ORIGINAL ARTICLE

Assessment of corticosteroid utilization pattern among dermatology outpatients in a tertiary care teaching hospital in Eastern India

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Abstract

Background: Owing to the rampant availability in the market, corticosteroids, the mainstay in the treatment of diverse dermatological conditions, is frequently used for their palliative effect leading to its misuse in medicine practice. This study aimed to monitor the utilization pattern of corticosteroids and to analyze the rationality of drug usage in a dermatology outpatient department setup. **Materials and Methods:** A cross-sectional observational study was conducted in which patients attending dermatology department, receiving corticosteroids in any form were included in the study. Demographic profile, clinical presentation, and undergoing treatment plan were recorded on a prestructured, customized data collection sheet. Trends in steroidal prescribing were duly analyzed. **Results:** A total of 328 prescriptions were analyzed during the entire study period. A number of drugs per prescription varied from 1 to 3 with an average of 2.01. Of 328 prescriptions analyzed, the most common indications requiring corticosteroid prescribing was eczema, followed by psoriasis, dermatitis, vitiligo, etc. Most of the corticosteroids prescribed were given topically (86.21%). Of the total topical corticosteroids prescribed, trend revealed that high potency corticosteroids were majorly prescribed (38%), followed by those of ultra-high potency (35%) and medium potency (19%). Most commonly prescribed steroids were clobetasol, followed by betamethasone dipropionate, mometasone, prednisolone, respectively. **Conclusion:** The misuse of topical corticosteroids has a huge impact on dermatological practices which needs multi-dimensional interventions, involving educational, lawful and managerial approaches to overcome it. Irrational prescribing of corticosteroids must thus be minimized which subsequently will avoid polypharmacy and related drug interactions.

Key words: Corticosteroids, dermatology, prescribing pattern

INTRODUCTION

Introduced in late 1950s, corticosteroids have revolutionized the practice of dermatology showing dramatic improvements in dermatological diseases and till now remains the largest and the mainstay in the management of various dermatological conditions such as eczema, psoriasis, vitiligo, lichen planus, atopic dermatitis, contact dermatitis, alopecia areata, discoid lupus erythematosus, and drug rash.[1] Since this group of drugs is readily and rampantly available in the market, it is frequently used for their palliative effect leading to its misuse in medicine practice.

It has been estimated that 50% or more medicine expenditure is being wasted through irrational prescribing, dispensing and patient use of medicine. Irrational polypharmacy paves path for adverse drug reactions (ADRs), which is reported to be as high as 28%. Studies were done in different areas of the world reveal different drug use patterns. Irrational overuse of medicines can stimulate inappropriate patient demand and lead to reduced access and attendance

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rates due to medicine stock outs and loss of patient confidence in health.[2]

Owing to such a rampant practice, it is imperative to monitor the rational use of this class of drug.[1] A proper intermittent and judicious monitoring is a prime requisite to minimize irrational practice of drug prescription, to analyze the rationality of every prescription, to offer suitable modifications in prescribing pattern to increase the therapeutic benefits and reduce adverse effects. Various adverse effects are seen with frequent and prolong use of corticosteroids which includes hypersensitivity, acne form eruptions, atrophy, telangiectasia, purpura, hypertrichosis, and tachyphylaxis with topical corticosteroids, hypertension, hyperglycemia, cushingoid features, cataract, glaucoma, hypothalamic-pituitary-adrenal (HPA) axis suppression, and immunosuppression with its systemic use. It is also dangerous for children as they are more vulnerable to topical corticosteroids because percutaneous absorption is more in children leading to systemic adverse effects. It is thus imperative for the dermatologists to have careful watch during corticosteroid prescription as too little steroid can lead to poor response or failure of treatment and too much leads to various adverse effects.

Thus, this study aimed to monitor the utilization pattern of corticosteroids intermittently and to analyze the rationality of drug usage in the outpatient department (OPD) of dermatology in a tertiary care teaching hospital in Eastern India.

MATERIALS AND METHODS

A cross-sectional observational study was conducted in the dermatology OPD of a tertiary care teaching hospital in eastern India. Permission of the Institutional Ethical Committee was obtained for conducting the study. Informed consent was taken from all participants before their inclusion into the study. The data of the patients attending the Dermatology OPD, during the study period October 1st, 2014, to March 31st, 2015, were included. The sampling frame was fixed as 10 prescriptions per day, 2 days a week (including one female and one male OPD) during the given sampling period. In the case of OPD holidays, the prescriptions of that day were assigned to the next working day. Patients of either sex attending dermatology department, receiving corticosteroids in any form were included in the study. Pregnant women, lactating mothers, immunocompromised patients, severely ill patients, cancer chemotherapy patients were excluded from the study.

Subjects and their accompanying family members were interviewed by a prestructured questionnaire, and past prescriptions and case notes, wherever available, were reviewed. Demographic profile, clinical presentation, and undergoing treatment plan were recorded on a prestructured, and customized data collection sheet. Trends in steroidal prescribing were duly analyzed. All decisions relating to the management of the patient including drugs and investigations were taken by the treating physician only. Investigator did not interfere in the management of the patient and only observed the proceedings. Data were coded, checked for completeness, and consistency. Then, the data were entered and analyzed. For descriptive statistics, results were expressed in terms of percentages and presented using tables according to the types of tool used. All statistical calculations were carried out with online Graph Pad Software.

RESULTS

A total of 328 prescriptions were analyzed during the entire study period. 175 prescriptions were found female (53.35%), while 153 prescriptions (47.81%) were found to be those of male.

The age group 30-39 years was accounted for the highest number of patients, i.e., 114 (34.75%) [Table 1].

A total number of corticosteroids in 328 prescriptions were found to be 660. Number of drugs per prescription varied from 1 to 3 with average of 2.01. Most of the prescription consists of minimum of 2 drugs (170 prescriptions, 51.82%) [Table 2].

Appropriateness and completeness of each prescription were assessed [Figure 1]. Important prescribing parameters such as route and frequency of administration, dosage and duration of therapy were checked. The majority of the prescriptions recorded these prescribing details.

Table 1: Age group distribution

Age group (years)	Male	Female	Total
<10	1	2	3
10-19	5	10	15
20-29	30	49	79
30-39	51	63	114
40-49	41	33	74
50-59	20	10	30
>60	5	8	14
Total	153	175	328

Table 2: Number of drugs prescribed per prescription

Drugs per prescriptions	Number of prescriptions
1	47
2	170
3	111

Of 328 prescriptions analyzed, the most common indications requiring corticosteroid prescribing was eczema (31.09%), followed by psoriasis (28.35%), dermatitis (14.63%), vitiligo (7.93%), etc. Corticosteroids were also prescribed for other indications such as Stevens-Johnson syndrome (SJS), erythema, pemphigus vulgaris, and xerosis [Table 3].

Most of the corticosteroids prescribed were given topically (86.21%). 8.64% of drugs prescribed were oral corticosteroids, while 5.15% were parenteral [Figure 2]. Of the total topical corticosteroids prescribed, trend revealed that high potency corticosteroids were majorly prescribed (38%), followed by those of ultra-high potency (35%) and medium potency (19%).

Out of 328 prescriptions encountered, 84 (25.61%) presented with fixed drug combinations. 58.33% of them contained combinations of corticosteroids and antibacterials, 34.52% had steroidal combinations with antifungals, and 7.14% were combined with other agents. Most commonly prescribed steroids were clobetasol, followed by betamethasone dipropionate, mometasone, prednisolone, respectively [Figure 3].

Only 1.36% of the drugs were found in generic form, while rest was prescribed in brand names.

39% of the corticosteroids prescribed were found included in National List of Essential Medicines (NLEM 2015).

Table 3: Indications requiring corticosteroid prescriptions

Descriptions	Frequency (%)
Eczema	102 (31.09)
Psoriasis	93 (28.35)
Dermatitis	48 (14.63)
Vitiligo	26 (7.93)
Lichen planus	13 (3.96)
Alopecia	10 (3.05)
Urticaria	7 (2.13)
Insect bite eruptions	6 (1.83)
Prurigo simplex	4 (1.21)
Melasma	3 (0.91)
Tinea corporis	1 (0.3)
Others	15 (4.57)

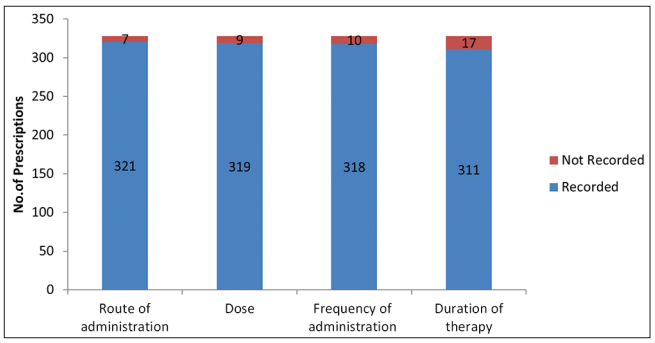

Figure 1: Appropriateness of prescriptions

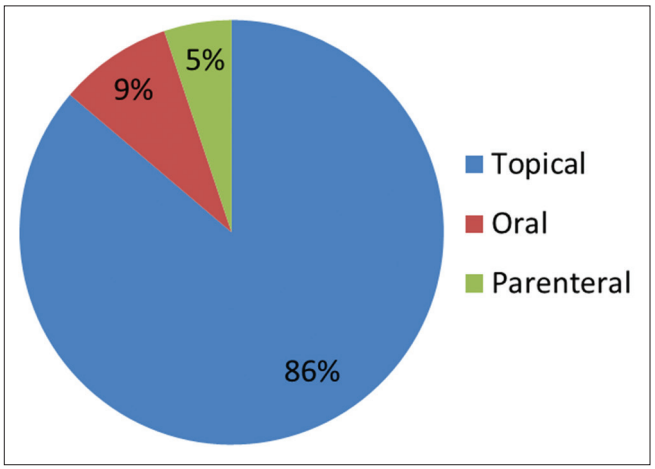

Figure 2: Routes of administrations of prescribed corticosteroids

DISCUSSION

Corticosteroids are today among the most commonly prescribed medications in dermatology clinics due to its wide indications and high potency. The clinical effects are mediated by their anti-inflammatory, vasoconstrictive, antiproliferative, and immunosuppressive properties. As potent topical corticosteroids are easily available over-the-counter at a low price, misuse has been noticed among the general population, producing many adverse effects, thus rational practice of corticosteroid should be practiced to minimize the systemic and cutaneous side effects thus ensuring increased therapeutic benefits. This study was undertaken to assess the corticosteroid utilization pattern in a dermatology outpatient setting in a tertiary care teaching hospital.

In this study, the demographic details pooled from a total population of 328 patients on corticosteroid prescriptions, revealed that the percentage of females were more than males which are quite in accordance with other studies.[3,4]

The irrational use of drugs is a common occurrence throughout the world. Average number of drugs per prescription is an important index of prescription auditing. Average number of corticosteroids prescribed per prescription was found to be 2.01, which was considerably lower than other studies.[4,5] It is preferable to keep the number of drugs per prescription as low as possible to avoid increased risk of adverse effect and drug interactions, thereby minimizing the cost of drug therapy.

Assessing polypharmacy, results revealed that number of corticosteroids prescribing per prescription varied from 1 to 3, with 51.28% prescriptions containing a minimum

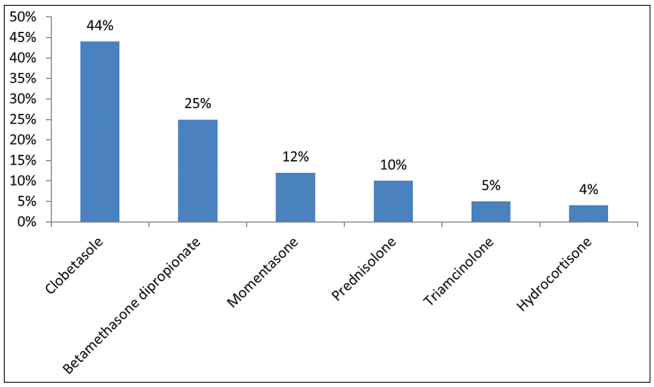

Figure 3: Pattern of corticosteroid prescription

of 2 drugs. he complications of polypharmacy are multiple such as increased problems with side effects of medications, ADRs, drug-drug interactions, noncompliance with the medical regimen, and direct cost of drugs as well as indirect costs resulting from hospitalization for iatrogenic illnesses.

Appropriateness and completeness of the prescriptions were analyzed. Incomplete prescription may predispose the patient to potential side effects thus limiting therapeutic efficacies. To achieve maximum effectiveness, patients must be encouraged to apply the prescribed agents appropriately. Physicians and dermatologists must be aware of giving proper advice to the patients about the amount and mode of administration of topical steroid on different parts of the body. In such case, use of the fingertip unit method can be a simple tool to help doctors and patients obtain a better understanding of the amount of topical steroid to be used.

The disease profile pooled revealed that the most common indications requiring corticosteroid prescribing were eczema, followed by psoriasis, dermatitis, and vitiligo respectively. Corticosteroids were also prescribed for other conditions like SJS, erythema, pemphigus vulgaris, xerosis, etc.

Route of administration was noted for all the corticosteroids prescribed, which stated that most of them being given topically, while some given in the oral and parenteral form.

Prescribing trend of topical corticosteroid showed that high potency corticosteroids were majorly prescribed followed by those of ultra-high and medium potency respectively. The prescription of very potent steroids should be limited when possible. Long and excessive use may carry the risk of suppression of the HPA axis as well as local adverse effects. This pattern of prescription may be influenced by the availability of the preparation in the hospital pharmacy and the choice of the dermatologist. The hospital authorities should make provisions for making low-potency steroids available in the hospital pharmacy taking into consideration the adverse effects of potent steroids.

Corticosteroids were also prescribed in fixed dose combinations with antibacterials, antifungals, and other agents. Few irrational combinations of topical corticosteroids were also observed. Prescribing steroids along with antifungal drugs in fungal infections can decrease the effectiveness of antifungal agents. Most commonly prescribed steroids were clobetasol, followed by betamethasone dipropionate, mometasone, prednisolone respectively.

Only 1.36% of the drugs were found in generic form, while rest was prescribed in brand names. The decreasing percentage of drugs prescribed by generic names in the present setting is a matter of great concern as prescribing by brand name may be indicative of promotional strategies by pharmaceutical companies. Even more the use of generic names usually provides flexibility to the dispensing pharmacist, and generic drugs are less expensive than brand-name drugs. In this study, none of the topical steroids was prescribed by their generic names. Using brand names for prescribing may sometimes create dispensing errors. Drugs with similar brand names but different ingredients might mistakenly be switched. Moreover, prescribing drugs by their generic names could reduce the cost and thus increase prescription compliance.

About 39% of the corticosteroids prescribed were found included in NLEM 2015. The possible reason for this lower value could be the prescribers lacking the understanding and importance of essential drug concept. The low rate of prescribing from essential drug list may be contributed by excessive use of several topical steroidal preparations which are not included in NLEMs.

Our study had certain limitations. The study was conducted for a short period at a single center with a small sample size; thus, the data cannot be a representative of national statistics. Cost based analysis focusing on the direct and indirect cost of drug therapy was not analyzed. Being a prescription based analysis; total duration of the drug therapy was not considered. Being a cross-sectional analysis, therapeutic risk and benefits of the prescribed medications were not adjudged. Further research should focus on overcoming these limitations.

The grave consequences of excessive and irrelevant use of topical corticosteroids were explained to the dermatologists. There is a need to revise hospital formulary where low-potency steroids can also be included along with potent ones so that the latter can be avoided in conditions where they are unnecessary. There is a need to put more emphasis on rational and complete prescription of topical steroids. The medical community should prescribe with a social perspective in mind and should stay away from practices which will be detrimental to the society at large. Continuing medical education for residents in the dermatology department is also greatly needed. The fingertip unit (FTU) method provides guidelines as to the amount of ointment needed in adults and children based on specific anatomic areas. The use of FTU should be promoted worldwide to reduce the variations in the use of topical corticosteroids and to encourage adherence to therapy. Periodic evaluation of drug utilization pattern needs to be done to enable suitable modification in the

prescription of drugs to increase the therapeutic benefit and decrease the adverse effects.

CONCLUSION

The misuse of topical corticosteroids has a huge impact on dermatological practices which needs multidimensional interventions, involving educational, lawful, and managerial approaches to overcome it. Irrational prescribing of corticosteroids must be minimized which subsequently will avoid polypharmacy and related drug interactions causing drug-induced skin lesion. Education of the general public through media programs and introduction of continuing medical education programs for medical, paramedical personnel and pharmacists are probably the most important steps to be taken to create awareness about the hazards of misuse of topical corticosteroids. Understanding the importance of essential medicines for the benefit of patient's personal and social economics is needed. Establishing the social and economic implications of the prescription patterns to the community will shed light in understanding the gap to be filled in this field.

Proper knowledge of common skin lesions must be ensured through continuing medical education programs dealing with short problem-based training on pharmacotherapy and more focused workshops on rational drug use.

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