Topical Steroid-Dependent Face: Response to Xylometazoline Topical

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Abstract
Unsupervised and long-term use of fluorinated/potent topical steroids on the face can lead to side effects such as acne, skin thinning, photosensitivity, and a typical clinical presentation of a topical steroid-dependent face (TSDF) with rebound flushing, burning, dryness, and scaling on attempted withdrawal of the potent topical steroid cream. To evaluate the response of a commercially available nasal decongestant solution of xylometazoline 0.05% in patients of long-term potent topical steroid abuse on the face. Two patients with a history of long-term, indiscriminate, and unsupervised topical steroid use on the face were asked to use a commercially available nasal decongestant solution, on face. Patients were asked to use the decongestant solution on face, once daily for 2 weeks. Follow-up after 2 weeks demonstrated excellent improvement in flushing and erythema. Side effects reported were transient tingling and stinging sensation. Xylometazoline, being an alpha-adrenergic agonist, presents an effective new option for treatment in patients of flushing and erythema, resulting from long-term topical steroid use on face.

Keywords: Red face, steroid induced, vasoconstriction, xylometazoline

INTRODUCTION
While topical steroids are the most useful medication for ameliorating various inflammatory skin conditions, they are also the most misused or abused medications, particularly on face. The initial remarkable improvement in inflammatory skin conditions on face to a potent topical steroid almost certainly results in side effects, on long-term or repeated use. Topical steroid-dependent face (TSD), i.e., flushing or rebound erythema, burning, itching, and dryness/scaling is a commonly encountered complication on withdrawal of indiscriminate, long-term use of potent topical steroids on face, apart from other associated side effects such as acne, perioral dermatitis, and background erythema. This clinical picture is strikingly similar to rosacea. In addition to withdrawal of the offending potent topical steroid cream, treatment measures have been quite similar to rosacea - broad spectrum sunscreens, emollients, metronidazole, immunomodulators such as tacrolimus/pimecrolimus, oral tetracyclines, and macrolides have been used for steroid-induced rosacea-like dermatitis.

We report 2 patients with a history of long-term topical steroids use on face with side effects such as flushing, erythema, and acne, who responded very well to topical alpha-adrenergic agonist, xylometazoline.

Several papers have studied the effects of topical vasoconstrictors in the treatment of flushing and background erythema in rosacea. Brimonidine, xylometazoline, and oxymetazoline have been studied in this category. Brimonidine tartrate is a highly selective α₂-adrenergic receptor agonist whose mechanism of action in the treatment of rosacea is thought to involve vasoconstriction of superficial skin vasculature and to a lesser extent anti-inflammatory effects. Successful treatment of flushing and background erythema with other topically applied adrenergic receptor modifiers such as oxymetazoline and xylometazoline have also been documented in the literature.

Therefore, drawing on literature reports about the use of alpha-adrenergic agonists in erythematotelangiectatic rosacea, we assumed the effectiveness of topical xylometazoline in treating...
steroid-induced rosacea-like dermatitis. Xylometazoline is commonly used in decongestant in nasal drops and sprays, for relieving nasal blockade.

**CASE REPORTS**

**Case 1**
A 32-year-old female, homemaker, was using betamethasone valerate 0.05% cream, for past 6 months, as a regular fairness cream, on a friend’s advice. She noticed that over the past 2 months, her face had started to turn increasingly red, especially over the malar area, forehead, nose, as well as chin. She continued to use betamethasone valerate cream despite these side effects. Her skin started to burn and itch, especially when outdoors and when cooking food at home. On presentation, she complained of flushing and had diffuse and persistent redness on cheeks, forehead, and chin with few telangiectasia [Figure 1a].

There was no history of oral ulcers, joint pains, and fever. She was ANA negative and her blood work was within normal limits. She was advised to stop topical steroid cream and asked to use a broad spectrum sunscreen (SPF 50) throughout the day and xylometazoline 0.05% solution, once daily at night. Sun protection was advised. Her next follow-up at 2 weeks had a visible reduction in acne as well as erythema and flushing [Figure 2b].

**Case 2**
An 18-year-old young female procured mometasone furoate 0.1% cream over the counter and was using this cream for acne on her face, on a friend’s advice. She had continued using this cream for over 5 months because of initial good response in her inflammatory acne, however, was troubled by her face becoming sensitive and red. When she presented to us, she had diffuse redness on cheeks and inflammatory acne on cheeks along with burning and itching sensation [Figure 2a].

She was asked to stop topical steroid cream and was started on clindamycin 1% gel and xylometazoline 0.05% solution, once daily at night for 2 weeks. Sun protection was advised. Her next follow-up at 2 weeks had a visible reduction in acne as well as erythema and flushing [Figure 2b].

**DISCUSSION**

TSDF presents a challenging problem for the patient as well as the treating dermatologist. Initially, patients may start using topical steroids for some trivial dermatosis like seborrheic dermatitis on advice by friends and relatives. At first, the vasoconstrictive and anti-inflammatory effects of the steroids result in what seems to be clearance of the primary dermatitis but repeated use leads to epidermal atrophy, degeneration of dermal structure, and collagen deterioration over several months. Multiple pathways including rebound vasodilatation and release of proinflammatory cytokines by chronic intermittent steroid exposure induce rosacea-like eruption.

A landmark, multicentric study in India, (Saraswat et al.,) re-emphasized and documented that steroid dependence due to long-term and repeated topical steroid use is widely prevalent and also coined the term “TSDF” to denote typical features of long-term potent topical steroid abuse on face such as rebound erythema, burning, itching, and dryness/scaling.[1-12] Other important studies during that period also stressed on the fact that easy availability of potent topical steroids over the counter without a legitimate prescription needs to be stopped altogether, in consultation with policymakers and that would go a long way in ameliorating the problem of steroid misuse in principle. This among other things like the primary aim of educating and spreading awareness about the dangers of using steroid based creams without legitimate prescription or for more than the recommended duration, over the past decade, has been the focus of several distinguished authors (Saraswat et al., Coondoo, Rathi, Abraham and Roga, Dey, Coondoo et al.) of national association of dermatologists, venereologists, and leprologists in a developing country like India (IADVL), where the problem of topical steroid abuse on face is still rampant and a lot needs to be done in this direction.[4-6,8-10]

Recovery of TSDF is slow, and treatment requires patience, both on the part of the patient as well as the treating
dermatologist. Apart from the discontinuation of topical steroid, which invariably leads to a flare-up of flushing and erythema, oral anti-inflammatory antibiotics, with or without topical metronidazole, and/or topical calcineurin antagonists such as tacrolimus and pimecrolimus, may be added.\(^{[12-15]}\)

Recently, there has been an emphasis on newer medical therapies (alpha-adrenergic agonists such as brimonidine, xylometazoline, and oxymetazoline) in the treatment of rosacea with various studies and case reports highlighting their effectiveness in improving flushing and erythema of rosacea.\(^{[16-22]}\)

Brimonidine 0.33% gel is also approved by the US-Food and Drug Administration for treatment of rosacea, apart from the other approved topical therapies (metronidazole, azelaic acid, sulfacetamide sodium, and recently, ivermectin).\(^{[23]}\) This urged us in our effort to find out the effectiveness of alpha-adrenergic agonists in patients with steroid-induced flushing and erythema. Excellent improvement and faster recovery to topical xylometazoline in 2 such patients furnish a new approach to treatment of these patients, acting by directly constricting the cutaneous vasculature thus reducing the blood flow, flushing and erythema and exerting anti-inflammatory effects.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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