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Original Research Article

Prescription pattern of topical corticosteroids in dermatology department in a tertiary care hospital

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ABSTRACT

Background: Topical steroids are sometimes combined with other active ingredients including antibacterial agents, antifungal agents and calcipotriol. The study of prescription pattern measures the performance of health care providers in several key dimensions related to the appropriate use of drugs. The objectives of the study were to study the prescription pattern of topical corticosteroids in terms of indications, its potency, average number of topical corticosteroids per patient and in fixed dose combinations.

Methods: Data of patients prescribed with topical corticosteroids in dermatology department OPD were collected. Data included age, gender, clinical diagnosis, topical & systemic corticosteroids prescribed and their dosing schedule

Results: Out of 500 cases, 229 were males and 271 were females. Mean age of patients was 40.60 ± 19.789 years. Most common dermatological condition for topical corticosteroid prescription was dermatitis (43.8%). 45.9% of prescribed corticosteroids were moderate potent agents. Average number of topical corticosteroids per prescription was 1.04. Most commonly prescribed topical corticosteroids were betamethasone dipropionate. Most common dosage form was cream. Most common fixed dose combination was with gentamicin. Among 103 fixed dose combinations 42.7% were combined with moderately potent steroids. 72% drugs were prescribed in generic name. 4% of prescription had strength of steroids mentioned. 80% of prescription stated site of application and in 76% cases frequency of drug application was mentioned. Duration of treatment was mentioned in 86.4% of cases.

Conclusions: Study demonstrates variability of topical corticosteroid utilization in various dermatological conditions.

Keywords: Dermatology department, Prescription pattern, Topical corticosteroids

INTRODUCTION

Since its introduction in the early 1950's, hydrocortisone has revolutionized dermatology. Corticosteroids have been found to be beneficial in many autoimmune and inflammatory conditions.¹ For various diseases like eczema, psoriasis, vitiligo, lichen planus, atopic dermatitis and drug rash, corticosteroids have been the mainstay of treatment in dermatology department. Anti-inflammatory,

anti-proliferative, immunosuppressive, anti-pruritic, melanopenic and sex-hormone-like effect of topical corticosteroids on the skin, is made use in treatment of skin conditions characterized by hyper proliferation, inflammation and immunologic involvement.² The potency of topical corticosteroids has been assessed by measuring their vasoconstrictive effect on the skin.³ British National Formulary (BNF) divides the topical corticosteroids in to four groups based on their potency as very potent, potent, moderate and mild whereas American

system divides them into seven classes with class I being super potent and class seven as least potent.⁴ Side effects are uncommon or rare when topical corticosteroids are used appropriately under medical supervision. Topical steroids are sometimes combined with other active ingredients including antibacterial agents, antifungal agents and calcipotriol. The study of prescription pattern measures the performance of health care providers in several key dimensions related to the appropriate use of drugs.

Aims and objectives

The objectives of the study were to study the prescription pattern of topical corticosteroids in terms of indications, its potency, average number of topical corticosteroids per patient and to study the prescription of topical corticosteroids alone or in fixed dose combination or in combination with systemic corticosteroids in dermatology department of Government T. D Medical College Alappuzha.

METHODS

A descriptive study was conducted in the dermatology department of Government T D Medical College from December 2017 to May 2019. Total of 500 patients of all age group and either sex, who were prescribed with topical corticosteroids were included in the study by convenient sampling. Sample size was calculated based on the prevalence of dermatological conditions for which topical corticosteroids were given

Sample size estimation

The following formula was used for sample size estimation

$$N = \frac{Z^2 \times p \times (1-p)}{d^2}$$

Where,

N= required sample size

Z= Z score corresponding to confidence level (1.96 for 95% confidence)

P= Prevalence of the skin conditions for which topical corticosteroids are prescribed

D= margin of error

Based on previous studies by Bylappa et al, prevalence of dermatitis for which topical corticosteroids were given was 47%.⁵ Hence p was taken as 47% and applying it in the above formula with 5% margin of error, a sample size of minimum 460 was obtained. The study was initiated after getting approval from institutional research committee and institutional ethics committee (EC 84/17). After getting prescriber's and patients consent, data was collected by interviewing the patient and from patient's

case record using pre structured proforma. Data collected included age, gender, topical corticosteroids prescribed, its potency, average number of topical corticosteroids prescribed per patient and whether given along with systemic corticosteroids or in fixed dose combination.

The data of patients were tabulated using Microsoft Excel and presented with the help of descriptive statistics using SPSS software version 16.

RESULTS

This study was conducted over a period of 18 months. Within the study period 500 prescriptions of patients were analyzed. Demographic details of study participants are given in Table 1.

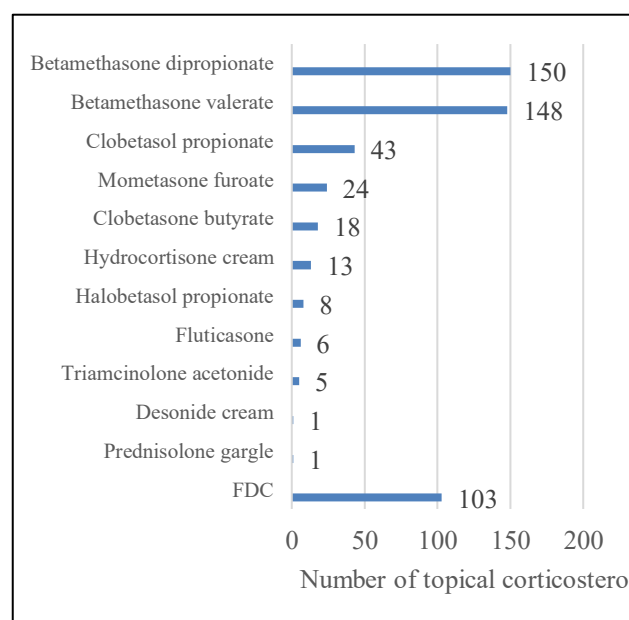


Figure 1: Prescribed topical corticosteroids.

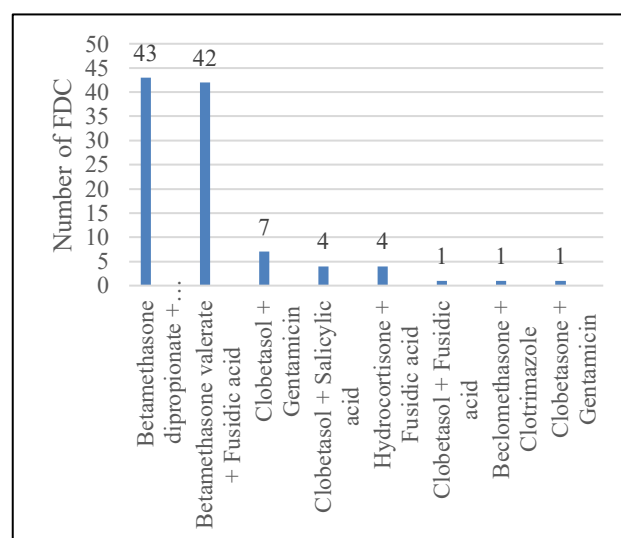


Figure 2: Constitution of FDC of topical corticosteroids.

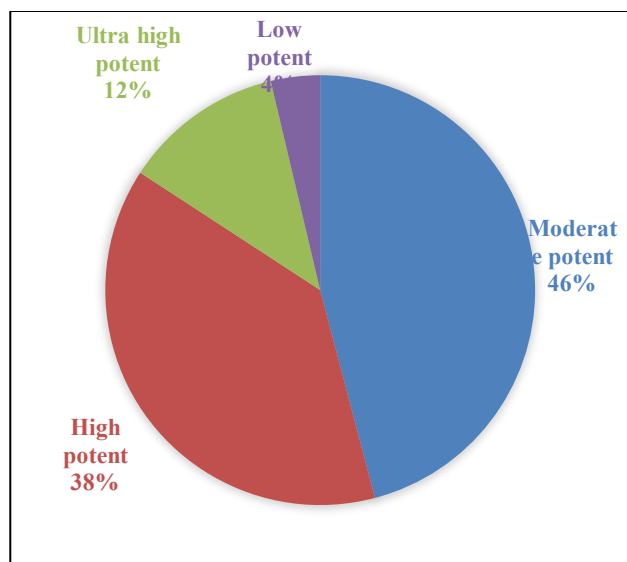


Figure 3: The potency of prescribed topical corticosteroids.

Mean age of patients was 40.60 ± 19.79 years with minimum age being 1 year and maximum age 92 years. Number of patients with various dermatological conditions for which topical corticosteroids were prescribed are given in Table 2. A total of 520 corticosteroids were prescribed in 500 prescriptions. Only 20 patients (4%) received more than 1 topical corticosteroid.

Minimum number of topical corticosteroids prescribed was 1 and maximum was 2 per prescription with an average of 1.04 topical corticosteroids per prescription. 94.8% of prescribed topical corticosteroids were cream. Other dosage forms prescribed include lotion (2.1%), ointment (1.7%), paste (0.9%) and gargle (0.5%). Figure 1 shows the different topical corticosteroids prescribed in the prescriptions analyzed for the study. Out of 103 (19.8%) fixed dose combinations of topical corticosteroids prescribed, 95.1% were combined with anti-bacterials, 3.9% with salicylic acid and 1% with antifungals. Figure 2 shows the constitution of fixed drug combinations (FDC) of topical corticosteroids in the analyzed prescriptions. Among 103 fixed dose combinations of topical corticosteroids prescribed, 42.7% were combined with moderately potent, 41.7% with high potent, 11.6% with ultra-high potent and 4% with low potent topical corticosteroids.

As we go through the details of topical corticoids prescribed 72% drugs were prescribed in generic name. 4% of prescription had strength of topical corticosteroids. Duration of treatment was mentioned in 86.4% of cases. Quantity to be applied was not mentioned in any of the prescription. 80% of prescription stated site of application and in 76% of cases frequency of drug application was mentioned. Out of 500 prescriptions only 1% prescription had systemic corticosteroids along with topical corticosteroids.

Table 1: Demographic details of study participants.

Characteristics	Number of cases with topical corticosteroids
Age group (years)	
<20	90 (18%)
21-40	144 (28.8%)
41-60	172 (34.4%)
61-80	88 (17.6%)
81-100	6 (1.2%)
Gender	
Males	229 (45.8%)
Females	271 (54.2%)

Table 2: Frequency of topical corticosteroid use in various dermatological conditions.

Dermatological condition	Number of cases prescribed with topical corticosteroids
Dermatitis	219 (43.8%)
Psoriasis	112 (22.4%)
Polymorphous light eruption	56 (11.2%)
Insect bite reaction	42 (8.4%)
Lichen planus	17 (3.4%)
Vitiligo	12 (2.4%)
Discoid lupus erythematosus	7 (1.4%)
Hypo pigmented patches	4 (0.8%)
Hyperpigmentation, pemphigus, prurigo nodularis	3 (0.6%)
Alopecia	2 (0.4%)
Other dermatological conditions.	9 (1.8%)

DISCUSSION

The present study was conducted in dermatology department of Government T.D Medical College during the time period from December 2017 to May 2019. Prescription of 500 patients with dermatological conditions for which topical corticosteroids prescribed were assessed for prescription pattern.

Mean age of patients were 40.60 ± 19.79 years with minimum age being 1 year and maximum being 92 years. 172 patients were in the age group of 41-60 years. This can be compared with the results of the study conducted by Nerukar et al, where mean age of 38.28 ± 11 years.⁶ According to a study by Sushil Sharma, it was seen that a majority of patients were between 20-40 years compared to 41-60 years in this study.⁷

In our case, 229 (45.8%) were males and 271 (54.2%) were females. Male to female ratio was 0.85:1. This is comparable to study by Mukherjee et al, where 175 (53.35%) were females and 153 (47.81%) were males.⁸ Compared to study by Rathod et al, in which none of the prescription had more than 1 topical corticosteroids, this study had 4% prescriptions with more than one topical corticosteroid.⁹ This is because in our study different strengths of topical corticosteroids were prescribed for different body parts.

In our study, the most common skin conditions encountered were dermatitis (43.8%) and psoriasis (11.2%). This may be because Alappuzha is a coastal area and dermatitis is a significant health problem in the coastal belt.¹⁰ This is comparable to study conducted by Purushotham et al, where skin conditions commonly encountered were dermatitis (41%) followed by psoriasis (12%).¹¹

Cream based preparations of topical corticosteroids were more commonly used (94.8%) followed by lotion (2.1%). In a study conducted by Kasyap et al, most commonly used preparations were also creams (62%) followed by ointments (33%).¹² Most commonly prescribed topical corticosteroids were betamethasone dipropionate (28.8%) followed by betamethasone valerate (28.5%), clobetasol propionate (8.3%) and mometasone furoate (4.6%). This is contrary to study conducted by Purushotham K, which constituted clobetasol propionate (46%), mometasone furoate (15%), betamethasone dipropionate (12%) and halobetasol (7%).¹¹ This may be because our hospital caters rural area and they depend on government supplies in which betamethasone dipropionate as well as valerate creams are mostly provided.

Out of 103 fixed dose combinations of topical corticosteroids prescribed 98 (95.1%) were combined with antibacterials, 4 (3.9%) with salicylic acid and 1 (1%) with antifungals. But in a study conducted by Pravin et al, 55.38% were combined with antibacterials, 33.84% combined with antifungals and 10.76% with others.¹³ This

is because dermatitis is the most common condition for which topical corticosteroids are prescribed and was associated with secondary infection.

Most common fixed dose combination of topical corticosteroids in this study was with gentamicin (49.5%) followed by fusidic acid (45.7%) and salicylic acid (3.9%), whereas in a study conducted by Bylappa et al, 30.95% were combined with fusidic acid and 28.57% with gentamicin.⁵ Out of 520 topical corticosteroids prescribed 239 (45.9%) were moderate potent, 199 (38.3%) were high potent, 63 (12.1%) were ultra-high potent and 19 (3.7%) were low potent. Even though betamethasone dipropionate was most commonly prescribed topical corticosteroid, which is high potent, but sum total of moderate potent corticosteroids are more than total number of high potent topical corticosteroids. In a study conducted by Jena et al, 44% were high potent steroids and 36% were ultra-high potent.¹⁴ The study conducted by Pravin et al had 63.72% of high potent topical corticosteroids.¹²

In this study, among 103 FDC of topical corticosteroids prescribed, 44 (42.7%) were combined with moderately potent, 43 (41.7%) with high potent, 12 (11.6%) with ultra-high potent and 4 (4%) with low potent topical corticosteroids. Whereas in a study conducted by Kumar et al, ultra-high potent topical steroids were commonly prescribed (54.93%) followed by high potent steroids (45.07%).¹⁵

In this study 72.2% of drugs were prescribed by generic name which is higher compared to 54% in a study conducted by Saravanan et al, WHO encourages generic medicines as it can enable huge cost savings by creating competition and driving down prices.^{16,17} This practice will definitely enhance the compliance, if treatment may have to be continued fairly for a long time. Strength of drugs were prescribed in 4% of cases compared to 0% by Saravanan et al, but less compared to 84.78% in a study conducted by Pravin et al, Quantity required were not mentioned in any of the prescriptions in this study as well as study conducted by Saravanan et al and Pravin et al.^{13,16}

In 80% of prescriptions in this study had details regarding specific areas of application which is comparatively higher compared to 48% mentioned in study conducted by Saravanan et al.¹⁶ Specifying area of application can avoid undue reactions or more systemic absorption as it varies in different areas of skin. Frequency of administration was mentioned in only 76% of cases compared to 92% of prescriptions in study conducted by Saravanan et al.¹⁶

In a study conducted by Jena et al, 12% patients were also prescribed systemic corticosteroids in addition to topical corticosteroids. But in this study only 1% prescriptions had additional systemic corticosteroids.¹⁴

Results cannot be generalised. Data from multiple centres need to be collected to get the exact picture of prescribing pattern in general. It cannot be guaranteed that the

prescription characteristics of a particular medication for a given patient remains unchanged over the course of follow up of these patients.

CONCLUSION

Study demonstrates variability of topical corticosteroid utilization in various dermatological conditions. Topical corticosteroids are the cornerstone therapy for many inflammatory skin conditions. If used appropriately they are safe and effective and side effects are generally uncommon. Drug usage needs monitoring to minimize irrational practice of drug prescriptions, to analyze the rationality of every prescription, to offer modifications in prescribing patterns to increase the therapeutic benefits and reduce the adverse drug reactions. Data from the outpatient department is a valuable tool to improve the patterns of prescription, for the effective outcome of the patients. This study also enlightens us about common skin conditions for which corticosteroids were prescribed in our setting along with the prescribing trends.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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