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PRESCRIBING ANALYSIS OF CORTICOSTEROIDS AMONG THE DERMATOLOGY IN-PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL, KARAIKAL, PUDUCHERRY. A PROSPECTIVE OBSERVATIONAL STUDY

C.M.DIVYASHANTHI M.D.*¹ AND E.MANIVANNAN M.D.²

¹ Assistant Professor, Department of Pharmacology, Vinayaka Missions Medical college, Karaikal- 609609, Puducherry, India.

² Associate Professor, Department of Pharmacology, Vinayaka Missions Kirupananda Variyar Medical College, Salem- 636308, Tamilnadu, India.

ABSTRACT

Corticosteroids remain the most important and frequently prescribed drugs for cutaneous diseases. This study is an effort to assess the drug prescribing patterns of corticosteroids for various skin diseases, to analyse the rationale behind and also to affirm the physicians' adherence to dosages and formulations in accordance with the recent guidelines. A prospective analysis of 291 in-patients admitted in the department of Dermatology, Karaikal over a period of one year (January 2013-December 2013) was carried out to ascertain the pattern of usage of corticosteroids for various dermatological diseases in terms of its potency, frequency, duration and routes of administration. The results were expressed in averages, ratios and proportions. Out of the total 291 prescriptions scrutinized, 60.48% were male and 39.51% were female. The average number of drugs per prescription was 6.37 ± 2.06 . The topical preparations prescribed were highly potent steroids like Clobetasol (33.33%), followed by moderately potent like Mometasone (28.24%) and low potent Desonide (14.69%). The various formulations utilized were Lotions (48.02%), followed by creams (30.51%), ointments (14.68%) and paste (6.78%). Oral corticosteroids were prescribed for 77 patients (26.46%), the most of which were for contact dermatitis (32.5%). Among the parenteral corticosteroids prescribed for 14 patients (4.81%) the maximum prescribed were for Eczema (28.56%). Dexamethasone was the only parenteral corticosteroid (4.81%) prescribed as injection. The prescribing pattern of corticosteroids by the Dermatologists was analyzed to appraise the conformity with the guidelines. The usage of steroids through topical, oral and parenteral routes was compliant with the guidelines.

KEY WORDS: Prescription analysis, Dermatology, Drug utilisation, Corticosteroids.



C.M.DIVYASHANTHI M.D.

Assistant Professor, Department of Pharmacology, Vinayaka Missions Medical college, Karaikal- 609609, Puducherry, India.

*Corresponding author

INTRODUCTION

The skin, the largest organ of the body, acts like a mirror for most of the underlying internal diseases. Majority of skin diseases associated with inflammation respond well to corticosteroids and the most commonly used are hydrocortisone, Prednisolone, Triamcinolone etc. Prior to the commencement of steroid therapy, its objectives and limitations should always be clearly defined. Systemic steroids are used to treat various skin diseases like eczema, bullous disorders and other papulosquamous disorders. Topical corticosteroids have a long history of effectiveness in a wide spectrum of dermatological conditions especially those characterised by hyperproliferation, inflammation and immunological involvement.¹ Currently available topical corticosteroids differ widely in their potency and this variation in potency is also based on the vehicles used. Ointments are used to treat dry, scaly and hyper keratinised lesions because of their occlusive nature. Creams are used specifically to treat lesions of intertriginous areas and are cosmetically acceptable too. The least greasy lotions and gels are useful in lesions of hairy areas.² Inappropriate use of topical corticosteroids can alter the normal presentation of superficial bacterial and fungal infections². Also, chronic topical corticosteroid application may lead to skin atrophy and other systemic complications. Hence a thorough knowledge of the patient's history of onset, course and duration of the disease along with age, socio economic status and seasonal changes is necessary to guide the treating physician to accurately diagnose and administer the appropriate treatment. Periodic auditing of the prescriptions helps the clinical pharmacologists to foresee the drug interactions and to look in for rational prescribing. Further the data collected from the hospital regarding the utilisation of drugs provide us with the knowledge to formulate the guidelines for the management of skin diseases. As there is a paucity of studies in

this area among dermatological in-patients, we tried to gather the information regarding the prescribing pattern of steroids administered through all routes and formulations at a tertiary care teaching hospital in a coastal area, Karaikal. Hence the present study has been attempted to evaluate the prescribing pattern of Corticosteroids for various skin diseases, the formulations used and other concomitant medications. The rationality behind the prescriptions were also analysed in this study.

METHODOLOGY

This prospective, observational study was carried out in Vinayaka Missions Medical College and Hospital, a tertiary care centre in Karaikal, Puducherry. The Institutional Ethical Committee approval was obtained prior to the study. The dermatological in-patient case sheets were retrieved from the Medical Records Department for the duration of one year (from January 2013-December 2013) and scrutinized systematically. A detailed analysis was performed to record the demographic profile, the pattern of various skin diseases reported, with the pattern of drug usage. A special emphasis was given to find out the frequency, duration of administration of topical corticosteroids and the usage of other topical agents in combination with them. Finally the results were tabulated and expressed in averages, ratios and proportions.

RESULTS

As per the demographic data obtained, out of the total 291 in-patients, 60.48% (n= 176) were male patients and 39.51% (n=115) were female patients. (Fig.1). Majority of patients were in the age group of 41-50 years (26.83%) followed by 31-40 years (22.36%). (Fig 2). The average number of drugs per prescription was 6.37 ± 2.06 .

Figure 1

Sex distribution

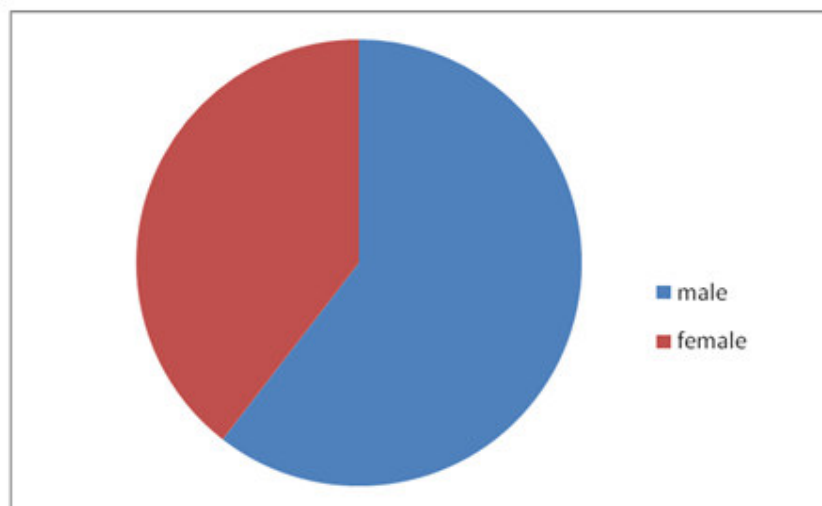


Figure 2

Agewise distribution of patients

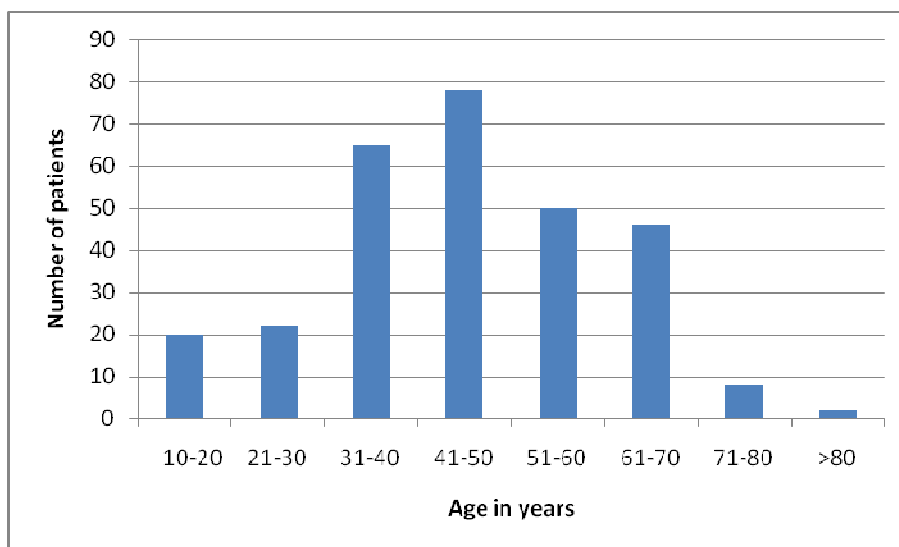


Table 1
Corticosteroids utilised for various skin diseases and their frequency

Sl. no	Diseases	Cases	Oral steroids	Parenteral steroids	Topical steroids
1	Psoriasis	24.82%	2.59%	14.28%	33.89%
2	Eczema	12.24%	10.4%	28.56%	16.24%
3	Allergic contact dermatitis	5.1%	19.5%	7.14%	8.4%
	Airborne contact dermatitis	4.42%	13%	14.28%	5.6%
4	Pemphigus and bullous Pemphigoid	4.42%	13%	21.42%	4.48%
	Epidermolysis bullosa aquisita	1.36%	3.9%	-	1.12%
5	Urticaria	5.44%	5.2%	7.14%	2.8%
6	Generalised pruritus	4.76%	-	-	2.8%
7	Carbuncle, furuncle	4.76%	-	-	-
8	Vasculitic ulcers	2.38%	-	-	-
9	Vitiligo	2.38%	-	-	2.24%
10	Lichen planus	2.38%	9.1%	7.14%	3.36%
11	Hansens disease(lepra reaction)	2.04%	7.8%	-	1.12%
12	Dermatitis herpetiformis	2.04%	3.9%	-	1.68%
13	Mycetoma	2.04%	-	-	-
14	Chronic lymphedema	2.04%	-	-	2.24%
15	Scabies	2.04%	-	-	-
16	Herpes	1.7%	-	-	-
17	Systemic lupus erythematosus	1.7%	7.8%	-	2.24%
18	Seborrhoeic keratoses	1.36%	-	-	0.56%
19	Chronic cutaneous lupus	1.36%	-	-	1.68%
20	Cellulitis	1.02%	-	-	-
21	Polymorphous light eruption	1.02%	1.3%	-	1.68%
22	Alopecia areata	1.02%	-	-	1.12%
23	Systemic sclerosis	0.68%	-	-	0.56%
24	Fixed drug eruption	0.68%	2.6%	-	0.56%
25	Oral submucous fibrosis	0.68%	-	-	1.68%
26	Extensive tinea cruris/corporis	0.68%	-	-	1.12%
27	Discoid lupus erythematosus	0.68%	-	-	0.56%
28	Vulvovaginal candidiasis	0.68%	-	-	-

Table1, showed that the most common cause of admission to hospital was Psoriasis (24.82%), followed by Eczema (12.24%), Contact Dermatitis (9.52%) and other bullous disorders (5.78%).The different routes of administration of corticosteroids prescribed along with the percentage used was also inferred from this table.

Table 2
Potency of topical corticosteroids and its use

Topical corticosteroid	Potency	Prescribed number	Percentage %
Clobetasol	High	59	33.33%
Halobetasol propionate	High	13	7.344%
Betamethasone dipropionate	High	2	1.129%
Beclomethasone	High	2	1.129%
Mometasone furoate	Moderate	50	28.24%
Betamethasone valerate	Moderate	10	5.65%
Fluticasone propionate	Moderate	3	1.69%
Triamcinolone acetonide	Moderate	12	6.77%
Desonide	Low	26	14.69%
Total		177	

The topical corticosteroids were prescribed for 177 patients (60.82%) with the major indication being Psoriasis (33.89%).The majority of topical corticosteroids prescribed were highly potent steroids like Clobetasol (33.33%), followed by moderately potent steroid like Mometasone (28.24%) and low potent steroid Desonide (14.69%).(Table 2)

Table 3
Formulations of topical steroids

Formulation	Prescribed number	Percentage %
Lotion	85	48.02%
Cream	54	30.51%
Ointment	26	14.68%
Paste	12	6.78%
Total	177	-

Table 3 depicts the various formulations of prescribed topical steroids. Lotion was the most frequently prescribed (48.02%), followed by cream (30.51%), ointment (14.68%) and paste (6.78%). The most commonly employed topical steroid preparation as monotherapy was Mometasone furoate (33.68%), followed by Desonide (27.36%) and Clobetasol (16.84%) (Table 4), whereas a majority of topical preparations were combined with Salicylic acid, Fusidic acid, Gentamicin, Clotrimazole and Mupirocin.(Table 5)

Table 4
Topical steroids prescribed as monotherapy

Topical corticosteroids	Cream	Lotion	Ointment	Paste	Total	Percentage %
Mometasone furoate	10	21	1	-	32	33.68%
Desonide	2	24	-	-	26	27.36%
Clobetasol	4	7	5	-	16	16.84%
Triamcinolone acetonide	-	-	-	12	12	12.63%
Beclomethasone	1	1	-	-	2	2.11%
Halobetasol propionate	1	-	1	-	2	2.11%
Fluticasone propionate	1	-	1	-	2	2.11%
Betamethasone dipropionate	-	2	-	-	2	2.11%
Betamethasone valerate	-	-	1	-	1	1.053%

Table 5
Combination of topical corticosteroids with other topical agents

Topical Steroid	Fusidic Acid	Salicylic Acid	Gentamicin	Clotrimazole	Mupirocin	Total
Clobetasol	2	37	4	-	-	43
Mometasone	16	2	-	-	-	18
Halobetasol	5	6	-	-	-	11
Betamethasone valerate	-	1	5	3	-	9
Fluticasone	-	-	-	-	1	1

As far as the indication being concerned, topical Clobetasol with Salicylic acid was the most commonly prescribed combination for Psoriasis, Mometasone with Fusidic acid and Halobetasol with Fusidic acid were for Eczema. The combination of topical Clotrimazole with Betamethasone was prescribed to treat extensive tinea corporis and cruris.

Table 6
Prescribed systemic corticosteroids

Systemic corticosteroid	Number of prescriptions	Percentage %
Oral Prednisolone	73	94.8%
Oral Methyl prednisolone	2	2.597%
Oral Deflazacort	2	2.597%
Both oral Prednisolone and Inj. Dexamethasone	3	1.03%
Inj. Dexamethasone	14	4.81%

Oral corticosteroids were prescribed for 77 patients (26.46%), the majority were for contact dermatitis (both allergic and airborne - 32.5%). Among the oral steroids Prednisolone (94.8%) was most commonly prescribed followed by Methyl prednisolone (2.59%) and Deflazacort (2.59%) (Table 6). Among the parenteral injectable steroids prescribed for 14 patients (4.81%) the common indication was Eczema (28.56%). Dexamethasone was the only parenteral corticosteroid (4.81%) prescribed intramuscularly. Both oral and injectable preparations were prescribed only for a few patients (1.03%) in the treatment of Eczema with Pampholyx, Airborne contact dermatitis and Pemphigus vulgaris. Similarly, both oral and topical preparations were prescribed together for 12.37% of patients with the major indication being contact dermatitis (44.44%), followed by Eczema (22.22%) and bullous disorders (16.66%).

DISCUSSION

From the demographic data obtained majority of patients were in the middle age group. Non infectious skin diseases like Psoriasis topped the table (24.82%), followed by Eczema (12.24%), contact dermatitis (9.52%) and bullous disorders (5.78%). Infectious diseases like carbuncle and furuncle (4.76%), scabies (2.04%), Hansen's disease (2.04%), Mycetoma (2.04%), herpes (1.7%), Candidiasis (0.68%) was found to be nadir. The disease pattern is comparable to the study by Saravanakumar et al³, Tamilnadu and Mirshad PV⁴, Kerala where papulosquamous disorders like Psoriasis were the most common cause for admission. This signifies that the incidence of skin

diseases relies mostly on the geographic location, genetic makeup and other environmental factors. The most common route of administration was topical followed by other routes. Topical steroids of moderate and high potency, Mometasone furoate (28.24%) and Clobetasol (33.33%) respectively were commonly used to treat non-infectious dermatological diseases. Similar to a study carried out by S.P. Narwane⁵, Clobetasol was the most common topical corticosteroid prescribed in our study. We also found that topical corticosteroids were prescribed mostly as lotions followed by creams, ointments and pastes. It was found from our study that Salicylic acid, was most commonly combined with topical corticosteroids for its keratolytic action and promotion of good penetration similar to the study by W.M. Sweileh⁶, Khan.N.A⁷ and Sarkar .C⁸. From our study it is also acclaimed that corticosteroids were never prescribed in any route to treat infectious skin diseases. This assures again that rationality is genuinely followed while prescribing. Since Prednisolone is the oral steroid found to have the least number of drug interactions⁹, it was the most commonly prescribed in our study followed by Methyl prednisolone and Deflazacort. Analysis revealed that a total of only 14 patients received parenteral corticosteroid (4.81%) and only 3 patients (1.03%) received both oral and a parenteral corticosteroid. From this study it is clear that majority of the dermatological prescriptions were written with a thorough knowledge of the recent guidelines. The pitfalls in prescribing pattern elsewhere might be because of non availability of particular drugs in their hospital pharmacy¹⁰, or due to availability only in particular brand names. The responsibility

should also be shared by the pharmacists to educate the patients about correct application of topical corticosteroids, the frequency of application etc. The patients should also understand the disease and its progression the complications due to improper treatment, overuse and misuse of medications and their outcomes. To conclude, the majority of skin diseases are chronic in nature and need lifelong treatment. A special consideration should also be given regarding Psychiatric counselling to patients who are highly obsessed of their disease. Self medication, over the counter medications, the use of

previous prescriptions for obtaining medicines should totally be avoided by the patients and this could be achieved through proper health education.

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