Prescription Trend of Topical Corticosteroids in Outpatient of Dermatology in a Tertiary Care Hospital in Tumakuru, Karnataka

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ABSTRACT

Background: Skin diseases amounts for a large fraction of patients attending the outpatient of dermatology and topical corticosteroids (TCS) are being commonly prescribed, the data related to drug usage patterns of TCS in skin conditions are particularly lacking. Hence it is vital to study the drug prescribing patterns of TCS in skin diseases. **Objective:** To study the demographic details and drug prescription pattern of TCS in patients with skin diseases. **Materials and Methods**: A cross-sectional study conducted in the Dermatology Department, Sri Siddhartha Medical College, over a period of 2 months. The patients with skin diseases who were prescribed TCS were included. The data was collected by direct observation in a specially designed proforma containing relevant detail such as demography, skin conditions and drug used. The data were analyzed as counts and percentages. **Result**: Majority of the patients were under the age of less than 20 years (38%) followed by those between the age of 21 years to 40 years (36%). .Female patients (61%) were more and majority were from rural areas (69%). Clobetasol propionate (46%), mometasone furoate (15%) and betamethasone dipropionate (12%) were the commonly prescribed TCS. Fixed dose combinations (FDC) of TCS were commonly with fusidic acid, gentamicin and salicylic acid. Average drug per prescription was 2.09. None of the prescriptions used generic names. **Conclusion:** Prescription pattern provides critical feedback to prescribing physician by focusing on rationalizing drug therapy. FDC of TCS with gentamicin, salicylic acid and fusidic acids are rational and approved by CDSCO.

Key words: Prescribing pattern, Topical corticosteroids, Dermatology, Rational, Skin disease

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INTRODUCTION

In modern practice, skin diseases account for vast majority of cases. Skin diseases manifests as primary and secondary cutaneous complaints, which are particularly more common in India. Among these, allergy and itches are widely observed in most of these patients. All age groups are susceptible to skin diseases. The skin problems that are commonly found are acne, burn scars, hyperhidrosis, psoriasis, scabies, vitiligo, pediculosis, herpes simplex infection, varicella, herpes zoster, erythema, urticarial and so on.[1] Sulzberger and Witten in 1952 introduced the first TCS compound F (hydrocortisone), to the world of dermatology.[2] This discovery revolutionized the treatment of dermatological disorders, particularly inflammatory diseases.[3] Following years evidenced a number of steroid molecules with varying potencies being introduced making the task of dermatologists easier in treating inflammatory dermatological disorders.

Appropriate use of TCS depends on various factors such as indication, potency of the drug, age of the patient

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and duration, amount and frequency of application.[4] Skin conditions characterized by hyper proliferation, inflammation, and immunologic involvement can be effectively treated by TCS due to their anti-inflammatory, anti-proliferative, immunosuppressive, anti-pruritic, melanopenic, and sex-hormone-like effect on the skin.[5] The potency of TCS has been assessed by measuring their vasoconstrictive effect on the skin. Based on their potency, British National Formulary (BNF) divides the topical corticosteroids into four groups, whereas American system divides them into seven classes,[6] where class I represents super potent or ultra-potent drugs and class VII the least potent. The physicians must have a thorough knowledge of the drugs in each class; however, they must be aware of their potency of at least one or two agents in each class in order to safely and efficiently treat the steroid- responsive skin conditions Corticosteroids, in both systemic and topical form, have to be used with great caution. Unless clear indication exists, steroids should not be administered considering the risks involved. Factors to be considered while prescribing steroids include steroid potency, delivery formulation, frequency and duration of treatment, and potential side effects. The anti-inflammatory effect of steroid act as a double-edged sword causing both therapeutic as well as adverse effects.[7] The adverse effects associated with topical application are adrenal suppression, epidermal and dermal thinning, purpura, striae, steroid-induced rosacea, perioral dermatitis, and hypertrichosis.[8] The WHO, in 1977 described the marketing, distribution, prescription, and use of drugs in a society as the drug utilization research, with particular stress on the consequences of medical, social, and economic aspects.[9] Such studies form the vital exploratory tools to determine the role of drugs in the society. They give rise to a strong socio-medical and health economics, which form the fundamental in making health-care decisions. The prescriptions need to be audited periodically to improve the therapeutic effectiveness, minimize the adverse effects, and provide feedback to prescribers. Hence, these audits are performed to supervise, check, and analyze the execution of medical treatment standards at all the levels of the health-care delivery system.[10] Considering the financial burden of the treatment on the patients and because of its high disease prevalence, it is of important to study the drug prescribing patterns of skin diseases. The information pertaining to drug usage patterns of topical corticosteroids is lacking especially in India. Keeping these facts in consideration, this study was undertaken in patients who were prescribed topical corticosteroids under the dermatology department of a teaching hospital to generate baseline data and analyze various aspects of drug prescribing practices.

MATERIALS AND METHODS

Study Design, Site, and Duration: The cross-sectional study was conducted in the Dermatology Department of Sri Siddhartha Medical College, Agalakote, Tumakuru, Karnataka India for 2 months.

Method of collection of data: Patients with skin diseases who were prescribed topical corticosteroids were included. Patients who were unable to respond to verbal questions, pregnant and lactating women, and patients with psychological disorders were excluded. Following ethical clearance from the Institutional Ethics Committee and after obtaining informed consent from patients, information were collected in a specially designed proforma by direct observation of prescriptions of patients attending skin out-patient. The proforma includes patient demographic information, diagnosis, prescription details like drug name, dosage form, strength, frequency of administration, duration of treatment, potency, whether generic name or trade name were used and if any drugs are combined or used concomitantly. The proforma also includes prescriber information.

Statistical analysis: The data was analyzed using descriptive statistics such as mean, standard deviation and proportions.

RESULTS

A total of 210 prescriptions of patients who were prescribed with topical corticosteroids at skin out-patient of dermatology department of SSMC, Tumakuru, were analyzed over a period of 2 months.(Table 6) Majority of the patients were under the age of less than 20 years (38%) followed by those between the age of 21 years to 40 years (36%) and those above 40 years (24%).Female patients (61%) were more and majority were from rural areas(69%). Majority of the patients were students (31%) followed by farmers (19%), businessmen (19%) and housewives (17%). (Table 1).

The skin conditions commonly encountered were dermatitis (41%), psoriasis (12%), pustulosis (8%). (Table 2) Topical corticosteroids that were most commonly prescribed were clobetasol propionate (46%), mometasone furoate (15%), betamethasone dipropionate (12%), and halobetasol (7%). (Table 4) Topical corticosteroids prescribed alone were 54% and in combinations were 46%. Fusidic acid, gentamicin, salicylic acid, neosporin, and clotrimazole were the common combinations that were prescribed.

Table 1: Demographic details of study participants

Characteristics	N = 210 (%)
Age (years):	
a) < 20	81 (38)
b) 21- 40	77 (36)
c) > 40	52 (24)
Gender:	
a) Female	129 (61)
b) Male	81 (29)
Residence:	
a) Urban	64 (31)
b) Rural	146 (69)
Occupation:	
a) Students	66 (31)
b) Farmer	41 (19)
c) Housewife	37 (17)
d) Business	40 (19)
e) Unemployed	26 (12)

Table 2: Conditions that were diagnosed in study participants

Skin conditions diagnosed	N = 210 (%)
Dermatitis	87 (41)
Psoriasis	25 (12)
Pustulosis	17 (8)
Polymorphous light eruption	11 (5.2)
Urticaria	10 (4.7)
Vitiligo	10 (4.7)
Lichen planus	9 (4.2)
Pompholyx	7 (3.3)
Tinea corporis	5 (2.3)
Pseudoacanthosis nigricans	4 (2)
Fissure foot	4 (2)
Pityriasis alba	3 (1.4)
Macular amyloidosis	3 (1.4)
Lichen simplex chronicus	3 (1.4)
Lichen sclerosis et atrophicus	2 (1)
Alopecia areata	2 (1)
Insect bite	2 (1)
Pellagra	2 (1)
Pityriasis rosea	2 (1)
Intertrigo	2 (1)

The topical corticosteroids were commonly in the form of cream (40%), ointment (32%) and lotion (27%). [Table 3]

Potency of the topical corticosteroids commonly prescribed were of super potent (59%) and potent (23%). Oral dosage forms constituted 38%, injections 10% and both accounted 5%. Among the concomitantly prescribed drugs, H_2 receptor blockers/proton pump inhibitors constituted 39% followed by antibiotics (30%) and antihistaminics (24%).

Table 3: Characteristics of drugs prescribed.

Characteristics	N = 210 (%)
Topical corticosteroid :	
a) used Alone	112 (54)
b) in Combination	98 (46)
Topical corticosteroid in combination with:	
a) Fusidic acid	36 (36)
b) Gentamicin	28 (28)
c) Gentamicin	17 (17)
d) Fusidic acid + clotrimazole	11 (11)
e) Salicylic acid + gentamicin	3 (3)
f) Salicylic acid + fusidic acid	2 (2)
g) Fusidic acid + Neosporin + clotrimazole	1 (1)
Topical corticosteroid potency :	
a) Class 1—Superpotent	124 (59)
b) Class 2—Potent	48 (23)
c) Class 3—Potent, upper mid-strength	12 (6)
d) Class 4—Mid-strength	8 (4)
e) Class 5—Lower mid-strength	8 (4)
f) Class 6—Mild strength	6 (3)
g) Class 7—Least potent	4 (2)
Topical corticosteroid Dosage forms:	
a) Cream	45 (40)
b) Ointment	36 (32)
c) Lotion	31 (27)
Dosage forms: Topical corticosteroid/Topical corticosteroid + Oral/Injection :	
a) Topical corticosteroid	210 (100)
b) Topical corticosteroid + Oral	80 (38)
c) Topical corticosteroid + Injection	20 (10)
d) Topical corticosteroid + Oral + Injection	11 (5)
Concomitant drugs	
a) Antihistaminic	102 (23)
b) H_2Receptor blockers/Proton pump inhibitors	91 (20)
c) Antibiotics	117 (26)
d) Emollients and skin protective agents	98 (22)
e) Others	31 (7)

Table 4: Topical corticosteroid prescribed in study participants

Topical corticosteroid used	N = 210 (%)
Clobetasol propionate	98 (46)
Mometasone furoate	32 (15)
Betamethasone dipropionate	27 (12)
Halobetasol	15 (7.1)
Hydrocortisone	14 (6.6)
Fluocinolone acetonide	12 (5.7)
Fluticasone propionate	12 (5.7)

Table 5: Number of drugs per prescription

Number of drugs per prescription	N = 210 (%)
1	6 (3)
2	23 (11)
3	66 (31)
4	81 (38)
5	27 (13)
6	7 (3)

Table 6: Contents of Prescription

Contents of Prescription	No of prescriptions (%)
Patient information:	
a) Name of the patient	210 (100)
b) Age of the patient	210 (100)
c) Sex of the patient	210 (100)
d) Address of the patient	183 (87)
e) Occupation of the patient	150 (71)
f) Date of prescription	210 (100)
Skin condition related information:	
a) Diagnosis	210 (100)
b) Site of involvement	195 (92)
Medication related information:	
a) Dosage form of the drug	210 (100)
b) Strength of the drug	167 (79)
c) Dosage units of the drug	145 (69)
d) Frequency of administration	210 (100)
e) Quantity of drug	210 (100)
f) Duration of treatment	210 (100)
g) Generic name of the drug	-
h) Instructions to the patients	180 (85)
i) Hand writing legible	190 (90)
Prescriber information:	
a) Prescribing doctor : Specialist	178 (84)
b) Prescribing doctor : non-specialist	32 (15)
c) Prescribing doctor name mentioned	178 (84)
d) Prescribing doctors signature /initials	210 (100)
e) Registration number mentioned	-

Emollients and skin protective agents were also commonly prescribed (51%). [Table 3]

DISCUSSION

Drug utilization studies are the organized quality enhancement processes which are designed to review drug usage and prescribing patterns of with current recommendations or guidelines for the treatment of a certain disease. Evaluation of drug use are done at a population level, according to age, sex, and social class. Prescriptions need to be audited periodically to enhance the therapeutic effectiveness, minimize the adverse effects, provide critical feedback to prescribers and analyze the execution of medical treatment standards. Data evaluation is the most crucial step in the drug utilization studies. Summarizing the data into the major categories of results and verifying the point of deviation of the data from the previously described guidelines and usage criteria are very important steps. Reasons for this deviation should be evaluated. For any drug utilization study to succeed, scientific interpretation of the results instead of a value judgment needs to be prepared and results of the same should be circulated.

In the present study, patients prescribed with topical corticosteroids were commonly under the of 20 years (38%) and between 21–40 years of age (36%) among whom female patients(61%) were more compared to male patients (29%); patients from rural area (69%) were commonly affected, which was comparable with the study done by Ankit[11] and Bylappa BK.[12]

The common skin conditions encountered in our study were dermatitis (41%) followed by psoriasis (12%) and pustulosis (8%). These findings are comparable to a study by Bylappa BK and Patil RT.[12] Where as in a study by Divyashanthi and Manivannan,[13] Psoriasis followed by dermatitis were most common conditions for which topical corticosteroids were prescribed. The most common topical corticosteroid prescribed in our study were clobetasol propionate (46%), mometasone furoate (15%), betamethasone dipropionate (12%), and halobetasol (7%). These findings are similar to a study by Jena *et al.*,[13] And Bylappa BK[12] where clobetasol was the most common topical corticosteroid that was prescribed too. Whereas a study by Javsen *et al.*[14] showed betamethasone as the commonly used topical corticosteroid.

In our study, the topical corticosteroid prescribed in combination (These are approved by CDSCO) (46%) were commonly with fusidic acid, gentamicin, salicylic acid, neosporin, and clotrimazole, which was similar to the study done by Mirshad *et al*[15] and Bylappa BK.[12] Topical antibiotics should only be used where the infection is limited to a small area of the skin and if necessary a short course of a suitable oral antibiotic may be indicated in more severe cases. The development of resistance needs to be prevented by avoiding injudicious use of antimicrobials. The topical corticosteroids were commonly in the form of cream (40%), ointment (32%) and lotion (27%).

In our study potencies of the topical corticosteroids that were prescribed were commonly of super potent (59%) and potent (23%), which were comparable with Saravanakumar *et al.*,[16] Jena *et al.*[17] and Bylappa BK.[12]

Oral dosage forms that were prescribed along with the topical preparation constituted 38%, injections 10% and combination of topical, oral and injection dosage forms were 5%.

In our study, the concomitantly prescribed drugs were H_2 Receptor blockers/Proton pump inhibitors (39%), antibiotics (30%), emollients and skin protective agents (24%) and antihistaminics (21%).

Among other miscellaneous drugs (7%), antioxidants, antifungals, multivitamins and minerals were prescribed. In our study, average number of drugs per prescription was 2.09, whereas in a study by Padma *et al.*,[18] (Table 5) and Bylappa BK.[12] The average number of drugs per prescription were 3.6. The number of drugs prescribed must be minimal since higher numbers leads to increased risk of drug interactions, adverse drug reactions, reduced compliance, and economic burden of prescription on the patient.

None of the prescriptions in our study mentioned generic name of drugs. Strength of the drugs were mentioned in 10% and quantity required were mentioned in 90% of the prescription. Instructions regarding the use of topical preparation were mentioned in 50% and duration of treatment were mentioned in 92% of the prescriptions in our study.

The under use of steroids leads to sub therapeutic effect, whereas the over dosage/ longer duration of steroids use, with prescriptions not mentioning the particular quantity of the steroids, results in different adverse effects. Pharmacist should also be responsible in educating patients about correct application of topical corticosteroids, the frequency of application, and so on. The patients should also understand the disease and its course, the complications caused by overuse and misuse of medications.

CONCLUSION

Prescription pattern studies help to generate baseline data which can be of utmost value to researchers and policymakers. Many useful measures such as standard treatment guidelines, essential drug lists, establishing drug and therapeutic committee, problem-based basic training in pharmacotherapy, targeted continuing education, drug information centers, drug use evaluation and drug bulletins have proven to be useful and efficient in enhancing rational drug use.

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CONFLICT OF INTEREST

None

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