help in finding several signs of TCS abuse that are invisible to the human eye. Dermoscopy research in TSDF are primarily anecdotal case reports. Dermoscopy may aid in the early identification of TSDF-indicating features before to their clinical manifestation.[13] In the present study, the most common dermoscopy findings seen were unpatterned brown pigmentations (86.3%), polygonal vessels (73.8%), hypertrichosis (53.8%), fine scales (52.5%), follicular plugs (32.5%), micropustules (15%) and ivory patches (11.3%). Sethi et al in their study reported that the most frequent dermoscopy results were brown globules (96.2%), red diffuse patches (92.4%), vessels (87.1%), white structureless areas (86.4%), hypertrichosis (80.3%), and white hairs (62.1%). Dermoscopy findings included polygonal veins.[13] (100%), red diffuse regions (100%), demodex tails (80%), and pustules (80%) in a prior study by Tatu on 40 patients. Four individuals had clinically evident atrophy, but dermoscopy indicated that another four had white, structureless patches.[8] In a 29-year-old male with TSDF, Sonthalia et al observed a reddish-brown backdrop, brown spots, globules, and clods, patches ranging in colour from ivory white to strawberry ice cream, numerous serpentine, and branching linear vessels without branches.[22] Along with whitish, structureless patches and hypertrichosis in a young girl, Jakhar and Kaur saw irregularly dilated, branched serpentine arteries that were practically interconnected..[23]

Comparing dermoscopy findings with their corresponding clinical findings revealed a statistically higher proportion of cases with unpatterned brown pigmentation (p=0.000), follicular plugs (p=0.000), polygonal vessels (p=0.000), ivory patches (0.129), and hypertrichosis (0.001). Similar findings were seen in research by Sethi et al where a considerably higher proportion of patients had white, structureless patches, veins, desquamation, white hair, and hypertrichosis visible under the microscope.[13] After several months of TCS use, these characteristics become clinically obvious, and if caught early enough, they may be reversed. While it was noted that more patients displayed recognisable dermoscopic symptoms with greater potency steroids, an attempt was made to link the strength of topical steroids with the clinical and dermoscopic results. However, we were unable to show any statistically significant association. All patients presenting with facial redness, itching, and dermatitis must be checked using a dermoscope in order to recognise these easily identifiable symptoms and differentiate TSDF from other causes of red face, such as tinea faciei, contact dermatitis, and lupus erythematosus. Dermoscopy non-invasively confirms the suspicion while also demonstrating photos and explaining in a way that is

understandable to patients the seriousness of topical steroid usage. Additionally, it helps improve treatment compliance and cut down on future steroid use. The sole drawback of our research was the absence of histopathological connection. Brown globules seen on dermoscopy in 96.2% of TSDF patients may not always be TSDF; instead, they may signify an underlying melasma for which the patient received TCS.

CONCLUSION

Dermoscopy in TSDF can be beneficial in a variety of ways, including verifying the diagnosis, distinguishing between other causes of facial redness, and estimating the approximate length of TCS misuse. Additionally, it can aid in determining the severity and prognosis of an illness. The other benefit may be counselling patients and monitoring their response to treatment. With efficient treatment, a reduction in vessels, hypertrichosis, scaling, red diffuse areas and white hair is expected; nevertheless, further studies supporting the same is needed.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Lahiri K, Coondoo A. Topical steroid damaged/dependent face (TSDF): An entity of cutaneous pharmacodependence. Indian J Dermatol. 2016;61:265-72.
2. Kragballe K. Topical corticosteroids: Mechanisms of action. Acta Derm Venereol Suppl. 1989;151:7-10.
3. Jain S, Mohapatra L, Mohanty P, Jena S, Behera B. Study of clinical profile of patients presenting with topical steroid-induced facial dermatosis to a tertiary care hospital. Indian Dermatol J. 2020;11:208-11.
4. Coondoo A. Topical corticosteroid misuse: The Indian scenario. Indian J Dermatol. 2014;59:451-5.
5. Gabros S, Nessel TA, Zito PM. Topical Corticosteroids. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2022.
6. Pal D, Biswas P, Das S, De A, Sharma N, Ansari A. Topical steroid damaged/dependent face (TSDF): A study from a tertiary care hospital in Eastern India. Indian J Dermatol. 2018;63:375-9.
7. Hameed AF. Steroid dermatitis resembling rosacea: A clinical evaluation of 75 patients. Dermatol. 2013; 2013:491376.
8. Tatu AL. Topical steroid induced facial rosaceiform dermatitis. Acta Endocrinol. 2016;12:232-3.
9. Saraswat A, Lahiri K, Chatterjee M, Barua S, Coondoo A, Mittal A, et al. Topical corticosteroid abuse on the face: A prospective, multicenter study of dermatology outpatients. Indian J Dermatol Venereol Leprol. 2011;77:160-6.
10. Kakkar S, Sharma PK. Topical steroid-dependent face: Response to xylometazoline topical. Indian J Drugs Dermatol. 2017;3:87-9.
11. Litt JZ. Steroid-induced rosacea. Am Fam Physician. 1993;48:67-71.
12. Saraswat A, Lahiri K, Chatterjee M, Barua S, Coondoo A, Mittal A, et al. Topical corticosteroid abuse on the face: A prospective, multicenter study of dermatology outpatients. Indian J Dermatol Venereol Leprol. 2011;77:160-6.
13. Sethi S, Chauhan P, Jindal R, Bisht YS. Dermoscopy of topical steroid-dependent or damaged face: A cross-sectional study. Indian J Dermatol Venereol Leprol. 2022;88:40-6.
14. Inakanti Y, Thimmasarthi VN, Anupama, Kumar S, Nagaraj A, Peddireddy S, et al. Topical corticosteroids: Abuse and Misuse. Dermatol. 2015;6: 130-4.
15. Dey VK. Misuse of topical corticosteroids: A clinical study of adverse effects. Indian Dermatol J. 2014;5: 436-40.
16. Pal D, Biswas P, Das S, De A, Sharma N, Ansari A. Topical Steroid Damaged/Dependent Face (TSDF): A Study from a Tertiary Care Hospital in Eastern India. Indian J Dermatol. 2018;63(5):375-9.
17. Al Dhafiri M, Alali AB, Alghanem ZA, Alsaleh ZW, Boushel EA, Alali ZB, et al. Topical Steroid Damaged Face: A Cross-Sectional Study from Saudi Arabia. Clin Pract. 2022;12(1):140-6.
18. Nyati A, Singhal AK, Yadav D, Sharma MK. Topical steroid abuse on face: A prospective study from a tertiary care centre of north India. Int J Res Dermatol. 2017;3(3):433-41.
19. Kar S, Gupta B, Barbhuiya GK. Self administration of topical steroids in face: A cross-sectional study from a tertiary care hospital in Northeast India. IP Indian J Clin Exp Dermatol. 2022;8(2):118-23.
20. Mahar S, Mahajan K, Agarwal S, Kar HK, Bhattacharya SK. Topical corticosteroid misuse: the scenario in patients attending a tertiary care hospital in New Delhi. J Clin Diagn Res. 2016;10(12):FC16-20.
21. Lu H, Xiao T, Lu B, Dong D, Yu D, Wei H, et al. Facial corticosteroid addictive dermatitis in Guiyang City, China. Clin Exp Dermatol. 2010;35:618-21.
22. Sonthalia S, Jha AK, Sharma R. The role of dermoscopy in a topical steroid-damaged face. Dermatol Pract Concept. 2018;8:166-7.
23. Jakhar D, Kaur I. Dermoscopy of topical steroid damaged/dependent face. Indian Dermatol J. 2018;9: 286-7
24. Abdallah MA, Zuelfakkar NM, Elbana RH. Comparative study of male and female sebum production. Egypt J Hosp Med. 2017;69:1847-79.

Cite this article as: Kushwah S, Namdeo C, Bhatia K. Study of clinicodermoscopic features of topical steroid damaged face patients. Int J Res Dermatol 2023;9:226-32.