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DERMOSCOPIC FINDINGS SECONDARY TO TOPICAL STEROID APPLICATION OVER FACE: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Topical steroid-dependent or damaged face (TSDF) is the term used to describe the widespread overuse of topical corticosteroids (TCS), which leads to steroid addiction. The Indian market is flooded with triple combination creams that contain TCS and are inexpensively offered as over-the-counter goods, tempting consumers to use them without a prescription. If the damage is discovered too late, it is difficult to repair and permanent. A better prognosis can be obtained by using dermoscopy as a tool for early detection of preclinical characteristics of topical steroids.

Materials & Methods: An observational study was carried out on 110 patients who were over the age of 18 years and had been applying TCS to their faces for more than a month, along with clinical symptoms and signs suggestive of TSDF. A pre-planned, organized approach was used to record their clinical characteristics, demographic information, and dermoscopy results. The one-tailed Z-test, Fisher's exact test, and Chi-square test were used to compare the dermoscopic findings with the clinical examination, gender, TCS potency, and duration of use.

Results: Mean age of the patients was 37.7 years. Forty (36.4%) patients abused TCS for 6-12 months of duration. Clinical findings noted in the patients were hyperpigmentation (94.5%), telangiectasia (82.7%) and erythema (81.8%). The most common dermoscopy findings seen were brown globules (97.3%), red diffuse areas (91.8%), vessels (86.4%), hypertrichosis (76.4%) and desquamation (42.7%). Linear and serpentine vessels were seen in significantly higher number of patients.

Conclusion: 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: TSDF, topical corticosteroids, dermoscopy.

INTRODUCTION: Since hydrocortisone's debut in the field of dermatology in 1952, topical corticosteroids (TCS) have significantly advanced the discipline.[1] In dermatology clinics, topical

corticosteroids are among the most frequently prescribed drugs.[2] TCS has been utilised improperly to varied degrees by both pharmacies and pharmaceutical corporations as well as the general public, despite its enormous benefits.[3] The most frequent site of overuse, occurs on the face.[4]
With continued usage, they cause telangiectasia, erythema, hypertrichosis, atrophy, scaling that is difficult for patients and dermatologists to manage.[5] Therefore its important to recognise topical steroid warning indicators as soon as possible. A better prognosis can be obtained by using dermoscopy as a tool for early detection of preclinical characteristics of topical steroids.[6] This investigation can aid in verifying the diagnosis and differentiating from other causes of red face and predicting the approximate duration of TCS abuse.[7]
Dermoscopy is an in vivo non-invasive imaging technique that enhances the visualisation of dermal, papillary, and dermo-epidermal junction beneath skin structures that are not obvious to the human eyes. It is also known as dermatoscopy, epiluminescence microscopy, incident light microscopy, or skin surface microscopy.[8-9] The fundamental idea behind dermoscopy is to magnify and transilluminate a skin lesion in order to see specific features.

MATERIALS AND METHODS

This study was carried out in the Department of Skin and VD in a Tertiary Care Centre from September 2022 to February 2024. Patients above 18 years with clinical symptoms and signs suggestive of TSDF (itching, burning, acne, redness, pigmentation) and with history of application of TCS on the face for a period for more than 1 month were included in the study after obtaining written informed consent. Institutional Ethics Committee approval was obtained before the commencement of the study.
All the patients who are not aware of steroid application and with compromised immune system like polycystic ovaries, thyroid disorders, Cushing syndrome were the exclusion criteria. Data regarding demographics, source of TCS prescription, potency, and duration of TCS used was recorded. When patients had previously used different topical steroids with different potencies, the formulation with the highest potency was taken into account for statistical analysis.
Photographs of all the patients were taken in such a way that only their lesions were highlighted obscuring their identity. Dermoscopy was performed using a dermoscope with inbuilt white light, polarised light. Dermoscopy findings were recorded as per case record sheet. Patient was allowed to leave the study anytime during the course of study if he/she willing to do so.

RESULTS

A total 110 patients were recruited in the study. There were 44 (40%) male and 66 (60%) female in the study while 42 (38.18%) samples were from 31-40 years age group with a mean age of 37.2. Presenting complaints of the patients were redness in 88 (80%), hyperpigmentation in 82 (74.5%), burning in 78 (70.9%) and itching in 20 (18.2%) patients **(Table 1)** Duration of TCS application ranged from one month to more than 2 years with 40 (36.4%) patients having applied TCS for 6-12 months. Most patients, (29%) started using TCS on recommendation of non-dermatologist doctor followed by relatives and friends (23%) each. Several patients gave a history of using multiple topical steroids of various potencies. Based on the potency of TCS used, patients were categorized into two groups: One using class I/II (45, 41%) potency TCS and the other using class III/IV (65, 59%).

Melasma (74, 67.3%) and fairness (32, 29.1%) were the most common underlying diseases for which TCS were used. Clinical findings noted in the patients were hyperpigmentation in 104 (94.5%), telangiectasia in 91 (82.7%), erythema in 90 (81.8%) followed by hypertrichosis in 76 (69%) **(Table 2)** The most common dermoscopy findings seen were brown globules in 107 (97.3%), red diffuse areas in 101 (91.8%), vessels in 95 (86.4%) followed by hypertrichosis in 84 (76.4%) and desquamation in 47 (42.7%) patients **(Table 3)** Type of vessels seen was linear without bends and branches in 33 (30%) followed by serpentine vessels in 27 (24.5%) cases.

Table 1: Presenting complaints among study subjects

Presenting complaint	Frequency
Itching	20
Burning	78
Redness	88
Wrinkles	6
Dark spots	82
Lesion around mouth	3

Table 2: Clinical features among study subjects

Clinical features	Frequency
White hair	3
Hypopigmentation	11
Scaling	34
Hyperpigmentation	104
Hypertrichosis	76
Telangiectasia	91
Erythema	90

Table 3: Dermoscopic features among study subjects

Dermoscopic features	Frequency
White hair	4
Pseudo-reticular network	18
Desquamation	47
Brown globules	107
White structureless area	38
Hypertrichosis	84
Vessels	95
Red diffuse areas	101
Follicular plugs	9

DISCUSSION

TCSs are commonly utilised in dermatology for a wide range of purposes. However, these can cause a wide range of symptoms if misused or overdone.[10] Long-term and recurrent usage of TCS is common, according to a multicentric study conducted in India. The study also developed the term "TSDF" to denote common side effects of powerful TCS treatment over an extended period of time on the face, including rebound erythema, burning, itching, and dryness.[11] Both the patient and the treating dermatologist encounter difficulties when dealing with TSDF.[12] Initially, individuals may begin taking TCS at the recommendation of friends and family for mild dermatoses like melasma or acne.[13] The anti-inflammatory and vasoconstrictive properties of steroids initially seem to clean up primary dermatitis, but prolonged use causes the epidermis to atrophy, the dermal structure to degenerate, and the collagen to break down over a period of months.[12]

Numerous investigations have emphasised the range of clinical presentations associated with TSDF. Most researchers have found that there is a dominance of women, and our study confirmed that

result as well.[5,10,14] The root causes of this could be a greater emphasis on appearance as well as social pressure that is common among women. According to earlier studies, 18-30 years is the most common age group, while this study indicates that the most common age group is 31 to 40 years old.[5,11,15] In this study, redness, itching, photosensitivity to pigmentation, were among the problems that participants presented with. Pruritus, erythema, and burning sensation are thought to be caused by mechanisms like nitric oxide accumulation, cytokine release, and rebound dilatation of blood vessels.[5]

Duration of TCS application ranged from one month to over 2 years. About 36.4% of the patients used TCS for duration of 6-12 months, this is a reflection of TCS's widespread and unregulated selling as over-the-counter (OTC) goods. About 46% patients used TCS on recommendation by relatives, friends whereas 29% got them on prescribed by non-dermatologists. Additionally, 16% used TCS on a beautician's recommendation, as anti-acne and fairness/cosmetic creams. Lu et al. from China reported similar findings.[16] The availability of OTC creams is one of the main causes of the rise in steroid addiction, necessitating the adoption of strict legal measures to halt the OTC sale of creams containing steroids. About 59% patients used TCS with potency three and four, in line with more Indian research from various locations.[5,10,14]

A large number of our patients applied double or triple combination creams that included TCS, an antibiotic, and an antifungal. Because these so-called cocktail creams are readily available and inexpensive, they present the most obstacle. The majority of documented signs of TCS misuse include acne and melasma. There seems to be a widespread misconception that TCS is a fairness product as well. Many people apply TCS without a doctor's advice for any skin irritation because they believe it to be a cure-all. This could be as a result of creams with these formulas being reasonably priced. Erythema, dyspigmentation are the common clinical signs seen in patients with TSDF.[5,10,14] We, in addition, also observed hypertrichosis (69.9%) and telangiectasia (82.73%) in a high percentage of patients.

Dermoscopy has shown to be a very effective method for assessing minute alterations in the skin, and it can be very helpful for TSDF patients. It can assist in locating a number of facts that point to TCS misuse but are invisible to the unaided eye. There are few studies on dermoscopy in TSDF, and the majority are anecdotal case reports. Early detection of characteristics suggestive of TSDF prior to their clinical manifestation may be facilitated by dermoscopy.

In the present study, significantly higher number of patients dermoscopically revealed white structureless areas, vessels, desquamation, white hair, and hypertrichosis. After using TCS for several months, these symptoms become clinically apparent, and if caught early, they may be reversible. In a prior study by Tatu, polygonal vessels (100%), red diffuse regions (100%), demodex tails (80%), and pustules (80%) were observed on dermoscopy in 40 individuals. Four individuals had atrophy that was clinically evident, while four more patients had white structureless patches on a dermoscopy.[6] The most common dermoscopy findings seen in our patients were brown globules (97.3%), red diffuse areas (91.8%), vessels (86.4%), hypertrichosis (76.4%), desquamation (42.7%) and pseudoreticular network (16.4%).

A 29-year-old man with TSDF was described by Sonthalia et al. as having a reddish-brown background, brown spots, globules, and clods, as well as patches ranging in colour from ivory to strawberry ice cream. There were also many serpentine and branching linear vessels without branches, along with hypertrichosis.[17] Jakhar and Kaur also noted a young female's hypertrichosis and white, structureless patches in addition to the serpentine vessels' uneven dilation and branching, virtually linking, to form a polygonal pattern.[18] The most common type of vessel appearance was linear (30%), followed by serpentine (24.55%)

Most dermoscopy observations, such as the white structureless area, brown globules, white hair, and hypertrichosis, show progression with longer TCS treatment times. Thus, by visualising these results, we may estimate the patient's approximate TCS application length even in the absence of a history, which helps in predicting treatment response and prognosis. In order to distinguish TSDF from other causes of red face, such as tinea faciei, contact dermatitis, and lupus erythematosus, all patients presenting with facial redness, itching, or dermatitis must be evaluated with a dermoscope.

In superficial fungal infections, follicular micropustules, diffuse strong erythema (not as regular dots), and brown patches with a white-yellowish halo have been reported.[19] In contact dermatitis, dotted vasculature, yellow scales, and sero-crusts are seen; in lupus malar rash, the follicular dots are pink in colour and encircled by white halos.[20,21] According to the older term "steroid dermatitis resembling rosacea," TSDF can resemble rosacea with or without demodecidosis, particularly if there isn't a history of TCS administration to support the condition. TSDF is preferred over rosacea due to the lack of hypertrichosis, white hair, and atrophy.

CONCLUSION

Dermoscopy is a less invasive and costly diagnostic technique that can detect changes in the skin that are invisible to the unaided eye. It also eliminates the need for routine biopsy by bridging the gap between clinical and histological diagnosis. The patient will consequently get a better treatment strategy. It facilitates the visualisation of alterations in pigmentation. Through the use of patient-friendly language and graphic explanations, dermoscopy not only non-invasively validates the suspicion but also helps patients understand the gravity of topical steroid misuse.

The investigation's shortcoming is its lack of histopathological correlation. In 97.3% of TSDF patients, brown globules were seen on dermoscopy. However, these could also be signs of underlying melasma, for which the patient was treated with TCS. Thus, dermoscopy can be useful in TSDF in a number of ways, such as verifying the diagnosis, distinguishing red face from other causes, and estimating the duration of TCS abuse. It can also help predict the severity and prognosis of a disease. Additional advantages might come from counseling patients and keeping an eye on how they respond to their medications. With a successful course of treatment, a decrease in vessels, scaling, hypertrichosis, white hair, and red diffuse areas is expected; additional research verifying this is required.

Further research is required to increase the noninvasive investigative tool's diagnostic sensitivity and specificity. It should be seen as a modality that should be evaluated in the context of clinical differential diagnosis rather than as a stand-alone approach. If used regularly and the results of dermoscopy are carefully considered, it may prove to be a useful tool in general dermatology practice as well as in the treatment of pigmentation disorders.

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