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Original Research Article

Dermoscopic Assessment of Topical Steroid-Dependent Damaged Face: An Observational Study

Birendra Prasad

Associate Professor and HOD, Department of Skin and VD, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

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Corresponding author: Dr. Birendra Prasad
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Abstract

Aim: This study was undertaken to characterize dermoscopic features of TSDF and to correlate them with potency and duration of application of the TCS.

Methods: The present study was conducted in the Department of Skin and VD, and 200 cases were included in the study. Patients (18 years or above) with clinical symptoms and signs suggestive of TSDF (redness, itching, acne, burning, swelling, photosensitivity, pigmentation and atrophy) and with history of application of TCS on the face for a period of more than one month were included in the study after obtaining written informed consent. Institutional Ethics Committee approval was obtained before the commencement of the study.

Results: Females (75%) constituted the majority as compared to males. Most of the patients belonged to the age group of 18–30 years (55%) with a mean age of 34.6 ± 8.2 years. Duration of TCS application ranged less than one year and 1-10 years was 45% patients each. 160 (80%) patients had received some form of formal education, while 40 (20%) patients were illiterate. Presenting complaints of the patients were redness in 150 (75%), itching in 140 (70%), pigmentation in 110 (55%), burning in 124 (62%) and acne in 80 (40%) patients. Clinical findings noted in the patients were erythema in 170 (85%), hyperpigmentation in 170 (85%), and hypertrichosis in 120 (60%) followed by telangiectasia in 100 (50%) and wrinkles in 70 (35%). Polygonal and Y-shaped vessels, though, are categorized under linear vessels with branches, the term Y-shaped vessel was used when only one lateral branch was visible and polygonal vessel was used if multiple branches forming a network were seen. Comparison of dermoscopy findings with their corresponding clinical finding revealed that red diffuse areas, vessels, brown globules, white structureless areas, desquamation, hypertrichosis and white hair were observed in a statistically higher proportion of cases dermoscopically.

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: Dermoscopy, Steroids, Face.

Introduction

Steroids were first used topically by Sulzberger and Witten in 1951. [1] Steroids are commonly prescribed drugs by dermatologists and most commonly used drugs by general population. [2] Steroids are indicated in management of diseases such as dermatitis, dry skin, insect bite, intertrigo, lichen planus, Polymorphic light eruptions, alopecia areata, discoid lupus erythematosus, psoriasis and eczema. These drugs are prescribed by the dermatologists for a specific required duration and frequency. The patients tend to continue application of steroids for longer periods due to rapid relief of symptoms. Due to easy availability over the counter and being available at nominal price, they tend to misuse/overuse the topical steroids. The most common reasons being for lightening of skin, melasma, sun tan and mild acne. [3,4] In an attempt of financial benefit, pharmaceutical companies market drugs containing steroids to boost sales (Modified Klingman‟s formula is prime example). [4] The trust showed by laymen on chemists and salesmen resulted in unprecedented increase in sale of steroids and thus its overuse/misuse. [5,6]

Topical corticosteroid is the synthetic form of natural corticosteroid which is synthesized in the adrenal cortex. [7] Topical corticosteroids are widely used by dermatologists and are highly effective in treating a variety of dermatological disorders. Topical corticosteroids (TCs) have a rapid effect in controlling dermatologic-inflammatory conditions due to their anti-inflammatory, anti-pruritic, and

immunosuppressive effects on the skin. [8] There are different potencies of TCs ranging from mild to very potent. They are used over different body parts, including the face. Different dermatologic conditions are treated with TCs, including atopic dermatitis and psoriasis. [9] However, the side effects of steroids are unneglectable; they are ranging from mild to very severe depending on the area exposed to the TCs, period, and frequency of usage. Side effects are notable on soft, sensitive areas of the body with a high rate of transcutaneous absorption, such as the face. These adverse effects can include acne, telangiectasia, steroids rosacea, and hyper/hypopigmentation. The risk of these adverse effects increases with the long-term use of TCs. [10]

This study was undertaken to characterize dermoscopic features of TSDF and to correlate them with potency and duration of application of the TCS.

Methods

The present study was conducted in the Department of Skin and VD, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India From Jan 2020 to December 2020 and 200 cases were included in the study. Patients (18 years or above) with clinical symptoms and signs suggestive of TSDF (redness, itching, acne, burning, swelling, photosensitivity, pigmentation and atrophy) and with history of application of TCS on the face for a period of more than one month were included in the study. History of rosacea, pre-existing comorbidities (e.g., Cushing's syndrome, polycystic ovaries, and thyroid disorders), pregnancy, and ongoing treatment with oral corticosteroids were the exclusion criteria.

Sample size of 100 cases was included in the study. A patient was labeled literate if he was able to read and write with understanding in any language. In patients with a history of using multiple topical steroids of various potencies, the preparation with the highest potency used was considered for statistical analysis. However, when a more potent steroid was applied for less than one month, the preparation used beyond one month was considered for analysis. Patients were subjected to dermoscopic evaluation with both polarized and non-polarized modes. Dermoscopic images were captured with iPhone X (12-megapixel camera; Apple Inc., Cupertino, California) attached to Dermlite DL200 hybrid, ×10 magnification (3Gen, San Juan Capistrano, California). Patients were later counseled about the harmful effects of TCS abuse.

Statistical analysis was carried out using statistical package for social sciences version 20. 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.

Results

Table 1: Demographic characteristics of study subjects (n=100)

Characteristic	Number (%)
Age group (years)	
18–30	110 (55)
31–40	60 (30)
>40	30 (15)
Gender	
Male	50 (25)
Female	150 (75)
Education	
Illiterate	60 (30)
Literate	120 (60)
Duration of TCS application (years)	
≤1	90 (45)
1-10	90 (45)
>10	20 (10)
Education	
Illiterate	40 (20)
Primary	100 (50)
Secondary	40 (20)
Graduate	20 (10)
Symptoms	
Redness	150 (75)
Itching	140 (70)
Pigmentation	110 (55)

Burning	124 (62)
Acne	80 (40)

Females (75%) constituted the majority as compared to males. Most of the patients belonged to the age group of 18–30 years (55%) with a mean age of 34.6 ± 8.2 years. Duration of TCS application ranged less than one year and 1-10 years was 45% patients each. 160 (80%) patients had received some form of formal education, while 40 (20%) patients were illiterate. Presenting complaints of the patients were redness in 150 (75%), itching in 140 (70%), pigmentation in 110 (55%), burning in 124 (62%) and acne in 80 (40%) patients.

Table 2: Comparison of clinical and dermoscopic findings in patients using topical steroids (n=200)

Clinical findings	Number of patients (%)	Dermoscopy findings	Number of patients (%)	P-value
Erythema	170 (85)	Red diffuse areas	180 (90)	0.32
Telangiectasia	100 (50)	Vessels (Linear, serpentine, polygonal, fine, branched, Y-shaped)	160 (80)	0.001
Hypertrichosis	120 (60)	Hypertrichosis	160 (80)	0.001
Hyperpigmentation	170 (85)	Brown globules	180 (90)	0.034
Atrophy	2 (1)	White structureless areas	160 (80)	0.007
White hair	32 (16)	White hair	120 (60)	0.001
Scaling	40 (20)	Desquamation	60 (30)	0.001
Pustules	10 (5)	Pustules	36 (18)	0.001
Other findings				
Wrinkles	70 (35)	Demodex tails	50 (25)	
Hypopigmentation	20 (10)	Breaking of pseudoreticular network	150 (75)	
		Follicular plugging	24 (12)	
		Comedones	20 (10)	

Clinical findings noted in the patients were erythema in 170 (85%), hyperpigmentation in 170 (85%), and hypertrichosis in 120 (60%) followed by telangiectasia in 100 (50%) and wrinkles in 70 (35%). Polygonal and Y-shaped vessels, though, are categorized under linear vessels with branches, the term Y-shaped vessel was used when only one lateral branch was visible and polygonal vessel was used if multiple branches forming a network were seen. Comparison of dermoscopy findings with their corresponding clinical finding revealed that red diffuse areas, vessels, brown globules, white structureless areas, desquamation, hypertrichosis and white hair were observed in a statistically higher proportion of cases dermoscopically.

Discussion

Regarding the prevalence of using facial TCs among the Saudi population, this study shows that 279 (45%) participants used facial topical steroids, while 332 (54%) did not use facial topical steroids. Topical steroids usage is more popular among females than the male population, which is similar to what was reported in previous studies. [11,12] At first, patients may initiate using TCS for some minor dermatosis such as acne or melasma upon suggestion by friends and relatives. [13] Ab initio, the anti-inflammatory and vasoconstrictive effects of steroids result in what appears to be from redness, itching, photosensitivity to pigmentation, and acne. Mechanisms such as rebound dilatation of blood vessels, cytokine release, and nitric oxide accumulation are considered responsible for the development of pruritus, erythema, and burning sensation.[14]

Females (75%) constituted the majority as compared to males. Most of the patients belonged to the age group of 18–30 years (55%) with a mean age of 34.6 ± 8.2 years. Duration of TCS application ranged less than one year and 1-10 years was 45% patients each. 160 (80%) patients had received some form of formal education, while 40 (20%) patients were illiterate. Presenting complaints of the patients were redness in 150 (75%), itching in 140 (70%), pigmentation in 110 (55%), burning in 124 (62%) and acne in 80 (40%) patients. Clinical findings noted in the patients were erythema in 170 (85%), hyperpigmentation in 170 (85%), and hypertrichosis in 120 (60%) followed by telangiectasia in 100 (50%) and wrinkles in 70 (35%). Polygonal and Y-shaped vessels, though, are categorized under linear vessels with branches, the term Y-shaped vessel was used when only one lateral branch was visible and polygonal vessel was used if multiple branches forming a network were seen. Comparison of dermoscopy findings with their corresponding clinical finding revealed that red diffuse areas, vessels, brown globules, white structureless areas, desquamation, hypertrichosis and white hair were observed in a statistically higher proportion of cases dermoscopically. Many of our patients used double or triple combination creams containing an antibiotic, antifungal, and TCS. These so-called

cocktail creams pose the greatest challenge due to their low cost and easy availability. Most reported indications for TCS abuse include melasma and acne. Another prevalent reason appears to be the false belief of TCS being a fairness product. Many consider TCS to be a panacea and use them for any rash on skin without consultation. This may be due to the cost-effective accessibility of creams containing such formulations. Erythema, dyspigmentation, and papulopustular lesions are the common clinical signs seen in patients with TSDF. [11,14,15] We, in addition, also observed hypertrichosis (65%) in a high percentage of patients.

Dermoscopy has emerged as an excellent tool to evaluate the subtle changes in skin and can be especially useful in patients of TSDF. It can help in identifying various findings suggestive of TCS abuse that cannot be appreciated with naked eye examination. Studies on dermoscopy in TSDF are scarce, with most being anecdotal case reports. Dermoscopy may aid in early identification of features suggestive of TSDF before their clinical appearance. In the present study, significantly higher number of patients dermoscopically revealed white structureless areas (P= 0.007), vessels (P = 0.001), desquamation (P = 0.001), white hair (P = 0.001), and hypertrichosis (P = 0.001). Jakhar and Kaur also appreciated irregularly dilated, branched serpentine vessels, almost interconnecting, giving a polygonal pattern along with white structureless areas and hypertrichosis in a young female. [16]

Appearance of fine vessels and pustules were significantly associated with male gender, and branched vessels with female gender. Androgens in males stimulate sebaceous gland proliferation, especially over face, chest, and upper back. Production of sebum is significantly higher among males, mainly influenced by androgens which can dilute the TCS effect, whereas estrogens exert opposing effect through down-regulation of sebaceous gland function. [17] Older term of "steroid dermatitis resembling rosacea" suggests that TSDF can mimic rosacea with or without demodecidosis, especially in the absence of a supportive history of TCS application. However, the absence of hypertrichosis, white hair, and atrophy favors TSDF over rosacea. Dermoscopy not only non-invasively confirms the suspicion but also aids in patient's understanding of the seriousness of topical steroid abuse through the demonstration of pictures explained in patient-friendly language. This also can prevent further steroid abuse and improves treatment compliance.

Conclusion

Thus, dermoscopy in TSDF can help 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. Further, it can also help in predicting disease severity and prognosis. An additional advantage could be in counseling the patients and monitoring response to treatment. With effective treatment, a decrease in vessels, scaling, hypertrichosis, white hair, and red diffuse areas is expected; however, future research supporting the same is warranted.

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