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Research Article

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Pattern of utilization of corticosteroids in department of dermatology at a tertiary care teaching hospital

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ABSTRACT

To study the utilization pattern of corticosteroids in department of Dermatology at a tertiary care teaching hospital in Odisha. The study was conducted for a period of 6 months from July 2013 to December 2013. A prospective study was carried out in Department of Dermatology of IMS & SUM Hospital in collaboration with Department of Pharmacology. All the prescriptions containing steroids were included in the study and the parameters evaluated were gender distribution, age of the patients, types of steroids according to the route of administration, potency of topical steroids, average number of steroids per prescription, number of fixed dose combinations. A total of 719 prescriptions were analyzed having 1079 corticosteroids during the study period. Amongst these prescriptions 56.6 - were in male whereas 43.3 % were in female category. Highest number of patients belongs to male category between the age group of 21 – 30 years (31.94% %) and in female 21 – 30years (25.96%).Out of 1079 drugs prescribed, 67% of these formulations consisted of topical corticosteroids, 26% were oral corticosteroid preparations whereas only 7% were parenteral corticosteroids. According to the potency of prescribed corticosteroids, the analysis ends with the result that 6% were mild, 14% & 36% were moderate & super potent steroids respectively whereas maximum percentage of steroid were potent category that is around 44% of total number of steroids prescribed. The percentage of fixed dose combination with topical steroids prescribed was 32%.

Key words: corticosteroids, topical steroids, potency, utilization pattern

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INTRODUCTION

Over the years it has become increasingly apparent that corticosteroids are being abused by doctors & patients alike. [1]

Corticosteroids being the mainstay in the management of various dermatoses like eczema, psoriasis, vitiligo, lichen planus, atopic dermatitis, contact dermatitis, alopecia areata, LSC, discoid lupus erythematosis, drug rash to name a few, there is always an imperative need to monitor the rational use of this drug.

Rational practice of drugs prescription is mandatory in clinical practice but it is seen frequently that there is rise of irrational prescription of drugs in various fields of medical management.[2] drug utilization pattern in both in & out patients departments of various teaching care hospital & medical care providing institutions must need a proper intermittent & judicious monitoring to minimize irrational practice of drug prescription, to analyze the rationality of

every prescriptions, to offer suitable modifications in prescribing pattern to increase the therapeutic benefits and reduce adverse effects. Data of utilization patterns of drugs at out-patient departments of tertiary care teaching hospitals & analysis of that data is a very beneficial measure to formulate guidelines for improving the pattern of prescriptions aligned to rationality & effective outcome of the treatment with cost effectiveness. [3]

In dermatology department the drugs are directly used over the target site whose concentration & frequency can be altered according to the response.

Introduction to corticosteroids in 1950's is a milestone in dermatology. Corticosteroids (both topical & systemic) introduced in late 1950s had shown a dramatical improvement in dermatological diseases and till now remains a largest and commonly used measures in the management of various dermatological conditions.[4]

Corticosteroids are most commonly used or else it is better to say highly used & misused drug in the medical field. Since this group of drugs are readily and rampantly available in the market it is frequently used for their palliative effect that is the reason why misuse term is frequently used in context with steroid therapy like antimicrobial agents in medicine practice.

Various adverse effects are seen with frequent & prolong use of corticosteroids which includes hypersensitivity, acne form eruptions, atrophy, telangiactesia, hypertrichosis, purpura, striae, tachyphylaxis etc with topical corticosteroids, hypertension, hyperglycemia, cushingoid features, APD, cataract, glaucoma, HPA axis suppression, immunosuppression etc 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 and may lead to systemic adverse effects. [5]

It is important for the dermatologists to have an eagle's eye to weigh the benefits to adverse effect ratio while prescribing corticosteroid as too little steroid can lead to poor response or failure of treatment and too much leads to various adverse effects. [6]

So our aim of the study is to monitor the utilization pattern of corticosteroids intermittently in the dermatology department to analyze the rationality of drug usage and feedback to the prescribers so that they must be able to modify the pattern of prescription so as to increase the therapeutic benefits and reduce the adverse effects related to the previously prescribed pattern of drug prescription.

EXPERIMENTAL SECTION

A prospective study was carried out in department of Dermatology of IMS & SUM Hospital, SOA University, Bhubaneswar in collaboration with the department of Pharmacology with permission from the institutional ethics committee. A data collection form was prepared which includes patient as well as medication related information. Prescriptions were collected from 719 patients within 6 months of study period having atleast a single steroid in each prescription during July 2013 to December 2013. All relevant and necessary information for the study was collected from the outpatient department cards, treatment charts and verbal communication with the patients.

A detailed prospective analysis was performed by noting down the details of the prescription chart. Patient related information including age, sex, and disease were recorded. Information related to the use of corticosteroids such as name of the drug, number of drugs, dosage form, dosing frequency, duration, route of administration, quantity to be used or applied and potency were also recorded. This information was analyzed by using WHO guidelines as described in accordance with "How to investigate drug use in health facilities?"

The data was analyzed using descriptive statistics. Ratios, proportions and percentages were used to describe the data.

RESULTS AND DISCUSSION

A total of 719 prescriptions were analyzed during the study period. Amongst these prescriptions 407(56.6%) were in male whereas 312(43.3 %) were in female category. Highest number of patients belong to male category between the age group of21 – 30 years (31.94% %) and in female 21 – 30years (25.96%). (Table 1)

Table 1: Age & sex wise distribution of patients requiring corticosteroids in the Department of Dermatology: (n= 719)

Age group (in years)	Male 407(56.6%) Number with %	Female 312(43.3%) Number with %
0 – 10	37(9.09)	25(8.01)
11 – 20	33(8.10)	28(8.97)
21 – 30	130(31.94)	81(25.96)
31 – 40	73(17.93)	62(19.87)
41 – 50	61(14.98)	44(14.10)
51 – 60	45(11.05)	47(15.06)
> 60	28(6.87)	25(8.01)

A total number of 1079 corticosteroids (Table 2) were prescribed in 719 prescriptions analyzed in our study population and the average number of drugs per prescription was found to be 1.5. The percentage of fixed dose combination drugs with topical steroids prescribed was 32%.

Table 2: Analysis of prescriptions:

Number of prescriptions	719
Total no. of drugs prescribed	1079
Average no. of drugs prescribed per prescription	1.5
Number of fixed dose combinations with topical steroids	32%

Out of all the formulations of corticosteroids prescribed in our study populations, around 67% of these formulations consisted of topical corticosteroids, 26% were oral corticosteroid preparations whereas only 7% were parenteral corticosteroids (Table 3). Most of the patients receiving corticosteroids were prescribed a topical corticosteroid preparation i.e. 67% (723/ 1079), out of which around 12% patients were also administered a systemic, oral or parenteral corticosteroid preparation in addition to the topical agent and two topical corticosteroid preparations at the same time.

Table 3: Steroids in different routes of administration in dermatology department: (n= 1079)

Routes of administration of steroids	**Percentage**
Topical	723(67%)
Oral	280(26%)
Parenteral	76(7%)

According to the potency of prescribed corticosteroids, the analysis ends with the result that 6% were mild, 14% & 36% were moderate & super potent potency steroids respectively whereas maximum percentage of steroid were of potent category that is around 44% of total number of steroids prescribed (Table 4).

Table 4: Types of topical steroids prescribed based on potency:

Potency	**Percentage of prescription**
Mild	6%
Moderate	14%
Potent	44%
Super potent	36%

Amongst the 719 prescriptions having atleast one steroid as advice, 677 (94%) were attended the Dermatology OPD of our hospital whereas around 6% the total study populations were admitted to the hospital.(Table 5)

The potent corticosteroids prescribed were betamethasone dipropionate, clobetasol and mometasone. Intermediate potency ones were Triamcinolone acetonide, Fluticasone and betamethasone and the remaining consisted of a less potent hydrocortisone preparation. Super potent were betamethasone dipropionate 0.05% in an optimized vehicle.

Dexamethasone sodium phosphate by intravenous route was highly prescribed amongst systemic steroids. It is due to its potency and longer duration of action. (Table 6)

Table 5: Diseases prescribed with steroids in dermatology OPD & in patients department: n = 719

Out patient n= 677(94%)	In patients n= 42(5.8%)
Psoriasis	Pemphigus vulgaris
Lichen planus	Systemic lupus erythematosis
Vitiligo	Dermatomyositis
Alopecia areata	Systemic sclerosis
Lichen simplex chronicus (LSC)	Bullous pemphigoid
Atopic dermatitis	Cutaneous T – cell lymphoma
Prurigo	Erythroderma
Sebborheic dermatitis	Drug rash
N.Eczema	Type I & II reactions in Hansen's
Cumulative insult dermatitis	Pyoderma gangreonosum
ACD	Vasculitic ulcers
Pompholyx	
Keloid	
Lichen sclerosis atophicus	
Papular urticaria	
Beetle dermatitis	
PMLE	
Melasma	
Post inflammatory hyperpigmentation	
Intertrigo	

Table 6: Categories of steroids prescribed in various diseases by various routes:

Topical (Cream/Ointment/Lotion)	Oral	Parenteral
Halobetasol propionate (0.05%) cream/Oint	Prednisolone (0.5 – 1mg/Kg BW)	Triamcinolone acetonide
Clobetasol propionate (0.05%) cream/Oint	Methyl prednisolone	Dexamethasone
Betamethasone dipropionate (0.05%)	Deflazacort	Methyl prednisolone
Fluocinonide 0.05% Oint	Betamethasone	Hydrocortisone
Mometasone furoate 0.1% Oint		
Fluticasone propionate (0.05%)		
Triamcinolone acetonide (0.1%)		
Fluocinolone acetonide (0.025%)		
Hydrocortisone butyrate (0.1%)		
Desonide (0.05%)		
Desoximetasone (0.05%)		

All (100%) of these were prescribed by their trade/brand names. Fixed dose combinations (FDCs) of topical steroids were used with antibiotics, antifungal, salicylic acids, calcipotriel, Kligman's formula, coal tar etc which was seen around 12% of the prescriptions analyzed in our study. The most common FDCs prescribed along with a topical corticosteroid preparation were antibiotics followed by salicylic acid, fusidic acid and antifungal. Topical FDCs were used in Eczema with secondary infections, Atopic eczema, Psoriasis, Alopecia areata, Melasma, Intertrigo etc.

The common disease in which topical steroids were prescribed was Eczema which includes both endogenous & exogenous type.

56.6% were in male whereas 43.3 % were in female category when analyzing 719 prescriptions in 6months of study period. In males highest number of patients belongs to the age group of 21 – 30 years (31.94%) and in female 21 – 30years (25.96%). This demographic profile is required for cautious use of steroids in children & elderly due to larger surface area to body weight ratio & poor skin barrier function in the former group & skin fragility in the latter respectively and that may lead to serious adverse effect related to topical corticosteroid. [7]

A total number of 1079 corticosteroids were prescribed in 719 prescriptions analyzed and the average number of drugs per prescription was found to be 1.5. FDCs with topical steroids prescribed were 32%. Topical FDCs were (with antibiotics, salicylic acid, fusidic acid and antifungal etc) used in Eczema with secondary infections, Atopic eczema, Psoriasis, Alopecia areata, Melasma, Intertrigo etc. The percentage of FDCs is much lower in comparison to other studies in India [8] as these are not included in WHO fixed drug combination list.

Corticosteroids are prescribed in different formulations and different routes in dermatology department. Out of all the formulations of corticosteroids prescribed in our study populations, around 67% of these formulations consisted

of topical corticosteroids, 26% were oral corticosteroid preparations whereas only 7% were parenteral corticosteroids. In accordance with the topical steroids, our study result was comparable to the study of PV Mirshad etal 2013 but the result was not in collaboration with the same study in relation to the prescription pattern of oral & parenteral steroids. [9]

In this study result, the percentage of topical steroids prescribed according to the potency was 6% mild, 14% moderate & 36% were super potent but the maximum number of prescription having topical steroids were of potent variety which contradicts the study result of Saravana Kumar RT et al 2012 which concluded that super potent steroids were more commonly prescribed (55%). [10].

Dexamethasone sodium phosphate by intravenous route was highly prescribed amongst systemic steroids. It is due to its potency and longer duration of action. [11]

Amongst the in patients, the most common disease were SLE, Pemphigus vulgaris & Drug rash whereas Eczema and Psoriasis were the most common steroid responsive dermatoses attending the Dermatology outpatient department seen in our study population.

One of the most commonly used drug in dermatology department is corticosteroid due to its wide indications & high potency but the rational practice of using steroid should be practiced to minimize the adverse effects related to steroid and increasing its benefit profile.

The findings of our study correlate with the finding of earlier studies carried out in India and elsewhere wherein potent topical corticosteroids were commonly used. [12] There is sub therapeutic effect of steroid by using under usage of preparation and different adverse effects were seen by using overdose of steroids in which the prescriptions were not having the proper mentioning of specific quantity of the steroids. [4, 6]

Clear explanations should be given, so that patients are aware of how much steroid to use, where and when to apply it, and for how long. Potency of the steroids prescribed and its amounts to be used are responsible for the development of side effects related to that of steroid.[13]Systemically dexamethasone was commonly prescribed to most of the patients which may be due to its potency and longer duration of action.[14,15]

In all our prescription charts the medications were prescribed by their brand names; generic names were never preferred which was also the case in a previous study conducted in Palestine.[4] Use of generic names usually provides flexibility to the dispensing pharmacist and generic drugs are less expensive than brand-name drugs.[16]

Another concern was the use of FDCs of topical steroids with an antimicrobial agent. Studies have shown that topical antimicrobial/steroid combinations do not confer any benefit over steroids alone in patients with atopic eczema. [13]

Topical antibiotics should only be used where infection is limited to a small area of the skin. A short course of a suitable oral antibiotic may be indicated in more severe cases. To prevent the development of resistance, all antimicrobials, including topical agents, should be used very judiciously.[13] The choice of route of administration of steroids cannot follow a general guideline as most of the time the treatment approach gets modified according to the severity of the disease.

CONCLUSION

By intermittently monitoring, evaluating and therapeutically analyzing the pattern of prescriptions of corticosteroids in Dermatology department of our college, we can contribute to the rational & ethical use of this life saving drug in dermatology practice with maximum effectiveness & least adverse effects.

Limitations of the study were:
1. No categorization of prescribers was taken into consideration (junior/senior residents, lecturers, associate professors, professors).
2. It represents a limited population of patients.
3. The time of period of the study was limited.

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