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Original Research Article

Clinical profile of cutaneous adverse effects induced by topical corticosteroids and their source of information

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ABSTRACT

Background: Steroids are a wide range of chemical molecules that have varying physiological effects. Corticosteroids own anti-inflammatory and immunosuppressive effects. They also have anti-proliferative effects on keratinocytes. The present study was undertaken to study the clinical aspects of the use of topical corticosteroids leading to adverse effects and to know the source of information leading to its abuse.
Methods: A cross-sectional observational study was carried out on cutaneous adverse effects of TC attending the dermatology outpatient department of Era's Lucknow medical college and hospital between December 2018 and November 2020. The patients who applied TC for more than 1 month were taken into account. Patients who had cutaneous adverse effects suggestive of TC without details of agents were excluded.
Results: Present study explored the patterns of use of topical corticosteroid, and its associated adverse effects in a total of 380 patients (aged 3 to 71 years; mean age 27.33±11.78 years; 52.9% males). Itching (72.4%), burning skin (64.5%) and skin color change (62.4%) were the three most common presenting complaints. Dermatophytoses (66.6%), acne (17.4%) and skin lightening (6.3%) were the three most common indications for use of topical corticosteroids.
Conclusions: The present study showed that the practice of using non-dermatologist prescribed topical corticosteroid use is highly prevalent and is associated with a high burden of adverse effects. To prevent this there is a need to spread awareness regarding harms associated with abuse of non-dermatologist prescribed topical corticosteroid use.

Keywords: Dermatophytosis, Topical steroids, Adverse effects, Tachyphylaxis, Atrophy

INTRODUCTION

Steroids in general are a wide range of chemical molecules that have varying physiological effects. Steroids are broadly divided into three types, viz. glucocorticoids, mineralocorticoids and corticosteroids. Of these, glucocorticoids are those steroids that have a physiological effect on regulation of metabolism and inflammation while mineralocorticoids regulate sodium and water levels. On the other hand, corticosteroids are a group of chemicals that include both naturally occurring as well as synthetic hormones that are used in various medical disorders.[1]

Corticosteroids own anti- inflammatory and immunosuppressive effects. They also have anti-proliferative effects on keratinocytes. Corticosteroids are successful in suppressing the collagen synthesis by fibroblasts.[2] The route of administration of corticosteroids is quite flexible and includes oral ingestion, systemic/parenteral, intralesional injection as well as topical application.[2] Topical application of steroids to the sites of inflammation bypasses the liver and its first-pass effect.[1]

Topical steroids are used for the treatment of a number of inflammatory skin disorders in an effective manner over a short period of time. This property of theirs makes them a suitable choice for the treatment of some common skin disorders like psoriasis, atopic dermatitis, vitiligo, lichen planus, lichen simplex chronicus, discoid lupus erythematosus, etc.

Owing to their easy availability, many a times even without a prescription, is responsible for the growing tendency of their abuse and misuse which is responsible for a number of undesired side effects including local and systemic adverse effects as well as an adverse impact on the psychological well-being of the users.

The side effects of topical corticosteroids could broadly be classified into local and systemic side effects. Among local side effects, most common ones are epidermal effects (epidermal thinning), dermal effects (striae, easy rupture on trauma, blot hemorrhage, stellate scars, prematurely aged skin appearance), combined epidermal and dermal effects (atrophy, telangiectasia, striae, purpura, stellate pseudoscars, ulceration, easy bruising), vascular effects (fixed vasodilatation, rebound phenomenon, perioral dermatitis, rosacea, facial erythema), ocular effects (glaucoma/cataract, decreased healing of traumatic ulcers, exacerbation of hepatic ulcers, increased susceptibility to bacterial and fungal infections, blindness), contact allergy, infections (exacerbation or increased susceptibility, crusted scabies, granuloma gluteale infantum, genital ulceration, masking of microbial infections like tinea incognito and tinea pseudoimbricata), effect on hair (hypertrichosis, lanugo hair and alopecia), vehicle related effects (stinging, irritation, folliculitis, miliaria, contact urticaria, exacerbation of acne and rosacea, allergic contact dermatitis), pharmacologic effects (tachyphlaxis, steroid rebound, steroid addiction) and others (acneiform eruption, delayed wound healing, reactivation of Kaposi's sarcoma, hypopigmentation, hyperpigmentation, rebound flare/psoriasis and millia).[3,4]

Unfortunately, the general public as well as a number of paramedical personnel who have witnessed only one side of the coin do not understand the adverse effects of topical corticosteroids if not used rationally. As a result, they tend to recommend their use to their friends and acquaintances for almost all kinds of dermatological conditions without understanding the specific needs of the patient or underlying dermatological condition. This unabated use of corticosteroids results in manifestation of serious dermatological conditions that become difficult to treat. Self-prescription and prescription by non-dermatologists is one of the most serious issues affecting rampant use of topical corticosteroids. Moreover, it has also been seen that even those patients who get these drugs prescribed for a particular condition often tend to use them for other conditions.

Though, a number of studies have addressed the problem of side effects associated with topical corticosteroid use yet they are related with a generalized study of systemic and local side effects associated with topical corticosteroids and as such there is lack of literature regarding the studies focused particularly on the study of microbial infections as the side effects of topical corticosteroid use.[5-15] Hence, the present study was undertaken to study the clinical aspects of the use of topical corticosteroids by the general physicians, pharmacists, quacks, friends, media and relatives leading to adverse effects such as tinea incognito, steroid acne, hyper/hypopigmentation, hypertrichosis, telangiectasia, etc. and to know the source of information for the use of topical corticosteroids leading to its abuse.

METHODS

A cross-sectional observational study was carried out on cutaneous adverse effects of TC attending the dermatology outpatient department of Era's Lucknow medical college and hospital between December 2018 and November 2020.

Inclusion criteria

Patients of age between 1 month to 75 years and both sexes. Patients who have applied TC for more than 1 month.

Exclusion criteria

Patients who had cutaneous adverse effects suggestive of TC without details of agents.

Patients fulfilling the study criteria were registered. In all patients a detailed history taking that included enquiry regarding brand name of the topical corticosteroid used by them, indications for use, type of corticosteroid, dose, source of knowledge/referral for the topical corticosteroid use, duration of use and site of application. Photographic documentation of the patients were also done.

Presenting complaints were noted. Detailed history was taken and cutaneous examination was performed. A total of 15 conditions were evaluated:

Tinea incognito, steroid acne, telangiectasia, cutaneous atrophy, hypo/hyperpigmentation, hypertrichosis, pyoderma, perioral dermatitis, striae, photosensitivity, granuloma, tachyphylaxis, erythema, ulceration.

Data collected was recorded on a structured proforma which was ultimately fed into computer using MS-Excel 2013 software. It was subsequently subjected to statistical analysis.

Data analysis

Data was analyzed using Statistical package for social sciences (SPSS), version 21.0. Chi-square test, ANOVA and Independent samples 't'-tests were used to compare

the data. 'p' value less than 0.05 was considered as significant. Multivariate analysis was done using binary logistic regression.

RESULTS

Present study explored the topical corticosteroid, their uses pattern and its associated adverse effects in a total of 380 patients (aged 3 to 71 years; mean age 27.33±11.78 years; 52.9% males) who reported topical corticosteroid use without a prescription from a trained dermatologist for various indications.

Following were the key findings of the study:

Itching (72.4%), burning skin (64.5%) and skin color change (62.4%) were the three most common presenting complaints. As many as 12 brands were the major brands being used (single brand used by 10 or more patients) and together comprised 65.0% of study population (n=247). The three major brands used were Betnovate (n=89; 23.4%), Panderm (n=24; 6.3%) and Lobate (n=19; 5.0%) respectively.

Table 1: Age profile of topical corticosteroid users.

S. no.	Age group (years)	No. of cases (n=380)	Percentage
1.	≤10	10	2.6
2.	11-20	111	29.2
3.	21-30	145	38.2
4.	31-40	71	18.7
5.	41-50	24	6.3
6.	51-60	12	3.2
7.	>60	7	1.8
Mean Age±SD (Range) in years		27.33±11.78 (3-71)	

Dermatophytoses (n=253; 66.6%), acne (n=66; 17.4%) and skin lightening (n=24; 6.3%) were the three most common indications for use of topical corticosteroids. Majority of patients were using clobetasol (62.1%) followed by those using betamethasone (25%), mometasone (6.8%), combination of clobetasone + betamethasone (3.9%) and combination of betamethasone + mometasone (1.1%) respectively. Most of the patients (94.2%) were using high potency of drugs.

The source of knowledge were pharmacists (44.5%), quacks (21.8%), friends (12.6%), relatives (11.6%), media (9.7%) and general practitioners (3.4%) respectively. Majority of patients were using the topical corticosteroids for 1-6 months (72.1%) followed by those using it for 7-11 months (14.2%), 1 year (7.4%), <1 month (5.3%) and >1 year (1.1%) respectively.

Maximum number of patients (n=145; 38.2%) applied the topical corticosteroids at face followed by those applying it at multiple sites (n=106; 27.9%), groin/buttocks (n=74; 19.5%), chest/trunk (n=24; 6.3%), abdomen (n=12; 3.2%), upper extremities (n=9; 2.4%), lower extremities and whole body (n=5; 1.3% each). All the patients showed aggravation of primary indications for use.

Table 2: Distribution of cases according to indication for use.

S. no.	Indication	No. of cases (n=380)	Percentage
1.	**Dermatophytoses**	253	66.6
2.	**Acne**	66	17.4
3.	Melasma	19	5.0
4.	Skin lightening	24	6.3
5.	Undiagnosed dermatoses	5	1.3
6.	General	13	3.4

Table 3: Distribution of cases according to type of corticosteroid used.

S. no.	Type	No. of cases (n=380)	Percentage
1.	Clobetasol	236	62.1
2.	Betamethasone	95	25.0
3.	Mometasone	26	6.8
4.	Clobetasone + Betamethasone	15	3.9
5.	Betamethasone + Mometasone	4	1.1
6.	Others (1 each Halobetasol, Flucinolone, Flucinolone+Beta methasone and Clobetasone+Terbi nafine)	4	1.1

Table 4: Distribution of Cases according to source of knowledge*.

S. no.	Source	No. of cases (n=380)	Percentage
1.	General practitioner	13	3.4
2.	Quacks	83	21.8
3.	Pharmacist	169	44.5
4.	Friends	48	12.6
5.	Relatives	44	11.6
6.	Media	37	9.7

*Multiple sources possible

The patients were assessed for as many as 15 cutaneous manifestations. A total of 13 were observed as cutaneous adverse effects of topical corticosteroids (except granuloma and tachyphylaxis). Tinea incognito (n=244; 64.2%) was the most common adverse effect (Figure 3) followed by steroid acne (n=67; 17.6%) (Figure 4), hypo/

hyperpigmentation (n=44; 11.6%), photosensitivity (n=35; 9.2%), erythema (n=29;7.6%), hypertrichosis (n=25; 6.6%) (Figure 5) ulceration (n=15; 3.9%), striae (n=14; 3.7%), Telangiectasia (n=13; 3.4%), cutaneous atrophy (n=9; 2.4%) (Figure 5), pyoderma (n=4; 1.1%), perioral dermatitis and steroid induced ulcers (n=3; 0.8% each) respectively.

Most of the patients (n=269; 70.8%) had only one adverse effect. There were 111 (29.8%) patients with multiple side effects. Tinea incognito showed a significant association with males. Betnovate, Lobate and Quadiderm were most commonly used. Among indications for use, it showed a significant positive association with dermatophytoses only. Clobetasol use was also positively associated with tinea incognito. High potency drug use, general practitioner as source of knowledge, upto 6 months of use, application at sites other than face, groins/buttocks and multiple site usage were also significantly associated with Tinea incognito.

Presence of multiple adverse effects was significantly associated with females like, burning skin, pustular lesions and skin color change as the presenting complaints. Low potency drug use were more common along with prolonged use and application at face.

The present study was carried out with an aim to study the clinical aspect of topical corticosteroids use and the adverse effects associated with it. So, a total of 380 patients with a history of topical corticosteroid use were enrolled in the study as shown in (Table 1).

Table 5: Comparison of profile of patients affected by multiple adverse effects with those affected with single adverse effect.

Characteristic	Multiple adverse effects (n=111)		Single adverse effect (n=269)		Statistical significance	
Mean Age±SD (Years)	25.52±8.84		28.08±12.74		't'=1.930; p=0.054	
	N	**%**	**N**	**%**	**χ^2**	**P value**
Sex						
Male	41	36.9	160	59.5	16.03	<0.001
Female	70	63.1	109	40.5		
Burning skin	84	75.7	161	59.9	8.59	0.003
Itching	51	45.9	224	83.3	54.75	<0.001
Pus	26	23.4	28	10.4	10.92	0.001
Abnormal growth/skin eruption	32	28.8	104	38.7	3.306	0.069
Skin color change	79	71.2	158	58.7	5.177	0.023
Skin texture change	40	36	73	27.1	2.978	0.084
Skin consistency change	26	23.4	62	23	0.006	0.937
Brand of corticosteroid						
Betnovate	33	29.7	56	20.8	3.479	0.062
Panderm	6	5.4	18	6.7	0.22	0.639
Lobate	3	2.7	16	5.9	1.742	0.187
Quadiderm	2	1.8	15	5.6	2.619	0.106
Dermikem	2	1.8	15	5.6	2.619	0.106
Clobetasone GM	1	0.9	14	5.2	3.838	0.05
Others	64	57.7	135	50.2	1.759	0.185
Indication for use						
Dermatophytoses	40	38.7	213	78.1	23.7	<0.001
Acne	35	31.5	31	11.5	21.92	<0.001
Melasma	14	12.6	5	1.9	19.13	<0.001
Skin lightening	14	12.6	10	3.7	10.51	0.001
Undiagnosed dermatoses	2	1.8	3	1.1	0.285	0.593
General	6	5.4	7	2.6	1.869	0.172
Type of corticosteroid						
Clobetasol	48	43.2	188	69.9	48.17	<0.001
Betamethasone	34	30.6	61	22.7	17.65	<0.001
Mometasone	18	16.2	8	3	21.62	<0.001
Clobetasone + Betamethasone	7	6.3	8	3	2.301	0.129
Betamethasone + Mometasone	2	1.8	2	0.7	0.845	0.358
Others	2	1.8	2	0.7	0.845	0.358

Continued.

Characteristic	Multiple adverse effects (n=111)		Single adverse effect (n=269)		Statistical significance	
High potency dose	95	85.6	263	97.8	21.39	<0.001
Source of knowledge						
General practitioner	5	4.5	8	3	0.557	0.455
Quacks	30	27	53	19.7	2.469	0.116
Pharmacist	47	42.3	122	45.4	0.288	0.591
Friends	16	14.4	32	11.9	0.452	0.502
Relatives	14	12.6	30	11.2	0.164	0.686
Media	7	6.3	30	11.2	2.1	0.147
Duration of use						
≤ 1 month	10	9	10	3.7	9.473	0.05
1-6 months	69	62.2	205	76.2		
7-11 months	19	17.1	35	13		
1 Year	11	9.9	17	6.3		
>1 Year	2	1.8	2	0.7		
Site of application						
Face	72	64.9	73	27.1	47.4	<0.001
Upper extremities	2	1.8	7	2.6	0.218	0.641
Abdomen	2	1.8	10	3.7	0.943	0.332
Groin/Buttocks	11	9.9	63	23.4	9.146	0.002
Chest/Trunk	1	0.9	23	8.6	7.77	0.005
Lower extremities	3	2.7	2	0.7	2.323	0.127
Whole body	0	0	5	1.9	2.091	0.148
Multiple sites	20	18	86	32	7.605	0.006

Age of patients enrolled in the study ranged from 3 to 71 years. Majority of patients were between 11 and 30 years of age (n=256; 67.4%). Maximum patients were aged 21-30 years (38.2%) followed by those aged 11-20 years (29.2%), 31-40 years (18.7%), 41-50 years (6.3%), 51-60 years (3.2%), <10 years (2.6%) and >60 years (1.8%) respectively. Mean age of patients was 27.33±11.78 years.

Gender wise distribution of cases in our study shows that majority of cases were males 201 (52.9%), whereas there were 179 females (47.1%). Sex-ratio of the study was 1.12.

(Figure 1) shows the various brands of topical steroid used. Betnovate was the most common steroid brand used (23.4%), followed by panderm (6.3%) and lobate (5.0%) respectively.

Dermatophytoses (n=253; 66.6%) was the most common indication as shown in (Table 2), followed by Acne (n=66; 17.4%), skin lightening (n=24; 6.3%), melasma (n=19; 5.0%) and undiagnosed dermatoses (n=5; 1.3%) respectively. A total of 13 (3.4%) patients used it for general purposes without any specific indications.

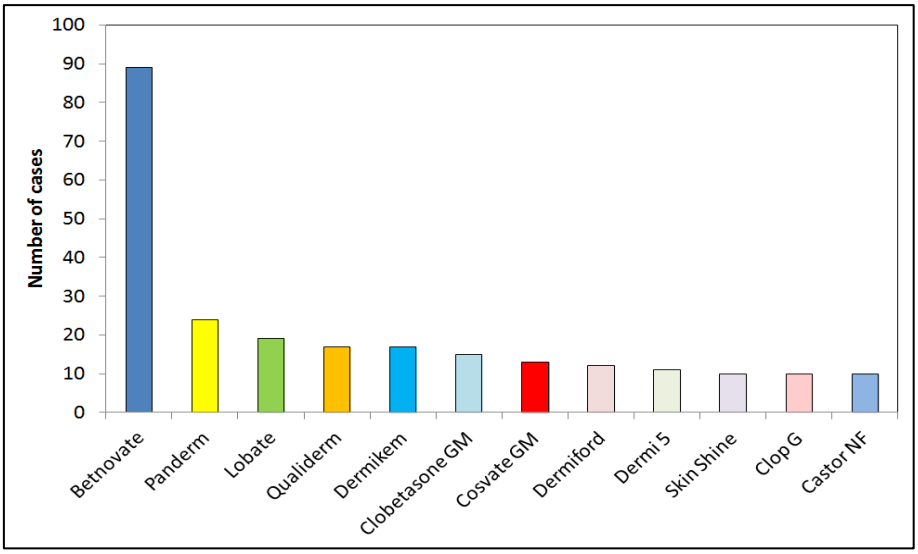

Figure 1: Distribution of cases according to brand name of topical corticosteroid being used (Single brand – represents only those brands used by 10 or more patients).

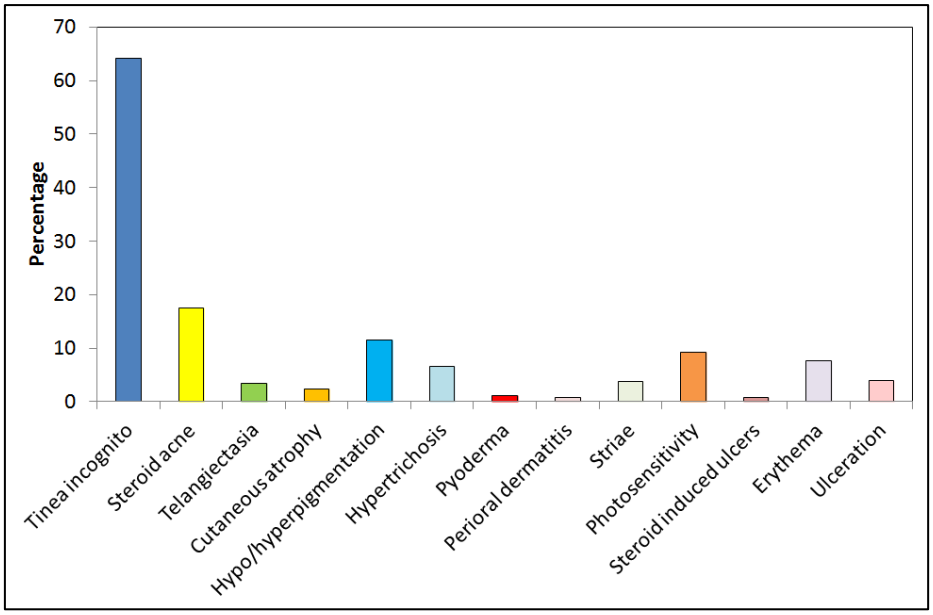

Figure 2: Distribution of cases according to adverse/side effects.

(Table 3) shows that the majority of patients were using clobetasol (62.1%) followed by those using betamethasone (25%), mometasone (6.8%), combination of clobetasone + betamethasone (3.9%) and combination of betamethasone + mometasone (1.1%) respectively.

There were 4 (1.1%) patients using other mono or combination steroids such as halobetasol, flucinolone, flucinolone+betamethasone and clobetasone+terbinafine respectively.

(Table 4) shows the distribution of cases according to source of knowledge. Maximum number of patients (44.5%) had knowledge of the topical steroid from the pharmacists followed by quacks (21.8%), friends (12.6%), relatives (11.6%), media (9.7%) and general practitioners (3.4%) respectively.

(Figure 2) shows the distribution of cases according to the adverse effects. Tinea incognito was the most common side effect seen (64.2%), followed by steroid acne (17.6%) and hypo/hyperpigmentation (11.6%) respectively.

Figure 3: Tinea incognito.

Figure 4: Steroid acne.

Figure 5: Hypertrichosis with cutaneous atrophy.

A total of 13 cutaneous manifestations were observed as cutaneous adverse effects of topical corticosteroids. Tinea incognito (n=244; 64.2%) was the most common adverse effect followed by steroid acne (n=67; 17.6%), hypo/ hyperpigmentation (n=44; 11.6%), photosensitivity (n=35; 9.2%), erythema (n=29;7.6%), hypertrichosis (n=25; 6.6%), ulceration (n=15; 3.9%), striae (n=14; 3.7%), Telangiectasia (n=13; 3.4%), cutaneous atrophy (n=9;

2.4%), pyoderma (n=4; 1.1%), perioral dermatitis and steroid induced ulcers (n=3; 0.8% each) respectively.

Majority of patients were using the topical corticosteroids for 1-6 months (72.1%), followed by those using it for 7-11 months (14.2%), 1 year (7.4%), <1 month (5.3%) and >1 year (1.1%) respectively.

High potency topical corticosteroid use was associated with single rather than multiple adverse effects (p<0.001). Source of knowledge did not have influence on the frequency of adverse effects. Shorter duration (<1 month) and >6 months use were significantly associated with higher frequency of multiple adverse effects as compared to those using it for 1-6 months duration (p=0.050). Application on the face was associated with higher frequency of multiple adverse effects however application at groin/buttocks, chest/trunk and multiple sites were associated with higher frequency of single adverse effect than multiple adverse effects (p<0.05) (Table 5)

DISCUSSION

Topical corticosteroids are often considered to be wonder or miracle drugs that are used for treatment of a number of dermatological conditions. They are known to provide a fast relief from symptoms owing to their anti-inflammatory, anti-mitotic, and immunosuppressive effects.[16,17] Only a trained dermatologist can assess the optimum dose and duration of use of a topical.

Age of the patients ranged from 3 to 71 years. Majority of patients were aged between 11-30 years (67.4%). Mean age of patients was 27.33±11.78 years and majority of patients were males (52.9%). As far as age is concerned, most of the studies from India as well as abroad show a dominance of younger patients. Al-Dhalimi and Aljawhiry reported almost half (49.3%) of the patients in age group 10-19 years, however, they reported a dominance of females (67.8%).[18] Saraswat et al in their study reported the mean age of patients as 30.1 years (range 0.5-79 years) and a dominance of females (77.7%).[7]

Among different Indian studies, Betnovate seems to be the most popular commercial topical corticosteroid brand. Chauhan et al in their study similar to present study reported Betnovate to be the most popular brand used by 34.2% of patients followed by Panderm/Panderm plus by 24.5% patients. In a number of other studies too Betnovate and Panderm were reported to be amongst the top three brands of topical corticosteroids used by patients.[21-25]

Among the indications for use, we found dermatophytoses (n=253; 66.6%), acne (n=66; 17.4%) and skin lightening (n=24; 6.3%) as the three most common indications for use of topical corticosteroids. Compared to present study, Al-Dhalimi and Aljawahiry in a study evaluating the dermatological problems resulting from topical corticosteroid abuse in an Iraqi population found lightening the skin as the most common indication for use (65.7%) followed by mild acne (16.4%), facial dryness (12.8%) and napkin dermatitis (9.3%).[18] Saraswat et al, in their study reported fairness/general purpose cream or aftershave as the most common indication for use (29%) followed by acne (24%).[7]

In respect to formulation of the corticosteroids, majority of patients in our study were using clobetasol (62.1%) followed by those using betamethasone (25%), mometasone (6.8%), combination of clobetasone + betamethasone (3.9%) and combination of betamethasone + mometasone (1.1%) respectively. Similar to present study, Al-Dhalimi and Aljawahiry also reported clobetasole to be the most common formulation (42.1%) followed by Betamethasone (26.4%). Chauhan et al in their study reported betamethasone to be the most common steroid (38.82%) which was closely followed by clobetasole (38.20%). In their study, combination steroids were used by 12.1% patients.[18,21]

Our study shows, most of the patients were using highly potent drugs (94.2%). Abuse of corticosteroids of high potency has previously been reported in a number of studies. Dey in their study reported use of potent and very potent preparations by as many as 88.9% of patients. However, Swaroop et al reported the use of mid-potent drugs in a majority of cases.[7,18-24]

Our study revealed, the source of knowledge were pharmacists (44.5%), quacks (21.8%), friends (12.6%), relatives (11.6%), media (9.7%) and general practitioners (3.4%) respectively. Jain et al reported friends and relatives to be the source of knowledge in as high as 57.9% of cases and reported pharmacists to be the source of knowledge in only 17.7% cases. They did not report quacks to be the source of knowledge. Meena et al similar to our study identified pharmacists to be the most common source of knowledge (42.5%) followed by general practitioner (25.8%), relatives (13.3%) and self use inspired by media ads (9.9%).[15,23]

In present study, majority of patients were using the topical corticosteroids for 1-6 months (72.1%) followed by those using it for 7-11 months (14.2%), 1 year (7.4%), <1 month (5.3%) and >1 year (1.1%) respectively. In some studies, though the maximum duration of use has been cited to be as long as 5 years or longer, however, most of the cases have been reported to have <6 months of topical corticosteroid use history. Al- Dhalimi and Aljawahiry in their study reported the range of use from 1-60 months and mean duration of use as 5.5 months. Nyati et al also reported <6 months usage in 69.9% of their cases. In another study, Nagesh et al reported majority of their patients with duration of use varying from 1 week to 3 months (62.5%).[18-25]

Al-Dhalini and Aljawahiry highlighted as many as 10 cutaneous conditions as the adverse side effects of topical corticosteroid misuse. Dey in their study reported eight

such conditions. The number of such adverse effects was reported to be 13 by Thomas et al too.[18-20]

In present study, Tinea incognito (n=244; 64.2%) was the most common adverse effect followed by steroid acne (n=67; 17.6%), hypo/ hyperpigmentation (n=44; 11.6%), photosensitivity (n=35; 9.2%), erythema (n=29;7.6%), hypertrichosis (n=25; 6.6%), ulceration (n=15; 3.9%), striae (n=14; 3.7%), Telangiectasia (n=13; 3.4%), cutaneous atrophy (n=9; 2.4%), pyoderma (n=4; 1.1%), perioral dermatitis and steroid induced ulcers (n=3; 0.8% each) respectively. The number of cutaneous side effects and their proportion has shown a considerable variability among different studies. Al-Dhalini and Aljawahiry showed facial acne (36.4%) to be the most common adverse effect followed by plethoric face and telangiectasia (22.1%), facial hypertrichosis (19.2%) and cutaneous atrophy and stretch marks (17.1% each), and hyperpigmentation (14.3%), rest of the patients had pyoderma (8.6%), tinea incognito (2.9%) and infantile gluteal granuloma (1.4%). Dey in their study reported facial acne (37.99%), plethoric face and telangiectasia (18.99%), facial hypertrichosis (18.46%), hyper-hypopigmentation (15.83%) and cutaneous atrophy (10.02%) as the most common side effect.[18,19] Similar to present study, tinea incognito was reported to be the most common side effect by Meena et al who observed it to be an adverse effect of topical corticosteroid abuse in almost half (49.5%) of their patients followed by acne (30.3%), cutaneous atrophy (13.0%) and rosacea (11.1%).[21]

CONCLUSION

The findings of present study showed that topical corticosteroid use without authorized prescription can result in adverse effects even on a short-term use. Hence, there is need to rationalize their use. Over the counter availability of these drugs is one of the most dominant reasons for their unwarranted and irrational use. To stop this, these drugs should be scheduled in order to check their over-the-counter availability. Moreover, prescription of these drugs should be done only by a trained dermatologist and prescription provided by a pharmacologist/drug store owner or a quack should be made a cognizable offence. Mass awareness campaigns to restrict use of these drugs should also be made by educating the masses regarding their associated adverse effects.

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