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Pattern of Inappropriate use of Topical Corticosteroid and Cutaneous Adverse Effects at a Tertiary Level Hospital in Kathmandu

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Abstract

Introduction: Topical corticosteroids are anti-inflammatory, immunosuppressive, and anti-proliferative drugs with profound efficacy. As it provides rapid relief, it is used for a wide spectrum of dermatological conditions. Rampant use of topical corticosteroids due to their easy availability gives rise to difficult-to-treat cutaneous adverse effects.

Objectives: To determine the pattern of inappropriate use of topical corticosteroids and cutaneous adverse effects.

Materials and Methods: This was a hospital based cross-sectional prospective study conducted among 84 participants in the Department of Dermatology, Tribhuvan University Teaching Hospital, Kathmandu, from October 2020 to September 2021. Ethical clearance was obtained from the Institutional Review Committee. The participants fulfilling the inclusion criteria were included in the study.

Results: Out of 84 cases, 59.5% were females and 40.5% were males. The mean age of participants was 30.4±9.1years. Dermatophytoses (71.4%) were the most common cause of inappropriate use of topical corticosteroids. The most common adverse effect was tinea incognito (23.8%). The most potent class (60%) of topical corticosteroids were misused. Most of the participants used topical steroids either for the duration of 1 week to 1 month (23.8%) or for more than 12 months (23.8%).

Conclusion: Inappropriate topical corticosteroid use is a common problem due to its easy accessibility, resulting in several difficult-to-treat cutaneous adverse effects. So, awareness-raising activities regarding the proper use of corticosteroids have to be conducted.

Keywords: Atrophy; Corticosteroids; Tinea

Introduction

Topical corticosteroid (TCS) misuse is defined as inappropriate use of TCS in terms of its potency, formulation, frequency, duration, and indications for particular dermatological manifestations.[1] TCS are available either as single-ingredient steroid products or in combination with antibiotics or antifungals.[2] TCS are classified according to the British Association of Dermatology into four classes based on their potency: mild, moderate, potent, and very potent.[3] The appropriate usage of TCS depends upon the nature of the disease, the patient's age, its severity and the location of the disease. [4]

Due to public unawareness and improper law implementation, TCS are being used indiscriminately in skin conditions such as acne, for lightening skin color, and for fungal, viral, bacterial, or parasitic cutaneous infections.[2] Prolonged duration of TCS application results in reversible and/or irreversible cutaneous adverse effects such as tinea incognito, atrophic

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changes, acneiform eruption, steroid-induced rosacea, hypertrichosis, pyoderma, photosensitivity, contact allergy, periorificial dermatitis, etc. [5,6] In melasma, cutaneous adverse effects arise when the triple combination (mometasone furoate 0.1%, tretinoin 0.025%, and hydroquinone 2%) is used beyond the recommended duration of 4-8 weeks.[7]

In Nepal, there is a paucity of studies regarding the inappropriate use of TCS. This study aims to determine the pattern of inappropriate topical corticosteroid use and the incidence of different cutaneous adverse effects, as well as to evaluate the class of topical steroid and its duration of use. These adverse effects result in economic drain, cosmetic disfigurement, and psychological distress for patients. So, this study emphasizes the urgency of implementing strict laws regarding the judicious use of topical steroids.

Materials and Methods

The following is a hospital-based descriptive cross-sectional study conducted among 84 patients at the outpatient Department of Dermatology and Venereology of Tribhuvan University Teaching Hospital, Kathmandu, from October 2020 to September 2021 (12 months). The study was conducted after obtaining ethical approval from the Institutional Review Committee of the Institute of Medicine.

Inclusion criteria included participants of all ages presenting with current use of a topical steroid on different body parts where it is contraindicated such as acne, lightening of skin color or fungal, bacterial, viral, and parasitic cutaneous infections. Participants applying triple combination in melasma for more than 12 weeks were included. Exclusion criteria were participants on oral corticosteroids or with comorbidities that could cause changes similar to topical steroid side-effects.

Written, informed consent was obtained from the participants. The generic name of TCS used, duration of use, and initial cutaneous disease for which TCS was applied were recorded. On examination, the current cutaneous adverse effect due to TCS use was observed and noted. Topical corticosteroids used were classified into different classes as per the British Association of Dermatologists classification. [6] Data were entered in SPSS version 26 and analyzed for descriptive statistics.

Results

Out of the 84 participants included in the study, 40.5% were male (n = 34) and 59.5% were female (n = 50). The age of participants ranged from 2 to 57 years, with the mean age being 30.4 $\pm$ 9.1 years. The majority of participants, 77% (n = 65) used TCS as dispensed by pharmacists. Most of the participants used topical steroids either for the duration of 1 week to 1 month or for more than 12 months. (Table 1)

Table 1: Duration of topical corticosteroid use

Duration of use	Number of participants (%)
1week- 1month	20 (23.8%)
1-3months	16 (19%)
3-6months	14 (16.7%)
6-12months	14 (16.7%)
More than 12months	20 (23.8%)

Most frequently, TCS was inappropriately used in dermatophytoses, 71.4% (n = 59) particularly tinea corporis, 22.6% (n = 19) followed by melasma , 22.6% (n = 19). The least common indications for which TCS were misused included lightening of skin pigmentation, bacterial scalp folliculitis, herpes simplex infection, tinea pedis, combined melasma with acne, and tinea on multiple body parts, accounting for 1.2% each (n = 1) . (Table 2)

Table 2 : Cutaneous disease for inappropriate topical corticosteroid use

Cutaneous diagnosis	Number of participants (%) n=84
Tinea corporis	19 (22.6%)
Melasma	19 (22.6%)
Tinea cruris	13 (15.5%)
Tinea faciei	11 (13.1%)
Tinea corporis + Tinea cruris	8 (9.5%)
Tinea corporis + Tinea faciei	4 (4.8%)
Acne	2 (2.4%)
Others	8 (9.5%)

Twelve cutaneous adverse effects were observed in the study population. A single cutaneous adverse effect was seen in 77.3% (n = 65) participants, and 22.6% (n = 19) had multiple coexisting cutaneous manifestations. Tinea incognito was the most common adverse effect seen in 24.3% (n = 25). On the face, the most common finding was an acneiform eruption seen in 14.6% (n=15). Other less common cutaneous adverse effects seen in 1 participant each were exacerbation of pre-existing scalp folliculitis, periorificial dermatitis, and steroid induced pyoderma. The most common coexisting cutaneous finding was tinea incognito with striae in 5 participants (6%) followed by telangiectasia with an acneiform eruption on the face in 5 participants (6%). (Table 3)

Table 3 : Cutaneous adverse effects due to inappropriate use of topical corticosteroids

Cutaneous Diagnoses	Frequencies N=103 (%)
Tinea incognito	25 (24.3%)
Steroid modified tinea	18 (17.5%)
Striae	11 (10.6%)
Acneiform eruption	15 (14.5%)
Telangiectasia	10 (9.7%)
Steroid induced erythema	9 (8.7%)
Steroid induced hypertrichosis	6 (5.8%)
Steroid induced hypopigmentation	4 (3.9%)
Exacerbation of pre-existing acne	2 (1.9%)
Others	3 (2.9%)

In this study, the most frequently used TCS were of the potent class, accounting for 60% (n=50). Clobetasol propionate 0.05% was the most frequently used TCS by 38.1% of the participants (n = 32). (Table 4)

Table 4: Inappropriate use of TCS by potency

Potency of steroid	Generic Name	Frequency (percentage)
Mild n=2 (3%)	Hydrocortisone 1%	2 (2.4%)
Potent n=50 (60%)	Mometasone Furoate 0.1%	23 (27.4%)
	Beclometasone dipropionate 0.025%	23 (27.4%)
	Betamethasone Valerate 0.1%	4 (4.8%)
Very potent n= 32 (38%)	Clobetasol Propionate 0.05%	32 (38.1%)

In dermatophytoses, clobetasol propionate 0.05% was the most used TCS in 51.7% (n = 31). In melasma and skin lightening, mometasone furoate 0.1% was the most used TCS in 100% (n = 19). (Table 5)

Table 5: Cutaneous disease and frequency of topical corticosteroid use

Topical Corticosteroid used	Cutaneous Diseases					
	Dermatophytoses (71.4%)	Melasma + skin lightening (22.6%)	Acne (2.4%)	Melasma+Acne (1.2%)	Scalp folliculitis (1.2%)	Herpes Simplex Infection (1.2%)
Clobetasol Propionate 0.05%	31 (51.7%)	0	1 (50%)	0	0	0
Beclometsone dipropionate 0.025%	21 (35%)	0	1 (50%)	0	1 (100%)	0
Mometasone furoate 0.1%	3 (5%)	19 (100%)	0	1 (100%)	0	0
Betamethasone Valerate 0.1%	3 (5%)	0	0	0	0	1 (100%)
Hydrocortisone 1%	2 (3.3%)	0	0	0	0	0

Discussion

Inappropriate use of TCS was found to be a major issue amongst the participants presenting to the dermatology outpatient department. Out of the 84 participants enrolled in our study, 50 (59.5%) were female and 34 (40.5%) were male. It was similar to the study done by Mahar et al., in which there were 250 (60%) female and 100 (40%) male participants.[1] The number of female participants was found to be higher than male participants in both the studies.

In our study, the mean age was found to be 30.4 years (SD of 9.1), which is similar to the study done by Shrestha et al., where the mean age of participants was 29.09 years (SD of 12.512).[8] The similarity in mean age in both the studies could be attributed to young patients being more concerned about their skin health and timely healthcare-seeking behavior.

TCS was most frequently used for dermatophytoses in 59 cases (71.4%), predominantly in tinea corporis (n = 19) (22.6%), followed by melasma and skin lightening in 19 cases (22.6%). In a study done by Shrestha et al., TCS was inappropriately used mostly for dermatophytoses (69.2%) followed by melasma (18.7%) which was similar to our finding.[8] Since dermatophytoses is a common skin manifestation due to high heat and humidity, it can cause troublesome itching. Participants first rely on topical steroids for rapid relief. Also, melasma is another common skin manifestation due to direct sunexposure and hormonal changes during pregnancy. Since it is cosmetically troublesome, especially for the females, they rely on TCS as a single ingredient or a triple combination.

The commonest cutaneous adverse effect was tinea incognito, which was observed in 25 participants (24.27%). On the face, the commonest adverse effect was acneiform eruption , occurring in 15 participants (14.56%) ,followed by telangiectasia in 10 cases (9.7%). A study done by Meena et al., also showed common side effects like tinea incognito in 49.46%, followed by facial acne in 30.27%, and telangiectasia in 8.38%. Due to reluctance of people to visit hospitals, they used TCS as dispensed by a pharmacist or as suggested by their friends until there were visible cutaneous adverse effects or worsening of the disease.

In our study, the most commonly applied TCS was clobetasol propionate 0.05%, by 38.1% of the participants. In a study done by Thomas et al., clobetasol propionate was used by 58.2% of the participants. Clobetasol propionate 0.05%, being a very potent TCS, helps in rapid clearance of dermatophytoses, though temporarily. Hence, it is the most frequently used TCS in both studies.

In this study, the majority of participants (59.5%) used steroids for a duration of less than or equal to 6 months. In a study conducted by Thomas et al., topical steroids were used for less than 6 months by 63% of the participants.[2] Since TCS provides a rapid initial symptomatic improvement in dermatophytoses and melasma, participants discontinue the use of TCS after a short period. Immediately after TCS cessation, there is a recurrence of initial symptoms or the development of cutaneous adverse effects. This compels people to visit dermatologists within a short period of time.

In this study, 77% of the participants used steroid-containing topical medications as dispensed by pharmacists. In the study by Dey et al., 35.3% of the participants used steroid-based preparations provided by pharmacists. [5] In our part of the world, people are less aware of the appropriate use of TCS, which has to be used only after consulting dermatologists.

Conclusion

Inappropriate use of TCS is a common problem in dermatology. Easy accessibility of TCS is the main contributory factor. This results in several difficult-to-treat cutaneous adverse effects, posing a challenge for dermatologists. So, to alleviate this issue, the general public must be made aware of the proper use of TCS. Strict rules and regulations to dispense the topical steroids only after a prescription from doctor have to be implemented.

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References

1. 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 Diagnostic Res. 2016;10(12):16–20.
2. Thomas M, Wong CC, Anderson P, Grills N. Magnitude, characteristics and consequences of topical steroid misuse in rural North India: An observational study among dermatology outpatients. BMJ Open. 2020;10(5):1–8.
3. British Association Of Dermatologists. The British Association of Dermatologists' information on topical corticosteroids – established and alternative proprietary names, potency, and discontinuation June 2015. London; 2015.
4. Varshney I, Suhail Amin S, Adil M, Mohtashim M, Bansal R, Qamar Khan H. Topical Corticosteroid Abuse-Risk Factors and Consequences. Indian J Clin Dermatology. 2019;02(03):72–7.
5. Dey V. Misuse of topical corticosteroids: A clinical study of adverse effects. Indian Dermatol Online J. 2014;5(4):436.
6. Hengge UR, Ruzicka T, Schwartz RA, Cork MJ. Adverse effects of topical glucocorticosteroids. J Am Acad Dermatol. 2006;54(1):1–15.
7. Majid I. Mometasone-based triple combination therapy in melasma: is it really safe? Indian J Dermatol. 2010;55(4):359–62. https://doi.org/10.4103/0019-5154.74545
8. Shrestha S, Joshi S, Bhandari S. Prevalence of misuse of topical corticosteroid among dermatology outpatients. J Nepal Med Assoc. 2020;58(231):834–8.
9. Meena S, Gupta LK, Khare AK, Balai M, Mittal A, Mehta S, et al. Topical Corticosteroids Abuse: A Clinical Study of Cutaneous Adverse Effects. Indian J Dermatol. 2017;62(6):675. https://doi.org/10.4103/ijd.IJD_110_17