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RESEARCH ARTICLE

EVALUATION OF PRESCRIPTION PATTERN OF STEROID IN DERMATOLOGY OPD OF TERTIARY HEALTH CARE INSTITUTION AND STUDY OF ADVERSE EFFECTS WITH STEROIDS USE

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ABSTRACT

Aims and objective: To evaluate the prescription pattern of steroids in Dermatology OPD and the adverse events reported with steroid use.

Materials and methods: The prescriptions of both genders and of all age groups attending Dermatology OPD with moderate to severe dermatological problem, receiving corticosteroid were included. A total of 1575 prescriptions were analyzed for 6months, out of which steroids were prescribed in 600 prescriptions. The parameters assessed were corticosteroids prescribed, their route and frequency, demographic profile of patients and the adverse events reported.

Results: The majority (54.5%) of cases were males in the age group 35-50 years. About 85% of the prescriptions contained four to five drugs per prescription. In 72% instances injection dexamethasone and in 53% cases oral prednisolone was prescribed. The prevalence of pemphigus vulgaris is highest followed by systemic sclerosis. Cutaneous adverse effects were maximum, most frequent being atrophy, acne, and purpura. Systemic reactions such as hyperglycemia and glaucoma were found in some cases.

Conclusion: Our study confirms that steroids are used frequently in the Dermatology OPD and are associated with adverse drug reaction which could be minimized by their judicious use.

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INTRODUCTION

Corticosteroids are extremely useful in the treatment of skin disorders. Topical applications are mainly used as the drug is delivered directly to the target site and the dose can be easily titrated according to response. Intralesional and systemic steroid are also used in certain circumstances. (Longo *et al*., 2012) Corticosteroids have an important role because of their anti inflammatory and immunosuppressive effects and also their anti proliferative effects on keratinocytes. They can suppress collagen synthesis by fibroblast which can lead to many adverse effects but can also help in treatment of keloid scars. (Brunton *et al*., 2011) Potent topical steroids are betamethasone dipropionate, halcinonide, momentasone furoate, methylprednisolone aceponate etc. Topical steroids are mostly useful in acute inflammatory disease like allergic contact dermatitis, atopic eczema, asteotic eczema, discoid eczema, napkin dermatitis and to some extent in seborrhoeic dermatitis, lichen planus, plaque psoriasis. Intralesional steroid like triamcinolone acetonide is used in keloid scars, recalcitrant lesions of nodular prurigo, acne cysts, discoid lupus erythematosus, alopecia areata, hypertrophic lichen planus etc. Systemic steroids are required for both acute and chronic disabling bullous disorders including pemphigus vulgaris, bullous pemphigoid; connective tissue disorder like SLE, Wegener's granulomatosis, dermatomyositis; severe acute allergic contact dermatitis, severe atopic eczema etc. (Sima Jain, 2012) The adverse effects of steroids are mainly skin atrophy, purpura haemorrhage, telengiectasia, periocular, perioral dermatitis of the face etc.(Banik *et al*., 2010) Hence for maximum benefit and minimum adverse effect, nature of the disease, age of the patient, site affected, pharmacology of the steroid, vehicle should be taken into consideration. (Shakya Shrestha *et al*., 2015) The prescription of steroids depends on factors such as choice of the physician, socio economic condition of patients etc. There is disparity in prescription from consultant to consultant and place to place. Also there is wide range of steroids available in the market with different efficacy. All these factors lead to irrational prescription of steroids for dermatological condition which is a common occurrence in clinical practice. To minimize adverse cutaneous and systemic reactions, especially with prolonged use, the rational use of steroids should include careful consideration. Hence, one step to achieve rational prescribing is periodic auditing of prescriptions. (Suvarna *et al*., 2013)

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Therefore the present study has been taken to look for the extent of satisfactory therapeutic ratio in treating patients suffering from skin disorders with steroids by different routes in out Patient Department of Dermatology, Gauhati Medical College and Hospital (GMCH), Guwahati.

MATERIALS AND METHODS

The present study was conducted in the Department of dermatology, Gauhati Medical College and Hospital.

Ethical review

The protocol was submitted to the Human Ethics Committee and the study was conducted after obtaining permission from the Institutional Human Ethics Committee vide letter no.MC/233/2013/274.

Study design

Study type- The present study was a Hospital based, Retrospective, observational study.

Study Site- The study was carried out in outpatient department of dermatology, Gauhati medical college and hospital by follow up of OPD prescriptions where different group of steroids were prescribed for different dermatological conditions.

Study duration- 6 months

Sample size- Out of 1575 prescriptions that were analyzed, only 600 prescriptions were prescribed with steroid by any route for different moderate to severe dermatological problem.

Study Population-

Inclusion Criteria

1. All age groups
2. Both genders (Male/Female)
3. Patients attending dermatology OPD with moderate to severe dermatological problem that were prescribed steroid by any route.

Exclusion Criteria- Patients attending dermatology OPD but were not prescribed any steroids.

Data Analysis- The data obtained from the analysis of 600 prescriptions was further condensed and a master chart was prepared using MS-Excel. The overall information generated was presented under the following headings:

1. Demographic Profile of patients- Prevalence of dermatological disorder, Gender, Age
2. Corticosteroid prescribed
3. Route of steroid
4. Frequency of steroid prescribed
5. Adverse events with steroid use

RESULTS

The data obtained from the analysis of 600 prescriptions was subjected to statistical analysis and arranged in the following tables and figures

Table 1. Age Distribution of the subjects

Age Group (In Years)	No. of Patients
UPTO 20	18
21-30	144
31-40	216
41-50	125
51-60	56
61-70	41

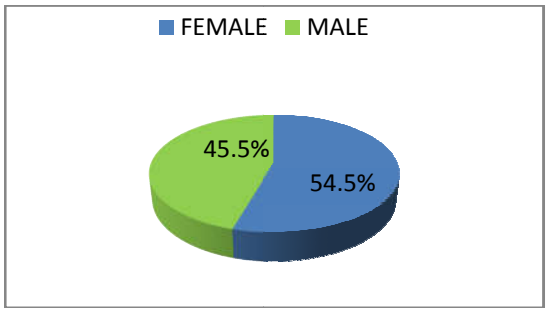

Figure 1. Gender wise Distribution of the subjects

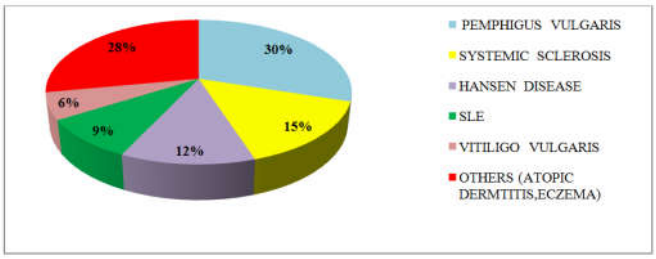

Figure 2. Prevalence of Dermatological Disorder

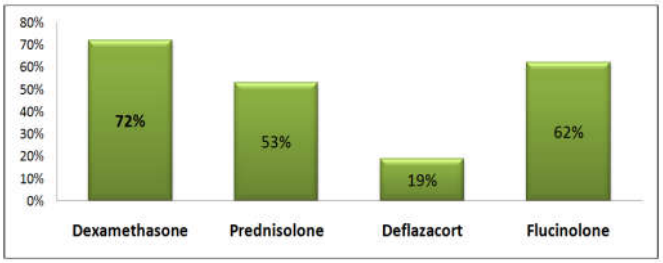

Figure 3. Corticosteroids Prescribed

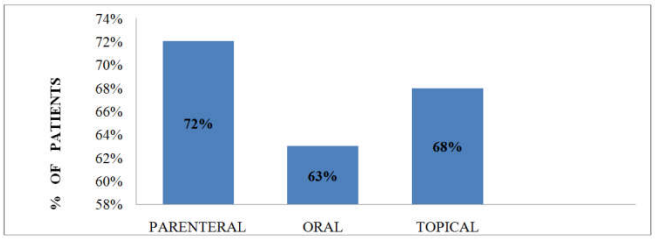

Figure 4. Route of Steroid Used

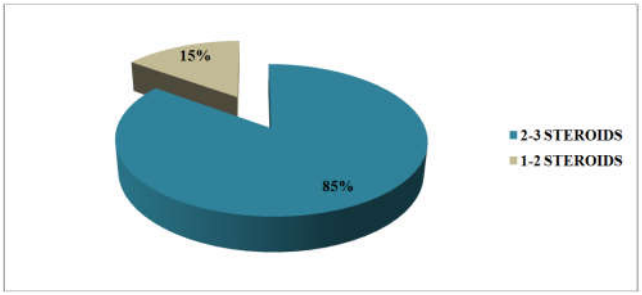

Figure 5. Frequency of Steroids used

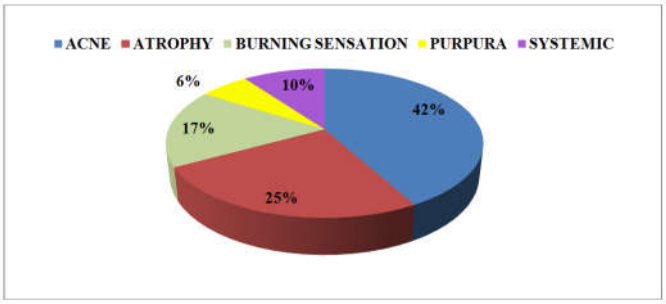

Figure 6. Adverse Events with steroid use

DISCUSSION

Corticosteroids constitute one of the largest groups of drugs which are being used in dermatological practice as a short term as well as long term therapy that are associated with a number of adverse effects. (Ashok Kumar *et al*., 2011) Their rational use can however, minimize the systemic and cutaneous side effects that occur with corticosteroids. Physicians ought to prescribe the corticosteroid that will treat the dermatological condition with maximum therapeutic benefits and least possible adverse effects. (Ashok Kumar *et al*., 2011) In the present study out of 1575 prescriptions that were analysed, only 600 prescriptions were prescribed with steroid for different dermatological problem and it was found that higher numbers of corticosteroids users were females as shown in figure 1. In consistence with the findings of our study, previous study has also reported that higher numbers of females were prescribed with corticosteroids along with antimicrobials for different dermatological conditions. (Sarkar *et al*., 2001) The high number of females using corticosteroids for dermatological purposes might be due to women being more conscious about the health of their skin. Additionally, women outnumber men in using cosmetics, which might predispose them to a number of skin disorders. The present study has revealed that patients in age above 30 years were using corticosteroid as shown in table no.1 which is similar to the previous study showing patients belonging to age below 40 years. (Sarkar *et al*., 2001) This finding strongly supports the fact that people at this age become more conscious about their physical appearance from cosmetic point of view.

A majority of the patients in our study used systemic corticosteroids followed by topical corticosteroids as shown in figure 4. Our finding is different from several other studies where topical corticosteroids were preferred over systemic corticosteroids for dermatologic disorders. (Ashok Kumar *et al*., 2011, Arellano *et al*., 2007, Joly *et al*., 2002, Schaefer *et al*., 2008) This might be due to the prevalence of pemphigus vulgaris, systemic sclerosis as the most common dermatological condition in our set up as shown in figure 2 which requires systemic steroids. Effectiveness of topical corticosteroids is mainly for many non-infective skin disorders and the fact that they are safer to use for acute skin diseases. (Ashok Kumar *et al*., 2011, Giulianam *et al*., 2013) Although topical corticosteroids are relatively safe, they can frequently produce local adverse effects and rarely systemic effects when used inappropriately. (Giulianam *et al*., 2013, Motghare *et al*., 1995) Systemic corticosteroids, however, are required for prolonged periods, as in atopic dermatitis so they have to be tapered or reduced to minimal doses for the long term therapy which makes them less preferred in many other dermatologic disorders. A study suggests that the optimum dosing schedule of the steroids should have minimum frequency of application and still provide relief. (Ference *et al*., 2009) Hence, the shortest possible treatment course is recommended for acute skin diseases. (Giulianam *et al*., 2013) In our study dexamethasone was the most commonly prescribed steroid as shown in figure 3. This is might be because of the prevalence of pemphigus vulgaris as the most common dermatological condition which requires administration of parenteral steroids. Topical steroids mainly belonged to very potent groups (fluocinolone, clobetasol) which show a trend toward prescribing potent steroids. (Motghare *et al*., 1995) The prescription of very potent steroids should be limited when possible. Long and excessive use may carry the risk of suppression of the hypothalamic-pituitary-adrenal axis as well as local adverse effects. (Walsh *et al*., 1993) 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 provisions for making low-potency steroids available in the hospital pharmacy taking into consideration the adverse effects of potent steroids. In this study, none of the topical steroids were prescribed by their generic names. Using brand names for prescribing may sometimes create dispensing errors. Moreover, prescribing drugs by their generic names could reduce the cost and thus increase prescription compliance. About 85% of the prescriptions contained 2-3 steroids as shown in figure 5. This reflects a trend toward polypharmacy. The complications of polypharmacy are multiple such as increased problems with side effects of medications, adverse drug reactions, drug-drug interactions, noncompliance with the medical regimen, and direct cost of drugs as well as indirect costs resulting from hospitalization for iatrogenic illnesses. (Colley *et al*., 1993)

In the present study out of 1575 prescriptions, around 25% of the patients reported adverse effects. In consistent with the findings of our study, several other studies have reported various systemic and cutaneous adverse effects with corticosteroids use. (Ashok Kumar *et al*., 2011, Sarkar *et al*., 2001, Giulianam *et al*., 2013) Acne has been reported as the most common adverse effect of topical steroids in our study as shown in figure 6 which is consistent to the findings of previous studies in which topical corticosteroids rapidly induced an acneiform eruption. (Hengge *et al*., 2006, Kaidbey *et al*., 1974) It has been suggested that the acnegenic effect of topical corticosteroids might be due to the degradation of the follicular epithelium which results in extrusion of the follicular content. (Hengge *et al*., 2006, Kaidbey *et al*., 1974) Corticosteroid-induced acne might be due to application of high concentration of drugs, application under occlusion, application to acne-prone areas of face and upper back etc., as proposed by another study. (Hengge *et al*., 2006) However, these predisposing factors were not assessed by our study as to assessment of such factors is beyond the scope of the present study and this warrants for further multi-centred study with a large sample size. Skin atrophy is the second most common adverse effect of topical corticosteroids. (Ashok Kumar *et al*., 2011, Ference *et al*., 2009, Sarkar *et al*.2001, Giulianam *et al*., 2013) Topical corticosteroids are known to decrease skin elasticity and bring alterations in its mechanical properties. (Hengge *et al*., 2006) Burning sensation was the third most commonly reported adverse effect in this study which might be due to contact hypersensitivity to topical corticosteroids upon prolonged exposure. (Hengge *et al*., 2006) In the present study, adverse effects were significantly high in females. This might be due to the higher number of females being prescribed with corticosteroids for skin disorders which was consistent to the

findings of previous study. (Ference *et al*., 2009) Additionally, adverse effects were significantly associated with the use of systemic corticosteroids. In agreement to the finding of our study, even low doses of systemic corticosteroids used for prolonged periods, was associated with significant morbidity and mortality. (Mitsos and Sasseville *et al*., 2011)

Multiple complications such as osteoporosis, cutaneous effects including purpura, atrophy, were reported with long-term use of systemic corticosteroids. (MitsosL and Sasseville *et al*., 2011) Topical corticosteroids, which are considered relatively safe, are also associated with various adverse effects as discussed above though they are preferred over systemic corticosteroids for dermatologic disorders. (Ashok Kumar *et al*., 2011, Arellano *et al*., 2007, Joly *et al*., 2002, Schaefer *et al*., 2008) Our study revealed that adverse effects were significantly associated with the regular use of corticosteroids. This finding is in strong agreement with several other studies in which incidence of adverse effects were high with daily and long-term use of corticosteroids like increase in risk of bone fractures, hyperglycemia etc. (Mitsos and Sasseville *et al*., 2011) Furthermore, our study found that a significantly higher number of patients in whom adverse effects were seen had discontinued corticosteroids abruptly. It might be because of the occurrence of withdrawal symptoms or relapse of underlying disease or aggravation of corticosteroids induced adverse effects on stopping the drug abruptly as suggested by other studies. (CrésioAlves *et al*., 2008) Such symptoms are seen when topical corticosteroids are used for longer duration, generally > 2 weeks and/or given in high doses and stopped abruptly. (CrésioAlves *et al*., 2008) Nevertheless, rapid reduction or abrupt withdrawal from corticosteroids therapy should be avoided.

Conclusion: The appearance of novel therapeutic agents and new clinical evidences in management of dermatological disorder has initiated a revolution in steroids utilization among practitioners. Our study confirms that steroid is used frequently in the dermatology OPD, GMCH and is associated with adverse drug reaction which could be minimized by their judicious use. Thus studying the prescription pattern can help the practitioner in adopting rational prescribing practices and the study was a step in this direction.

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