



Research Article

IATROSACEA FOLLOWING ABUSE OF TOPICAL STEROIDS AS A FACE-WHITENING CREAM IN MOSUL CITY

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ABSTRACT

Objectives: To highlight the knowledge, frequency, types, and the clinical aspects of overusing TCs on the face as well as the motivation for such practice, with the aim of rising the public awareness in Mosul City. **Methods:** This prospective observational study included 180 patients aged 13-53 years, with steroid dermatitis resembling rosacea "Iatrosacea" with history of using TCs on face > 1 month, were evaluated at Al-Qudis Health Center for Family Medicine. Patients contradicted using TCs, or with classical rosacea were excluded. **Results:** The majority were females (90%). Duration was 2 months to 7 years. The motives were fairness (55%) and melasma (19%). The commonly abused drug was Betamethasone Valerate (35%). The reported side effects were facial erythema (84%), telangiectasia (79%), rebound phenomenon (66%), rosacea (56%), and acne (42%). The exacerbation on stopping TCs (63%) and skin lightening (37%) were the main reasons behind continued use; 59% were unaware about side effects of TCs; 42% obtained the products from cosmetic shop/Beautician and 27% from nurse clinic. In spite of observable side effects, 74% of abusers didn't feel guilty for applying them for protracted periods. **Conclusion:** Inappropriate use of TCs for cosmetic purposes is still commonly encountered in our environment, with believe TCs will correct any facial imperfection. As fair skin is correlated with beauty and social privilege, both genders of different ages, social, and educational status are indulged in this practice that exposed them to medical and social problems. It is a multiphase issue necessitates collaboration of different sectors to raise public awareness and control their easy availability to overcome this dilemma.

Key words: Topical corticosteroids, steroid abuse; steroid rosacea.

INTRODUCTION

Topical corticosteroids (TCs) represent a significant milestone in dermatological practice. A new treatment era for dermatologists has been emerged with the development of TCs, formerly faced with management intractable dermatoses^{1,2}.

Paradoxically, the same mechanisms that responsible for them underlie therapeutic effect, have mediated also in their adverse effects. They have potent melanopenic, atrophogenic, immunosuppressive, and sex-hormone like effects on skin. All these effects can lead to significant local adverse effects if they have been used indiscriminately^{3,4}. So that, corticosteroid acts as double-edged sword, that makes it essential to be used with utmost caution⁵.

Misuse of TCs is prevalent worldwide and has become the subject of many studies, mainly in Asian countries⁶. It has increasingly become apparent that TCs acquired a reputation of as antiblemish, antiacne, and whitening agents among general population⁷. In most instances, they are used as cosmetic practices for their side effect of depigmentation⁸. On the other hand, there is popular misconception among many cultures that fair skin is linked to beauty and a higher social class, and the overuse and misuse of TCs may stem from this conception⁹.

It was reported that TCs abuse on face resulted in an acne rosacea-like dermatitis. Different terms are given to such abuse lesion, most often are called as steroid rosacea, "Iatrosacea" or "Red face syndrome"¹⁰. It is characterized by diffuse facial redness,

papulopustular lesions, steroid addiction and tachyphylaxis as well as development of rebound phenomenon subsequent to TCs withdrawal¹¹⁻¹³. This problem is even worse, wherein anyone can obtain a potent / very potent TCs easily without prescription².

In fact, general population in Iraq has access to different types of medications easily. Therefore, the haphazard of self-medication and the improper use of nonprescription potent TCs on face has been observed as a very common in daily clinical practice¹⁴. The fairness effect of TCs is the essential reason for their continued use even among literate population. It is considered to be associated with increasing frequency of dermatological side-effects^{15,16}. Thus this dilemma emphasizes the need to aware the public to ask for medical help instead of continuing this practice.

Of notice, the rapid increase of improper use of TCs, by general physicians, patients, and even by dermatologists, a threaten to bring disrepute to these amazing drugs. Thus, it was decided to conduct this study to highlight the knowledge and frequency of abuse of TCs, commonly used preparations, and the clinical aspects of overusing TCs on the face as well as the motivation for such practice, with the aim of rising the public awareness regarding the misuse of steroids on face in Mosul City.

METHODOLOGY

This prospective observational study was carried out at Al-Qudis Health Center for Family Medicine and at private clinic of Dermatology in Mosul city, by dermatologist and experienced family physician on all consecutive patients who attending for

dermatological problems, between April and August 2020. The local Health Center ethics committee approved the study. All the patients agreed for participation.

Patients of any age and of both sexes with clinical signs and symptoms of facial dermatosis (steroid-induced rosacea) with history of using any type of TCs on face for > 1 month without medical advice, for any cosmetic reason other than classical rosacea, were enrolled in this study. Patients were asked to come back with the cosmetic products containers that have been utilized in order to ascertain the used substances. Patients who contradicted any history of using TCs on the face, or those with classical rosacea, and pregnant women were excluded from the study.

A special questionnaire was designated to contain three sections: (a) Demographic variables: sex, age, marital status, occupation, educational level and social class, (b) Information regarding TCs therapy: names and types of products used, frequency, duration, source of these products, the reason behind utilizing such products, and dermatological complications, (c) Respondents perceptions about TCs: safety, side effects, guilty feeling for using such drugs.

The types of TCs were suggested by the patients in most of the cases. None of the patients provided the duration of using steroids

exactly. Participants were also asked if they used these products during pregnancy and lactation.

The diagnosis was instituted on clinical basis. The dermatological conditions that prompted the patients to attend the dermatology clinic were recorded and the clinical details registered. In addition to total skin examination which performed to identify any condition associated with misuse of TCs. Counseling and treatment of TCs side effects were then initiated.

Different treatment modalities were tried for patients, including oral antibiotics (doxycycline or azithromycin), topical tacrolimus along with emollients and oral vitamin C and E were also added. Treated patients were educated to avoid all topical products that are containing steroids and factors known to aggravate rosacea (emotional stress, hot beverages, caffeine, spicy foods, hair removal and sun exposure) as well as to apply sunscreen for outdoor activity

Statistical analysis

Data were analyzed by using SPSS (V24; IBM SPSS Statistics USA). Results were illustrated as range, mean± standard deviation and percentage.

RESULTS

Table 1. Demographic characteristics of enrolled patients (N=180)

Variables	Number	Percentage
Gender distribution		
Male	18	10
Female	162	90
Age group (years)		
< 15	13	7
15–30	89	49
30–45	70	39
> 45	8	5
Occupation		
Students	19	11
Teachers	38	21
Employed	35	19
Paramedics	23	13
Housewives	65	36
Social Class		
Lower	65	36
Middle	79	44
Higher	36	20

Table 2. Type and potency of TCs that misused by patients

Brand Name of Product Used	Type of Steroid Content	Potency BNF Classification	Number	%
Dermodin cream/ointment	Clobetasol propionate 0.05%	I (Very potent)	5	31
Betnosam cream /ointment	Betamethasone valerate 0.1%	II (Potent)	43	24
Betnosam N cream/ointment			15	8
Betnovate cream/ointment			5	3
" Magic mix" Corticosteroid mixed with the cosmetics	Betamethasone valerate 0.1% and/or Clobetasol propionate 0.05%	II (Potent)	62	34
Nystacort cream/ointment	Triamcinolone acetonide 0.1%	I (Very potent)		
Elica cream	Mometasone furoate 0.1%	II (Potent)	6	3
Melacare cream			26	14
Alfacort cream/ointment	Hydrocortisone 0.1%	IV(Mild)	7	4
Hydrocortisone cream/ointment				

Table 3. Purposes of using TCs on the face, frequency, duration of application and adverse effects

Variable	Number	Percentage
Purpose of using TCs on face		
Fairness	99	55
Melasma and pigmentation	34	19
Acne	20	11
Dryness	15	8
Freckles (blemish)	12	7
Application Frequency		
Twice or fewer times/day	133	74
Three or more times/day	47	26
Application Duration		
6 months or less	56	31
More than 6 months	124	69
Faced Complication		
Diffuse facial redness, dryness with hotness	152	84
Rosacea with burning	102	56
Acneform	75	42
Telangiectasia	143	79
Perioral dermatitis	36	20
Hyper-hypopigmentation	49	27
Rebound phenomenon	120	66
Edema of the face	41	23
Milia	36	25
Skin atrophy	27	15
Hypertrichosis	9	5

Table 4. Sources of TCs, sources of prescription and attitudes about the use of TCs

Questions	Number	Percentage
Source of TCs		
Pharmacy	57	31
Nurse clinic	48	27
Cosmetic shop /Beauty center / Flea market /Herbal shops	75	42
Source of recommendation of TCs		
Dermatologist	25	14
Non dermatologist physician	31	17
Nurse	24	13
Flea /Street market / Beautician / TV ads	67	37
Pharmacist	9	5
Relatives / Friend / Self-prescription	24	13
Do you feel guilty?		
Yes	47	26
No	133	74

A total of 180 patients who utilized TCs on face met the criteria for inclusion in this study; Of these, 162 (90%) were females that outnumbered males 18(10%), with ages ranging 13-53 years (mean \pm SD of 33 ± 6.7 years). Duration of application was between 2 months to 7 years (mean 1.7 ± 1.3 years). Of these participants, 19 (11%) were students, 38 (21%) teachers, 35 (19%) employed, 23(13%) paramedic, and 65 (36%) were illiterate housewives. Sixty-five patients 65 (36%) were from lower social class, 79 (44%) belonged to middle social class and 36 (20%) from higher social class (Table 1).

Regarding the types of steroids, varying types and potencies of steroids were used by the patients, potent and very potent products were the main corticosteroids used. The commonest were being the fluorinated products, betamethasone valerate 0.1% cream by 63 (35%) patients, clobetasol propionate 0.05% cream by 56 (31%) patients and combination of them with other over-the-counter whitening products for making "magic mixtures" in 62 (34%) (Table 2).

The purposes behind the use of TCs were melasma in 34 (19%) patients, acne in 20 (11%) patients, dryness 15 (8%) and freckle in 12 (7%), while 99 (55%) participants used TCs for fairness (Table 3). Frequency and duration of TCs usage as well as dermatologic complication that observed in patients are outlined in Table 3.

The sources of TCs prescription were dermatologists (14%), general practitioners (17%), advised by nurses (13%), beautician (37%), prescribed by pharmacists (5%), advised by relatives or friends or self-prescription in 13%. The sources of TCs and their prescription and attitudes about the use of TCs are illustrated in Table 4.

About patients' knowledge of steroids, most of the participants were unaware about the adverse effects of TCs. Seventy-four (41%) patients thought that using TCs might pose harm their skin and general health, whereas 106 (59%) didn't think so and they didn't know that their products containing steroids. Moreover, only 26% participants felt guilty because of applying these

products on face. When the patients were asked to select the most harmful type of TCs, 76% chose hydrocortisone ointment/cream (which is mild corticosteroid), while 24% selected clobetasol propionate ointment/cream (very potent corticosteroid). In this study, the main reason behind continued using TCs was exacerbation of lesion on stopping the products in 114 (63%) patients. Whereas whitening of skin, which has believed to be associated with beauty, self confident and social advantages, was the cause for continues using of TCs in 66 (37%) cases. All the participants were well informed about the side effects of steroid on skin. TCs were tapered off or replaced with mild corticosteroid and stopped completely. Oral doxycycline or azithromycin was given. Topical tacrolimus was added in some cases. Emollients, oral vitamin E and vitamin C had further beneficial effects in relieving the symptoms of sever atrophy and telangiectasia. All patients showed good response in around 3-8 weeks.

DISCUSSION

The findings of current study demonstrate that the abuse of TCs for cosmetic purpose has become actually common in Mosul city among both men and women. It is referred by a representative sample of patients visiting the dermatologists complaining of complication of these products and seeking for medical advice; This demonstration concurs with the previous studies reports from different countries worldwide^{15, 17, 18}.

As beauty is an element craved by all individual, in this study, 74% participants were using TCs on their faces for cosmetic purposes (fairness and depigmentation). TCs obviously lighten the skin, however, the mechanism of inhibition of melanogenesis is imprecise yet¹⁹. The proposed theories of TCs fairness action are initial blanching due to vasoconstriction that retard skin cell turnover, reducing the activity and number of melanocytes, or might be by decreasing the production of steroid hormones precursor²⁰. The prevalence of the present study coincides with the view of prior study carried out by Hameed²¹. Whereas this value is higher than that reported in Nigeria by Nnoruka et al.⁷, and in Saudi Arabia by Alrayyes et al.²² where TCs used as cosmetic agents accounted for 58.7% and 56.2% respectively. The difference might be due to the variation in socioeconomic status among populations. Of notice, 49% patients who misused TCs as skin lightener were in the age between 15–30 years. These drives are probably be predictable as this is the period when young age people begin to take care of their appearance to look attractive, beautiful and having fair skin devoid of blemishes or pigmentary disorders as melasma in females^{2, 23}. This motivation didn't include young females only, but young males also indulged in this practice and used them regularly. These observations could be similar to other studies carried out by Wone et al²⁴, and Pitche et al²⁵, who have noticed that TCs misused as bleaching agent by both young women and men in their communities.

Regarding the level of education, it was expected that educated women would avoid using bleaching products as they aware about the risks of them. Yet, the results of current study contradict our expectations, patient's educational status did not show a role in abuse of TCs in this study. The majority of participants were young women (90%) of different social class and level of education. This observation is in accordance with the finding of Adebajo²⁶ who reported that the abuse of TCs was widely spread among all section of African society, regardless of socioeconomic, educational level or employment.

Although TCs are not the panacea for all types of dermatological disorders, yet they are particularly valuable for a variety of cutaneous diseases when they are applied on the proper site and in appropriate concentration. However, they should not be

applied on the face except in acute inflammatory disorders as long as they will not be utilized for more than 1 month^{27, 28}. In the present study, facial cutaneous disorders were demonstrated as complications of TCs that abused on the face mainly for cosmetic practice, acne, dryness and dermatitis. The average duration for TCs to develop this condition was 6 weeks to 3 months, it varied according to the potency. Generally, the structural alteration and the signs of chronological aged skin are very similar to those signs of TCs inducing chronic atrophy of the skin. Dryness, laxity and thinning of skin occur in both conditions. Therefore, dermatologists can recognize the abuse of TCs in patients from these characteristic changes of skin¹⁵. In many instances, the dermatologists observe the underlying condition as melasma mix up with red face. For this reason, the dermatological examination, in this study, were relied chiefly on clinical basis that reflects the dermatological practice in Iraq, where clinical precision for the diagnosis of dermatoses being good. Moreover, TCs complications that were seen have shown an exaggerated symptomatic patterns which making the diagnosis much easier, especially with those using potent / very potent corticosteroids for prolonged intervals. With regard to safety concerns, the excessive and regular uses of TCs on the face often creating an array of unexpected dermatological disorders that might be not merely a health problem but a social problem as well. The manifestations included a flaming red, scaly with papulopustular eruption covered the face (clinically identical to rosacea), thinning of skin in addition to corticosteroid skin dependency¹⁴. In current study, steroid-induced rosacea was seen in 56% patients and acne (monomorphic pigmented papules) in 42% patients due to steroids misused which can facilitate the proliferation of *Demodex folliculorum* and *Propionibacterium acnes* leading to acne rosacea like condition^{2, 29}. Our study have shown more rosacea than acne form lesions. This result is agreeing with the observation of Bhat Y et al.¹³ Whereas Ambika H et al.¹⁸ demonstrated acne as commonest adverse effects.

Furthermore, other side effects of the misuse of TCs in cosmetic practice, that commonly reported in various studies as complication, were also diagnosed in current work, such as telangiectasia, pigmentary disorders and hypertrichosis³⁰. Telangiectasia was seen in 79% patients. It might be occurred as a result of stimulation of nitric oxide release leading to abnormal capillary dilatation¹⁸. While a clinical hyper and hypopigmentation were noticed in 27% patients. The pigmentary alteration with steroids, mainly hypopigmentation, is frequently reported in various studies^{29, 31}. It might be due to impaired melanocyte function³². In addition, steroid-induced hypertrichosis was seen in this study in 5% patients. As steroid promotes hair growth by an unknown mechanism. In a study carried out by Meena et al.³³, hypertrichosis was seen in 1.35% patients. Further side effects were also diagnosed in our study, like edema of the face in 80%, perioral dermatitis in 20%, milia in 25% and skin atrophy in 15%.

Unfortunately, an important observation of this study that the chiefly used preparations were betamethasone valerate 35% and clobetasol 31%, alone or in combinations 34% (with various substances as depigmenting products, antibacterial, antifungal agents) that classed as potent and very potent, for beautiful facial appearance. In spite of the fact that the use of these drugs should be avoided on the face without medical prescription or control². Saraswat et al³⁴, also demonstrated that combination of TCs, potent and very potent steroids, were the mainly abused preparations on the face to achieve fairness.

An important demonstration of this study was the popularity of abused practice of TCs as skin whitening cream that gained in our community without seeking for consultation from a dermatologist

or ignoring search for advice about adverse effects of these products. Motivated by others practice, relatives, friends, and self-prescription (13%). Also, they were prescribed by dermatologists (14%), general practitioners (17%), nurses (13%) and pharmacists (5%) as well as recommended by beautician and television ads (37%). The main seduction of TCs belongs to their local vasoconstrictor effects, which are responsible for their instant dramatic reduction in pigmentation that lasts for several hours following topical application that gives a satisfying impression and encouraging patients to keep on using these “magical drugs” without supervision of medical authorities^{21,34}. Moreover, it is reinforced by the easy obtaining of TCs from pharmacies, herbal shops, nurse clinics, or via online markets encouraged their victims to become addicts on these remedies. By the time, the effect of TCs decreases due to tachyphylaxis and patient is enforced to use potent TCs and the cycle continues¹⁸. Regrettably, the main reason behind continued using TCs was exacerbation of lesion on stopping the products in 63% patients. As on cessation of the offending products, there is severe withdrawal dermatitis, rebound facial erythema and scaling (63%), that is unpleasant due to vasodilatation. Whereas skin whitening, which has believed to be associated with beauty, self confident and social advantages, was the cause for continues using of TCs in 37% cases. Patients are not appreciating this medical challenging condition; however, they always try for achieving again the prettiness that they missed rather than to cure the current problem of TCs complications. So that, discontinuation is impossible.

In spite of the observable side effects of TCs products, 74% of abuser didn't feel guilty for applying such preparation for protracted periods due to their unrealistic eagerness to achieve a “quick cure” for lightening intention. It is also pertinent to note that management of steroid dependent face considers a challenge for the patient when it necessitates absolute ending of TCs application¹⁴. In the present work, treatment firstly included careful instruction regarding dependency and counseling about recurrence of lesion on stopping of TCs. All patients gradually weaned off TCs and switch to lower potency prior to stop them altogether. In addition to prescribe topical emollients and tacrolimus for 2 months period with oral administration of doxycycline 100mg / day to avoid occurrence of acne³⁵. The patients, also, were counseled to wash their faces with plane water only and avoidance of triggering factors (emotional stress, sun exposure, heat exposure, hair removal and hot drinks) as well as to apply sunscreen for outdoor activity. A good improvement was shown for all patients within 4 weeks.

In general, bleaching products contain a variety of materials, many of them are still unidentified³⁶. However, the most common used compounds are hydroquinone, corticosteroids and mercurials³⁷. Hydroquinone is skin-lightening agent that mostly prescribed worldwide in spite of its conflicting effects and safety concerns³⁸. For TCs, of notice, dermatologists state that no topically applied preparations can change the skin tone without using these harmful chemicals. So that, most physicians firmly convinced that TCs are essential in treatment of skin pigmentation. This opinion was relying on experts judgment³⁹.

It is evident from the study data that betamethasone/clobetasol/mometasone, hydroquinone and tretinoin-containing skin-whitening formulas as Melacare TM, "Magic Mix" have recently become very popular bleaching creams in our town, and they were most commonly misused products in our study. “Magic mix” is a formula containing a cocktail of skin bleaching preparations (of unidentified origin or herbal products of poor quality) along with potent TCs plus crushed dexamethasone tablet and marketed as a natural skin lightener. It is prepared by

beauticians, nurses, or homemade, it is used by 34% participants of this study. The responsibility to publicize proper information concerning where, when, and how to utilize TCs to internists and patients rests essentially with the dermatologists. Benefit of ethical and rational use and the hurt of overuse / misuse for nonmedical/cosmetic purposes, should be obviously explained prior to penning a TC in prescription³¹. In the present study, all patients suffered from side effects of TCs abuse. This was due to lack of health education and awareness about TCs usage.

The finding of current study highlights many public health implications. Firstly, the dire requirement to target intervention to educate the public about the risks of abuse of TCs via medical education programme including various media as leaflets, TV and radio. Secondly, the noticeable exaggeration in numbers of steroids abuser's day by day indicates that the existing legislative measure are unsuccessful. The burden of responsibility for TCs abuse was put primarily on paramedical staff. In fact, most products are available easily in non-pharmaceutical local stores and nursing clinics without medical prescription or counseling a doctor. The non-pharmaceutical sources of TCs in this study were 69%. Thirdly, the responsibility is carried by pharmacists, general practitioners and even some dermatologists. They need to raise the awareness of public health about the impact of the dangerous practice, the effects of continuous application and the difficulty to reverse some of their complication, specially the pigmentary problems. Furthermore, the authorization of fluorinated TCs prescription should be limited for dermatologist only and the easiness of obtaining them from the pharmacies must be controlled.

Further cohort studies are requisite to find the trend to systemic complication following abuse of TCs.

CONCLUSION

The observations of current study indicate that the abuse of TCs for cosmetic purposes is still commonly encountered in our community, with believe they will correct any facial imperfection. Both genders of different ages, social, and educational status are indulged in this practice that exposed them to various medical and social problems. This multiphase issue necessitates the collaboration of different sectors to overcome, by raising public awareness via media programs, medical education courses for paramedical personnel and controlling the easy availability of potent/very potent steroids, are perhaps the main steps that be taken to overcome this dilemma.

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