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Study of Drug Utilization Pattern of Corticosteroids in Dermatology at Tertiary Care Teaching Hospital

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ABSTRACT

Context: Rational use of corticosteroids is essential for improving patient safety. With the increasing number and types of corticosteroids available, there is a need to understand current prescribing practices.

Objectives: To study the drug utilization pattern of corticosteroids among the patients attending dermatology outpatient department at tertiary care teaching hospital.

Methodology: An observational, cross-sectional study was conducted for 2 months in 250 patients receiving any category of steroid therapy in Dermatology department with approval from Institutional Ethics Committee. A case sheet of patient was analyzed for prescribing pattern of corticosteroids using WHO core drug use indicators after obtaining written informed consent.

Result: Total 250 prescriptions analyzed with mean age 39.37± 18 years with male preponderance. (56.8%) Total 1113 drugs were prescribed with 4.5 drugs per prescription. Corticosteroids (32.43%) were the major class of drug prescribed. Among corticosteroids, prednisolone was most commonly prescribed. (29.91%) In majority of prescription, corticosteroids were prescribed by topical route. (47.36%) Frequency of administration and the strength of the medication were mentioned for 89systemic and 21 topical corticosteroid. Duration of treatment was mentioned for 89systemic and 169topical preparations. Not a single prescription mentioned quantity of medication to be applied topically. Among the topical preparations, 71 were highly potent steroids, 97 were with intermediate potency and 41 had low potency.

Conclusion: The study reveals irrationality to some extent in existing prescribing pattern of corticosteroids which needs multi-dimensional interventions, involving educational, lawful and managerial approaches topromote safe use of corticosteroids.

Keywords: Prescription analysis, Dermatology, Drug utilization, Corticosteroids

INTRODUCTION

Drug utilization (DU) studies are an integral part of Pharmacoepidemiological studies which describes the extent, nature and determinants of drug exposure. The World Health Organization (WHO) defined DU study as "The marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences." [1] DU studies are powerful exploratory tool to evaluate healthcare system and to ascertain the role of drugs in society. It describe pattern of drug use, provide early signals of irrational drug use and suggest interventions to make medical care more rational and cost effective. [2]

Glucocorticoids are extensively used for the treatment of various inflammatory, immunologic, hematologic, and other disorders. This has stimulated the development of many synthetic steroids with anti-inflammatory and immunosuppressive activity. These synthetic glucocorticoids differ with respect to relative anti-inflammatory and mineralocorticoid effect, duration of action, cost, and dosage forms available. Along with conventional dosage forms, topical preparations for skin disease, nasal spray for allergic rhinitis, ophthalmic forms for eye disease, intra-articular injections for joint disease, inhaled steroids for asthma, and hydrocortisone enemas for ulcerative colitis, provides a means of delivering large amounts of steroid to the diseased tissue.

[3]Owing to striking and apparently curative effects of steroids, physicians tend to routinely prescribe them to attract patients to their clinics. This generally leads to irrational use of corticosteroids in non-indicated disease conditions. [4,5] Though, corticosteroids are life-saving drugs, produce adverse reactions which may vary from mild to life threatening ADR. Steroid therapy is commonly associated with multiple drug interactions, adverse effects and super infections. [3]

Rational use of corticosteroids is very essential to improve patient safety on long term basis. With the increasing number and types of corticosteroids available to clinicians, there is a need to better understand current prescribing practices. There is need to monitor, evaluate and therapeutically analyze the utilization pattern of corticosteroids to achieve better patient care.

Some studies have reported irrationalities in pattern of corticosteroids use in dermatology. These study findings shows usage of highly potent topical corticosteroids, inadequate prescribing information and the excessive use of brand names. [6,7]Simillarly, irrational prescription practices related to steroids were also reported in patients with arthritis and lower back pain as well as in asthma patients. [8,9] On the contrary, Thakur et al found all the prescriptions for corticosteroids were rational. Most of all patients were diagnosed well and were prescribed corticosteroids taking into consideration pharmacokinetic and pharmacodynamic parameters. [10] Hence, present study is planned to analyze prescribing pattern of corticosteroids in various dermatological conditions.

OBJECTIVES

To study the drug utilization pattern of corticosteroids among the patients attending dermatology outpatient department at tertiary care teaching hospital.

METHODOLOGY

An observational, cross-sectional study was conducted for 2 months duration in Dermatology department of a tertiary care teaching hospital after obtaining approval from Institutional Ethics Committee. Two hundred and fifty patients receiving any category of steroid therapy who are willing to participate in study were included after taking written informed Consent. Patients who met all the inclusion criteria but not willing to participate in the study were excluded. A case sheet of patients were analyzed for prescribing pattern of corticosteroids using WHO core drug use indicators.

STATISTICAL ANALYSIS

Data was analyzed using descriptive statistics and expressed as Mean±SD and percentages wherever applicable.

RESULTS

A total 250 prescriptions were analyzed. The mean age group suffering from skin diseases is 39.37± 18 years with male preponderance. (56.8%) (Table 1) Table 2 describes prescription analysis according to World Health Organization core drug use indicators. Total 1113 drugs were prescribed with an average number of drugs per prescription 4.5. Dermatitis (36.86%) is the common reason for attending dermatology OPD. (Fig 1) Analysis of total drugs prescribed in patients shows that corticosteroids [361(32.43%)] was the major class of drug prescribed followed by antihistaminics (20.93%) in dermatology. (Fig 2) Table 3 explains pattern of corticosteroid used in dermatology outpatient department. Among corticosteroids, prednisolone was most commonly prescribed(29.91%) . In majority of prescription, Corticosteroids were prescribed by topical route (47.36%) out of which 11 patients also received additional corticosteroid by route other than topical one.

100% prescriptions for mometasone, beclomethasone & clobetasol were by topical route whereas in majority of prescriptions betamethasone was administered parenterally. Prednisolone was mostly prescribed orally (88.88%). Among total prescriptions, % of drug dispensed were 56.98± 19.63. Frequency of administration and the strength of the medication were mentioned only for 24.65% systemic and 5.8% topical corticosteroid. Duration of treatment was mentioned for 56% systemic and 47% topical preparations. Not a single prescription mentioned quantity of medication to be applied topically. Among the topical preparations, 40.8% were highly potent steroids like clobetasol, and mometasone, 55.74% were with intermediate potency like fluticasone and betamethasone and 23.56% prescriptions contain fluocinolone which has low potency. Special instruction of administering the

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medication in the morning in case of systemic steroid was not mentioned in any prescription

DISCUSSION

Corticosteroids have revolutionized the practice of dermatology due to its wide indications and high potency. As potent corticosteroids are easily available over-the-counter, It leads to misuse and ultimately patient land up into fatal adverse drug reactions. [6] Hence a rational use of these medications is the need of the hour. Present study analyzed prescription pattern of corticosteroids in department of Dermatology of tertiary care teaching institute.

In present study 250 prescriptions of patients who were on corticosteroid were analyzed which revealed male preponderance which in contrast to other studies. [7,11] Highest number of prescriptions were from middle aged population (30-40yrs) which was observed in other studies also. [7,10]

Average number of drugs per prescription is an important index of prescription auditing. In present study, number of drugs per prescription was found to be 4.5, which is similar to other studies. [6,10] It is preferable to keep the number of drugs per prescription as low as possible to avoid risk of adverse drug reactions due to drug interactions and to minimize the cost of drug therapy. Most common indication for which corticosteroids were prescribed was dermatitis followed by Hansen's disease. However in a study by Mukharjee et al, [7] corticosteroids were prescribed mainly for eczema followed by psoriasis.

Corticosteroids were mostly administered by topical route which is a common finding in other studies also. [7,10] Probable reason for this may be this study was conducted in dermatology department where topical application of corticosteroid is a common treatment for many skin disorders.

In Present study, many prescriptions were inadequate in terms of documentation of diagnosis, dose, duration, frequency and proper instructions regarding drug administrations. it is surprising that not a single prescription for systemic steroid mention timing for drug administration. Similar finding in-terms of adequacy of superscription, route of administration and duration of therapy were reported by Sharma P et al. [12] Patient should be properly instructed regarding amount and mode of administration of steroid both by systemic as well as topical route. In case of topical application, use of the fingertip unit method can be a simple tool to help doctors and patients to understand the amount of topical steroid to be applied. [13]

In present study, prednisolone was most frequently prescribed followed by mometasone & clobetasone. Previous studies also indicate that prescribing trend of corticosteroid showed that high potency corticosteroids were majorly prescribed. [6, 10,14] Excessive Prescribing of potent steroids for long term 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 low-potency steroids available in the hospital pharmacy.

In present study majority of drugs were prescribed in generic form which is a welcoming sign. Prescribing drugs by generic names usually provides flexibility to the dispensing pharmacist, and they are comparatively less expensive as compared to branded ones. Unfortunately in many hospital setups, prescribing by brand name is routine practice which unnecessarily increase financial burden of the patient. [14,15]

About 45.91% of the corticosteroids prescribed were found included in NLEM 2015. The possible reason for this lower value could be lack of awareness about importance and advantages of following essential drug concept while prescribing. Low frequency of prescribing from essential drug list may unnecessarily increase financial burden of the patients. According to study by Satheesh et al, [12] possible reasons for the misuse of steroids might be negligence on the part of physician, marketing strategies of pharmaceutical companies, free availability of drugs, lack of stringent regulations etc. To overcome this situation, hospital formularies should be updated frequently in which low-potency steroids should be included along with potent ones to restrict the use of potent one where they are unnecessary. Continuing medical education for health professionalsis greatly needed to promote rational and complete prescription of steroids. In case of systemic steroids, emphasis should be given on instruction to the patients regarding timing of drug administration. The use of FTU should be promoted

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worldwide to reduce the variations in the use of topical corticosteroids and to encourage adherence to therapy. Strict and stringent regulatory means should be adopted for monitoring irrational use of steroids along with periodic evaluation of drug utilization pattern.

Our study had certain limitations. Being a cross-sectional analysis, done for a short period at a single center with a small sample size; the data cannot be a representative of national statistics. Being a prescription based analysis; total duration of the drug therapy was not taken into consideration.

CONCLUSION

The study reveals irrationality to some extent in existing prescribing pattern of corticosteroids which needs multi-dimensional intervention at academic, industrial, legal and government level to promote safe use of corticosteroids.

TABLES & FIGURES

Table 1: Demographic profile of patients on corticosteroids (n = 250)

Parameter	Number
Age (Mean ±SD)	39.37 ± 18 years
Gender distribution	
Male	142
Female	108
Qualification	
Primary	78
$\leq 12^{th}$	128
$\geq 12^{th}$	40
Postgraduation	4
Residential status	
Urban	119
Rural	131

Table 2: Prescription analysis according to World Health Organization core drug use indicators (n=250)

Parameter	
Total number of prescriptions	250
Total no of drugs	1113
Average no of drugs per prescription	4.5
Drugs prescribed by generic name	75.83%
Drugs prescribed by brand name	24.17 %
Drugs from essential drug list	45.91 %

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Table 3: Pattern of corticosteroid prescribed in dermatology outpatient department (n=250)

Name of corticosteroid	Route of administration			Total corticosteroid prescribed	% among corticosteroids prescribed	% among total prescribed drugs
	Oral	Parenteral	Topical			
Prednisolone	96	12	--	108	29.91	9.70
Betamethasone	16	61	--	77	21.32	6.91
Mometasone	--	--	88	88	24.37	7.90
Fluocinolone		--	54	54	14.95	4.85
Beclomethasone	--	--	14	14	13.87	1.25
Triamcinolone	--	2	2	4	1.10	0.35
Clobetasol	--	--	16	16	4.43	1.43

Fig. 1: Distribution of common skin diseases among patients attending dermatology OPD. (n=250)

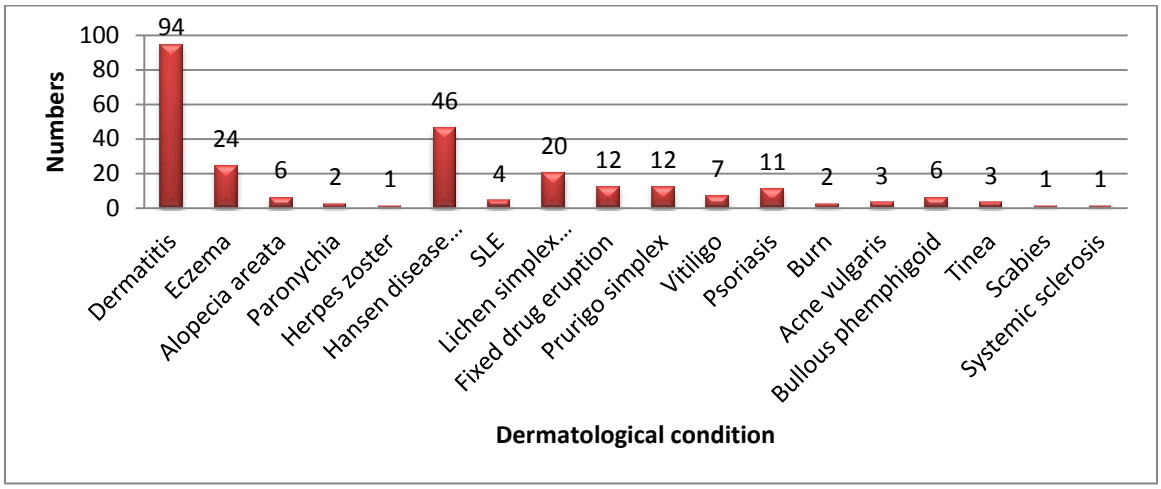
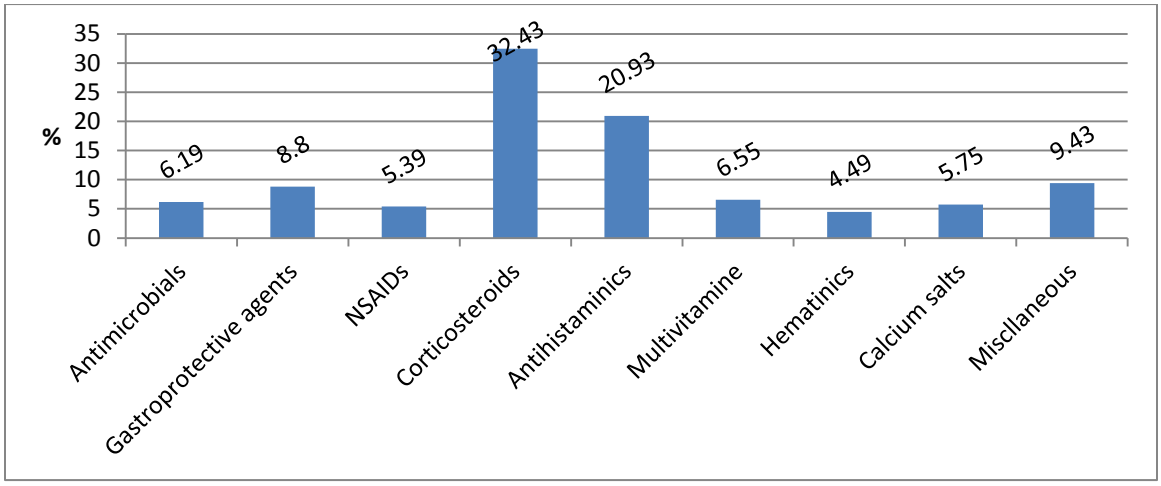


FIG 2: Figure 2: Analysis of total drugs prescribed in patients (n=1113)



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