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Study on Utilization Pattern of Corticosteroids in Dermatology Unit in Jayanagar General Hospital, Bangalore

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Abstract: ***Introduction: Skin diseases are a significant problem all over the world. Corticosteroids are one of the most commonly prescribed drugs in the skin diseases due to their anti-inflammatory and immunosuppressive actions. The appropriate use of corticosteroids is necessary to obtain best possible effect with safest and least number of drugs, while avoiding under use and abuse which may lead to subtherapeutic dose (non-responsive) and adverse effects respectively. Aim: To assess the utilization pattern of corticosteroids in the dermatology department, Jayanagar General Hospital, Bangalore, India. Methodology: A hospital based prospective observational study was carried out for a period of 6 months in Jayanagar General Hospital, by enrolling outpatients considering study criteria. Prescription with atleast one steroid were collected and analyzed for corticosteroids prescription pattern. Results: Out of 150 patients studied, majority of the prescription were of females (59.33%) compared to males (40.67%). The study showed most common dermatological problem requiring steroid therapy was ACD (50%). 166 steroids were prescribed during the study, Clobetasol (57.22%) was the most preferred one. Topical route was much preferred (89.82%) over oral (7.78%) and parenteral (2.4%). Ointment (60%) was the most preferred topical formulation. 72.28% steroids were prescribed as generic name. Conclusion: Although most of the drugs were prescribed rationally, involvement of a Clinical pharmacist in patient care can help in more rational prescribing along with prevention & early detection of ADRs which can directly promote drug safety and better patient outcomes as well as to control misuse and abuse of OTC steroids.***

Keywords: utilization pattern, rationality, steroids, potency

1. Introduction

Skin diseases are a significant problem all over the world. Collectively skin is the 18th leading cause of health burden worldwide and it was 4th leading cause of nonfatal health burden in 2010 globally. [1] The dermatological problems constitute 2% of total outpatient department (OPD) consultation worldwide. [2] These skin problems are generally among the most common diseases seen in primary care settings in tropical areas. For instance, the World Health Organization's (WHO) 2001 report on the global burden of disease indicated that skin diseases were associated with mortality rates of 20,000 in Sub-Saharan Africa in 2001. This burden was comparable to mortality rates attributed to meningitis, hepatitis B, obstructed labor, and rheumatic heart disease in the same region. [3] The pattern of skin diseases in India is influenced by the developing economy, level of literacy, social backwardness, varied climate, and industrialization, access to primary health care, and different religious ritual and cultural factors. Skin changes are affected with aging due to passage of time, photo-aging due to exposure to the sun.[2]

Corticosteroids have revolutionized the world of Dermatology since the introduction of first steroidal drug (hydrocortisone) in 1952 by Sulzberger and Witten.[4] Corticosteroids are one of the most commonly prescribed drugs in the skin diseases due to their anti-inflammatory and immunosuppressive actions. They are widely prescribed in most of the departments. The effects of topical corticosteroids are related to four main mechanisms of action: anti-inflammatory, immunosuppressive, anti-proliferative and vasoconstrictive effects. Together, the effects of these medications make them instrumental in treating a wide variety of disorders. The anti-inflammatory effect of topical corticosteroids is mediated by the inhibition of phospholipase A-2 release and also by inhibiting transcription factors involved in activating pro-inflammatory genes. The immunosuppressive effect of topical corticosteroids is mediated by their ability to significantly suppress the production and action of humoral factors involved in the inflammatory response. The anti-proliferative effect of topical corticosteroids is mediated by their ability to interfere with DNA synthesis and mitosis. The vasoconstrictive effect of topical corticosteroids is not yet completely understood. However, it is believed that the effect on superficial dermal vessels may be mediated via inhibition of natural vasodilators.[5]

The choice of potency, for a specific skin condition, is dependent on the severity of the reaction.[6] The greater the potency, the more effect it has on reducing inflammation, but the greater the risk of side effects with continued use.[6,7] The availability of steroids as OTC drugs and their over-use puts these drugs at the risk of misuse. Thus the appropriate use of corticosteroids is necessary to obtain best possible effect with safest and least number of drugs, while avoiding under use and abuse which may lead to sub-therapeutic dose (non-responsive) and adverse effects respectively.The utilization pattern studies help to generate baseline data which can help modification in the prescription pattern, to obtain rational and cost-effective medical care, if required.[8]

2. Methodology

The out-patients visiting Dermatology (OPD) based prospective observational study carried out for the period of 6 month in the Department of Dermatology, Jayanagar General Hospital. Where the prescription with at least one steroid selected and enrolled into the study by considering inclusion and exclusion criteria. The enrolled patient's prescriptions were monitored and required details were collected in Data Abstraction Form. The prescription containing steroids were evaluated for the commonly used, category, indication and pattern (single or combination therapy).

Inclusion criteria:

- All patients visiting Dermatology OPD of Jayanagar General Hospital and prescribed with at least one steroid.

Exclusion criteria:

- Patients already on steroid therapy for indication other than dermatological.
- Children below 10 years.

3. Result and Discussion

Among 150 prescriptions analyzed, the pattern of distribution based on gender revealed that 89 (59.33%) were females and 61 (40.67%) were males prescribed with corticosteroid therapy. This data showed that female population was more frequently prescribed with corticosteroid therapy. Our study revealed that Eczema (ACD) was the most common indication for steroid therapy (50%) followed by dermatitis (8%), Hand eczema, psoriasis vulgaris and lichen planus each were diagnosed in 7 cases (4.66%). The study conducted by Mukherjee *et al* carried and Bylappa BK carried out in year 2015 in Kollam, Kerala also shows that high prevalence rates of Eczema.[9,10]

Our study revealed that, the steroids were prescribed more in generic name 120 (72.28%) than compared to brand name 46 (27.72%), that coincides with the study conducted by Nerurkar RP *et al*. This result is in contrast to study carried out by Arjan Aryal *et al.* where brand names were most used (76.93%) than generic (23.07%).[11]

Out of 166 corticosteroids prescribed in 150 prescriptions, most were prescribed from topical route (89.82%) followed by oral (7.78%) and parenteral (2.4%). This is supported by study conducted by Wahane Pravinkumar A *et al.*where topical (86.48%) were most favored followed by oral (8.4%) and parenteral (5.17%). Similar results were obtained in study by Dr Purabi Roy *et al*.[12,13]

Comparing the corticosteroids prescribed, most prescribed were Clobetasol (57.22%) and mometasone (18.67%). This is similar to analysis by Purushotham K *et al*.[14]Clobetasol and Salicylic acid ointment is available for free of cost and this may be one of the cause for its extensive use in the government hospital.

A total of 149 topical preparations were prescribed. Among them ultra-high potent steroids were prescribed the most (60.84%), followed by moderate potency steroids (18.67%). High and low potency steroids were prescribed 9.03%. This is supported by study Conducted by Purushotham K in 2016. Similar results were obtained in study by Nerurkar RP *et al*. in which ultra-high potent steroid were prescribed in 68.66% cases. In study conducted by Bylappa BK, 73% of steroids prescribed were very potent and 14% potent.[9,14]

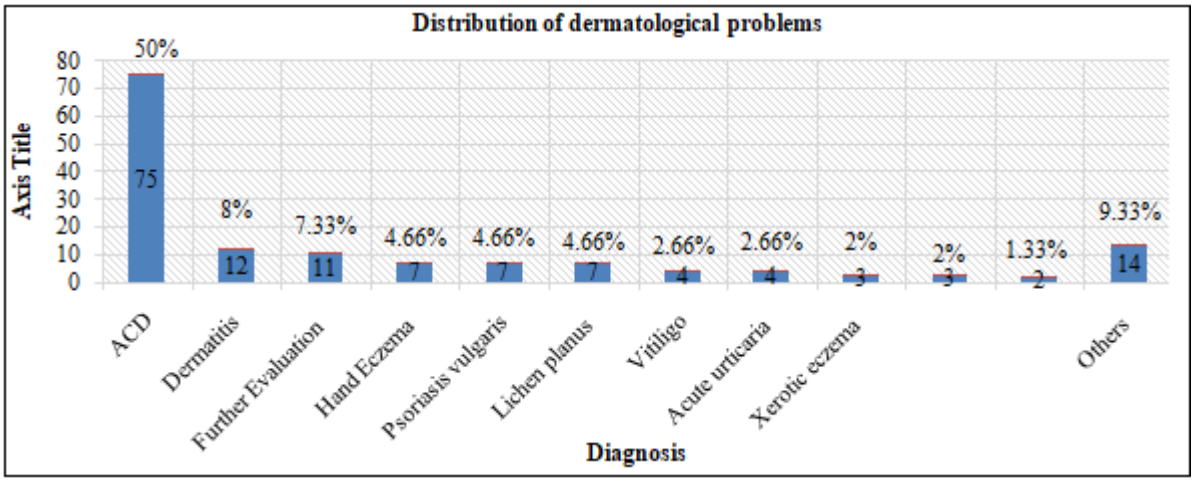

Figure 1: Distribution of dermatological problems

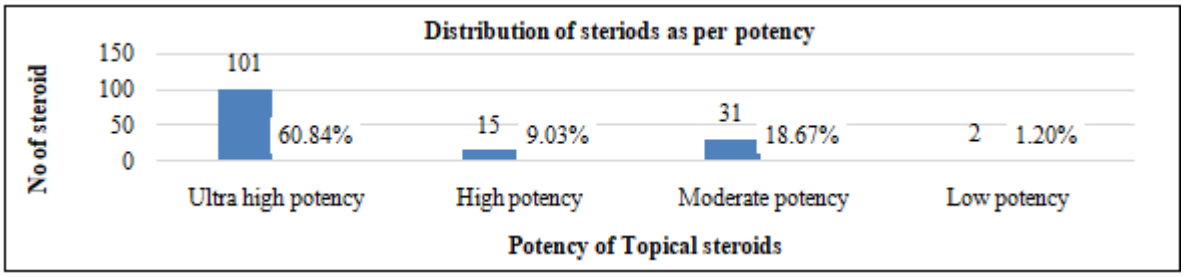

Figure 2: Distribution of steroids as per potency

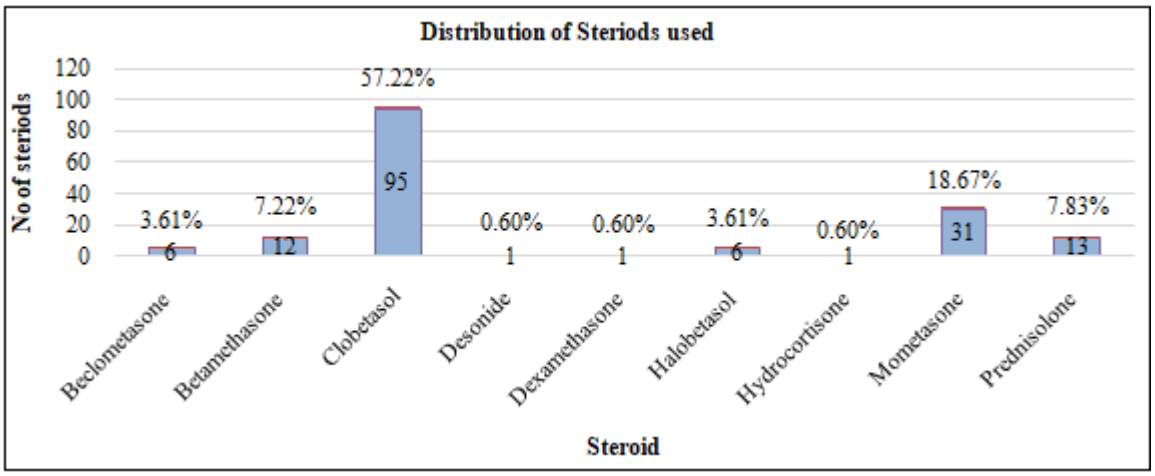

Figure 3: Distribution of steriods used

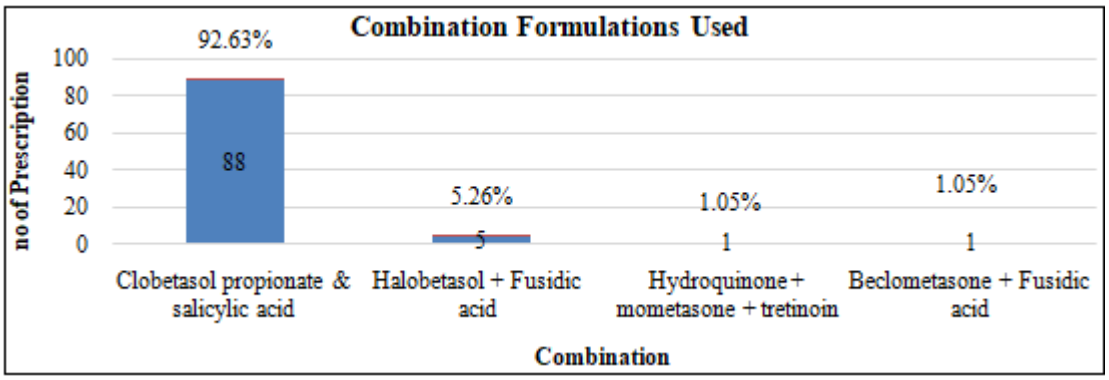

Figure 4: Combination formulation used

Table 1: Distribution of dermatological problems

S. No.	Principal diagnosis	Total no. of diagnosis, n = 150	Percentage of total no. of patients
1	ACD	75	50%
2	Dermatitis	12	8%
3	Further Evaluation	11	7.33%
4	Hand Eczema	7	4.66%
5	Psoriasis vulgaris	7	4.66%
6	Lichen planus	7	4.66%
7	Vitiligo	4	2.66%
8	Acute urticaria	4	2.66%
9	Xerotic eczema	3	2%
10	Post inflammatory Hyperpigmentation	3	2%
11	Fixed drug eruption	2	1.33%
12	Others	14	9.33%

Table 2: Distribution of steroids as per potency

S.No.	Potency of Topical Steroids	Total No. of Drugs, n=149	Percentage of Total No. of Drugs
1	Ultra high potency	101	60.84%
2	High potency	15	9.03%
3	Moderate potency	31	18.67%
4	Low potency	2	1.20%

Table 3: Percentage of steroid Prescribed.

S. No.	Steroid	No. of Steroid Prescribed	Percentage Total of Steroid
1	Clobetasol	95	57.22%
2	Mometasone	31	18.67%
3	Prednisolone	13	7.83%
4	Betamethasone	12	7.22%
5	Beclometasone	6	3.61%
6	Desonide	1	0.60%
7	Hydrocortisone	1	0.60%
8	Dexamethasone	1	0.60%
9	Halobetasol	6	3.61%

Table 4: Combination formulation used

S No.	Combination	No of combination Prescribed	Percentage Total of Combination
1	Clobetasol propionate & salicylic acid	88	92.63%
2	Halobetasol + Fusidic acid	5	5.26%
3	Hydroquinone + mometasone + tretinoin	1	1.05%
4	Beclometasone + Fusidic acid	1	1.05%

Potential limitations of this study are the limited sample due to short study period. Our Study was restricted only to Out-Patient Department of Dermatology practice. Follow up of the patients was another limitation due to which study on medication adherence ADR was not possible. The possibility that the subject not disclosing complete information such as duration of steroid intake, abuse and other OTC medication that could cause possible interaction with steroids could be another likely limitation. Few medicines were available free of cost in the hospital pharmacy, while others had to be bought from outside. This may have had an influence in prescribing.

4. Conclusion

The study revealed that majority of the steroids prescribed were of ultra-high potency. Among them Clobetasol, alone or in combination with salicylic acid was the most commonly prescribed drug. Periodic study on the usage of steroids in the hospital set up should be encouraged which will help the health care professional to select most appropriate medicine under current conditions. Further, periodic utilization pattern analysis can contribute to formulary making and best utilization of hospital budget. Involvement of a Clinical pharmacist in patient care can help in promoting drug safety and better service. Active monitoring of medication adherence seemed necessity to optimize the benefit and reduce the potential risk of adverse effects.

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