Topical Steroid Abuse: A Prospective Study in Dermatology Outpatients

Abstract: Background: Topical steroids are backbone for the treatment of dermatological diseases. They are commonly prescribed and thus are the most used and abused drugs. Low cost, easy availability without prescription and quick relief on application are some of the major reasons for their misuse. This study aims to find out the commonly used steroids by patients, the indication for their use and their side effects in the patients of steroid induced dermatoses. With their inadvertent use, these are a menace in creating and aggravating many dermatoses. Materials and Methods: This was a prospective study conducted for a period of four months from 1 August to 30 November 2019 in the Department of Dermatology, Venereology and leprosy, Rohilkhand Medical College and Hospital, Bareilly, U.P. Two hundred patients who were clinically diagnosed as steroid induced dermatosis were selected and given a questionnaire regarding the type of topical steroid used, indication for use, duration and others. Finally, the data was collected and analyzed. Results: Total 200 patients were included in the study. Most of the patients i.e. about 44% used the topical steroids in combination preparations. In only 20%, the medication was prescribed by a doctor. Majority used it for a period of 3-6 months and stopped following several complaints like itching, flushing, burning and photosensitivity. After examining the patients, erythema and telangiectasia was the most common finding in about 73 patients followed by hypertrichosis, acneiform eruptions, pigmentation, exacerbation of infection, atrophy and scarring. Conclusion: This study highlights on the lack of awareness among people regarding use of topical steroids and the different side effects observed due to their inappropriate use. Also, the increasing incidence of the steroid induced dermatitis is a quite alarming and regulations should be made regarding their sale.

Keywords: Topical steroids, abuse, awareness.

INTRODUCTION:

The introduction of topical steroids was a big landmark in the history of dermatology. The first one to be discovered was hydrocortisone by Sulzberger and Witten in 1952 (Sulzberger, M. B. 1952). They work like magic drugs offering quick relief to the patients for various dermatological conditions and thus are the most abused drugs in dermatology.

They are the mainstay of treatment as their action as anti-inflammatory, anti-mitotic, vasoconstrictive and immunosuppressive agents are used in various dermatological diseases like eczema, psoriasis, lichen planus, vitiligo, vesiculobullous disorders (pemphigus and pemphigoid), autoimmune (lupus erythematosus, dermatomyositis) and other miscellaneous conditions (insect bite, T cell lymphomas) (Mehta, A. B. et al., 2016).

Topical corticosteroids are available in various formulations as creams, ointments, lotions, gels and foams. The intrinsic property of topical steroids maybe augmented by esterification and halogenation (Mori, M. et al., 1994). Ointments are useful over thickened skin, creams are less greasy and better for moist areas. Gels are non greasy and lotions are useful for large surface areas and hairy areas. These vehicles and formulations play a vital role in potency determination of topical steroids (Katz, M., & Gans, E. H. 2008). Different patients require different formulations depending on the disease, site and patient requirement.
According to their potency are divided into seven classes, as Class I: superpotent (clobetasol propionate 0.05%, halobetasol propionate 0.05%, desoximetasone 0.25%), Class II: high potency (betamethasone dipropionate 0.05% cream, halcinonide 0.1%), Class III: medium-high potency (fluticasone propionate 0.005% ointment), Class IV medium potency (mometasone furoate 0.1% cream), Class V: medium potency (betamethasone valerate 0.1% cream, fluocinolone acetonide 0.025% cream), Class VI: low potency (desonide 0.05% cream, fluocinolone acetonide 0.01% cream), and Class VII: low potency (hydrocortisone acetate, dexamethasone acetate 0.1%) (Tadicherla, S. et al., 2009).

Human vasoconstrictor assay (McKenzie and Stoughton) is a common method to assess the potency of topical steroids. Various dilutions of topical steroids are applied to the skin and then the degree of visible blanching caused by it is measured (McKenzie, A. W., & Stoughton, R. B. 1962).

The amount of steroid applied can also play a part in preventing its abuse. This can be done by using FTU as a method to counsel the patient how much of the steroid is to be used. One finger tip unit is the amount of ointment expressed from a tube with nozzle diameter 5mm applied from distal skin crease to the tip of palmer aspect of index finger. Different sites require different amount. One Finger Tip Unit is equal to 0.49 g in males and 0.43 g in females (Long, C. C., & Finlay, A. Y. 1991). All topical corticosteroids come under pregnancy category C and should be prescribed with caution during lactation (Tadicherla, S. et al., 2009).

**RESULTS:**

1. **Demographic data:**
   - Out of the 200 patients included in the study 119 were female and 81 were male.
   - Majority belonged to the age group of 21-30 years.
   - Education status: Most of the patients were literate in the study about 176 patients and 24 patients were illiterate.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than/equal to 20 years</td>
<td>25</td>
</tr>
<tr>
<td>21-30 years</td>
<td>56</td>
</tr>
<tr>
<td>31-40 years</td>
<td>47</td>
</tr>
<tr>
<td>41-50 years</td>
<td>42</td>
</tr>
<tr>
<td>More than 50 years</td>
<td>30</td>
</tr>
</tbody>
</table>

2. **Topical steroid being used:**

   - Combination     | 88 (44%) |
   - Clobetasol       | 47 (23.5%) |
   - Betamethasone    | 25 (12.5%) |
   - Mometasone       | 20 (10%)  |
   - Fluticasone      | 5 (2.5%)  |
   - Others           | 15 (7.5%) |

Successful treatment depends on their judicious administration taking in account all the factors like choosing the appropriate drug with regard to potency, vehicle, amount and frequency of application in relation to the disease.

As there is little knowledge regarding their adequate use among general public as well as medical personnel, they are misused frequently. The major reason for this is its easy availability in various combinations and rapid response. Their abuse can lead to varied spectrum of dermatitis ranging from mild erythema to severe irritant dermatitis.

The burden of steroid induced dermatosis is increasing rapidly in India. Studies need to be done to highlight the severity of this problem so that effective strategies can come up to counteract this. The aim of this study was to find out the reasons leading to abuse in patients and side effects encountered.

**MATERIALS AND METHODS:**

This was a prospective study conducted in the department of Dermatology, Venerology and leprosy in Rohilkhand Medical College and Hospital, Bareilly, U.P for a period of four months from 1 August to 30 November. A total of 200 patients with clinically diagnosed topical steroid induced dermatosis attending the Dermatology OPD were included in the study. After obtaining informed verbal consent, they were asked to fill up a questionnaire. The questionnaire aimed at finding out the steroid being used, whether it was prescribed by a medical practitioner or not, condition for which it was being used, duration of use and side effects encountered.
Out of the total of 200 patients, most of them i.e. 44% used topical preparations which were combination of steroids with antibacterials, antifungals, retinoids and hydroquinone. About 47 patients used clobetasol, and 25 used betamethasone. Mometasone was used by 20 and fluticasone by 5.

3. Given by:
   - Medical practitioner
     - Dermatologists 40 (20%)
     - Non-dermatologists 21
   - Quacks/ Pharmacists 76 (38%)
   - Advised by
     - Relatives/friends 48
     - Print and social media 36

   As mentioned in the above table, majority of the patients i.e. 42% patients applied topical steroids after recommendation by friends, relatives print as well as social media. About 20% applied it after prescription from a doctor and 38% after consulting a quack or a pharmacist.

4. Indication of Use:
   - Hyperpigmentation over face 43 (21.5%)
   - Acne 37 (18.5%)
   - Rash over face 29 (14.5%)
   - Rash over body 57 (28.5%)
   - Fairness/ Glow 28 (14%)
   - Others 6 (3%)

   Out of the 200, maximum number i.e. 57 patients used the steroid for rash over the body. Forty three used for hyperpigmentation over face, 37 for acne, 29 for rash over face and 28 patients for fairness or glow over face.
5. **Duration:**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 3 months</td>
<td>59</td>
<td>(29.5%)</td>
</tr>
<tr>
<td>More than 3-6 months</td>
<td>85</td>
<td>(42.5%)</td>
</tr>
<tr>
<td>6 months - 1 year</td>
<td>34</td>
<td>(17%)</td>
</tr>
<tr>
<td>More than 1 year</td>
<td>22</td>
<td>(11%)</td>
</tr>
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Most of the patients (42.5%) applied the medicine for a duration of 3-6 months. About 29.5% applied it for less than 3 months, 17% for about 6 months to an year and 11% for more than an year.

6. **Side effects (by patient):**

- Itching: 86
- Redness/Flushing: 74
- Photosensitivity: 62
- Burning: 54

# Sum total is not 200 as most patients experienced multiple symptoms

The commonest complaint of the patient after application of topical steroids was itching, seen in about 86 patients. Flushing/redness was the second complaint in about 74 patients. Photosensitivity was seen in about 62 patients and Burning sensation in 54 patients. Most of the patient experienced an overlap of the above symptoms.

The most common side effect examined by the doctor was telangiectasia and erythema 73 patients (36.5%) followed by hypertrichosis 36 (18%) patients, acneiform eruptions 26 (13%) patients, hypopigmentation in 19 (9.5%), exacerbation of infection 17 (8.5%), atrophy and striae 29 (14.5%) patients.

**Figure 1:** Striae induced by repeated application of Clobetasol over abdomen for tinea abdomen.

**Figure 2:** Erythema and telangiectasia seen after use of betamethasone over face over dark spots.
DISCUSSION:

Topical steroids are a boon for many exhausting, long term dermatological diseases. Its availability in various formulations and potencies has revolutionised the treatment of many dermatoses. However, its use is like a double edged sword and thus careful administration is of utmost importance. Overuse beyond the designated time can also lead to steroid induced dermatoses. Due to its rampant use as a go-to medication for any skin related disorder by non-dermatologists and quacks has led to menace in and increased incidence of steroid induced dermatoses.

Psoriasis, lichen planus, vesiculobullous disorders, papulosquamous disorders are some of the common conditions regarding use of topical steroids. The decrease the course of the disease drastically and help provide relief to the patient.

Tinea incognito, steroid induced Rosacea and hypertrichosis are some of the common conditions caused due to steroid abuse. Patients complains of excessive erythema, scaling, and burning sensation. Few patients also present with irritant dermatitis. The abuse of topical steroids further aggravates the condition and prolongs the course of the disease.

In the present study we found out that only 20% of patients were using the steroids after recommendation from a doctor whereas in a study by Saraswat et al., 41% of the patients got prescription from a doctor (Saraswat, A. et al., 2011).

In a study by Meena S et al., Clobetasol propionate was the commonest topical steroid being abused in about 44.3% patients followed by betamethasone, mometasone and others (Meena, S. et al., 2017) Rath S et al., found betamethasone vaterate to be the commonest agent. However, in our study we found out that combination creams containing hydroquinone, tretinoin and steroid and others were the most common an about 88% patients followed by clobetasol in 47%, betamethasone in 12.5%, mometasone in 10% and others (Rathi, S. K., & D’Souza, P., 2012).

The common indication for use in our study was found out be was rash over the body (28.5 %) patients followed by hyperpigmentation over face in 21.5 %. A similar finding was present in study Gupta et al., where most of the patients (49.4%) were using topical steroids for dermatophytosis.

In our study the most common side effects were erythema, telangiectasia, hypertrichosis, acneform eruptions, pigmentations, atrophy, striae which was similar in study by Nagesh, T. S., & Akhilsh, A. (2016).

CONCLUSION:

Topical steroids are vital for the treatment of various dermatological diseases. However, their use should be strictly monitored to prevent their abuse. Lack of regulations regarding their manufacturing, irrational combinations and their free availability are some of the major reasons for their abuse. Our study highlights the lack of awareness among general public leading to this continuous vicious cycle of use and abuse.

REFERENCES: