Case Report

Detection of Steroids in Topical Fairness Preparations Using Histamine Wheal Test

Abstract

Topical corticosteroid (TC) abuse is a common, worldwide, problem. One of the recent emerging concerns is the adulteration of TC in fairness cream. The presence of TC in skin-whitening cosmetic creams can be detected by high-performance liquid chromatography (HPLC). Since HPLC is expensive, time-taking and not easily available, we suggest the use of histamine wheal test as a simple and inexpensive test to detect the presence of topical steroids in fairness cream.

Keywords: *Adulteration, fairness creams, histamine wheal test, skin prick test, steroids*

Satish Nithya, Chakravarthi R. Srinivas[1], Surendranath Lal

Department of Dermatology, Ranga's Centre of Dermatology, Coimbatore, Tamil Nadu, [1]Department of Dermatology, Venereology and Leprology, Kalinga Institute of Medical Sciences (KIMS), KIIT University, Bhubaneswar, Odisha, India

Introduction

Fairness creams are popular and often adulterated with heavy metals and steroids.[1] The presence of topical steroids in fairness creams on prolonged usage can lead to numerous complications. Topical steroid-dependent face (TSDF) is a common entity encountered in clinical practice.[2] There are numerous ways to detect the presence of steroids in topical preparations.[3,4] We used histamine wheal suppression to detect the presence of steroids in fairness creams.

Case 1

A 42-year-old female presented with an abnormal burning sensation over the face for two months. On examination skin showed mild atrophy, erythema and minimal scaling with acneiform eruption. History revealed that she has used a fairness cream marketed by a beauty parlor for seven months. She observed that there was burning of the skin when she discontinued the application and hence was used daily.

An attempt was made to detect the presence of steroids using histamine wheal test. She was advised to apply the fairness cream over the flexural aspect of right forearm over an area of 2*2 square centimeter (sq cm) twice daily for five days [Figure 1]. After five days of application, prick test was performed with 0.1% histamine over right forearm and contralateral area of left forearm. She noticed that prick testing elicited a transient burning sensation over left forearm which was absent over the test site. The orthogonal diameter of the wheal was 25 square millimeter (sq mm) over the test site and 72 sq mm over the control site [Figure 2].

Case 2

A 35-year-old lady developed redness, burning sensation, erythema, scaling, and telangiectasia over face following the use of a fairness cream for 10 months. The presence of steroids was suspected and patient was diagnosed with TSDF. She was asked to apply the fairness cream over a fixed area of 2*2 sq cm over the flexural aspect of right forearm twice daily for five days after which the histamine wheal test was performed with 0.1% histamine over the test site and control site.

Patient reported burning sensation following prick testing over the control site which was absent on the test site. The orthogonal diameter of the control was 42 sq mm and the test site was 20 sq mm.

Discussion

Corticosteroids are prohibited to be used in skin cosmetics, and it should not be present as impurities or contaminants;[3] however, significant group of illegal cosmetics has corticosteroid adulteration.[5] Topical corticosteroid (TC) abuse is prevalent

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Address for correspondence:
Dr. Satish Nithya, Ranga's Centre of Dermatology, Cowley-Brown Road, R S Puram, Coimbatore - 641 002, Tamil Nadu, India.
E-mail: Hamlet.nithya@gmail.com

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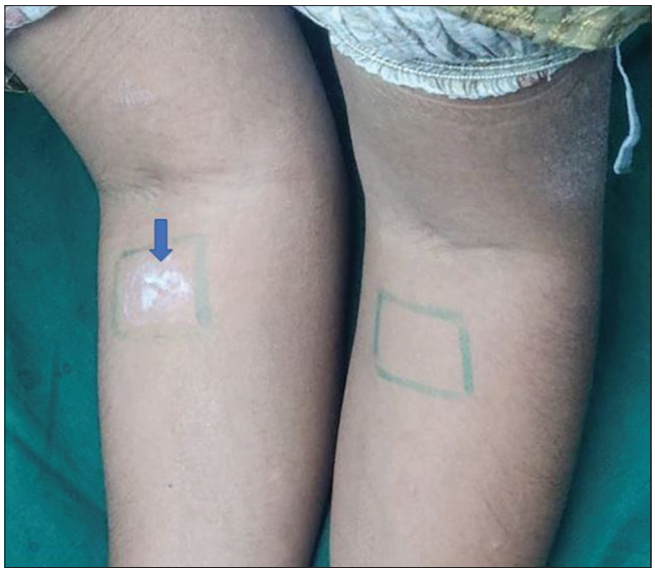

Figure 1: Application of steroid-containing fairness cream over the test area (blue arrow)

worldwide, particularly in Africa[6] and Asian countries.[7] The obsession for fair skin in India, and easy accessibility to TC as over the counter (OTC) product and as adulteration in skin-whitening fairness creams from beauty parlors has increased the prevalence of TC abuse, particularly over the face. This leads to various adverse effects like acneiform eruption, steroid rosacea, demodicidosis, atrophy of skin, telangiectasia and hypertrichosis.[1] TSDF is a syndrome which occurs after continuous application of TC on the face leading to rebound erythema, burning sensation and scaling on any attempt to withdraw the application.

Various methods are used to detect the potency of topical steroid in fairness cream like high-performance liquid chromatography (HPLC),[3] thin-layer chromatography (TLC),[4] gas chromatography, pallor test and spot test. HPLC has been used to detect adulteration in fairness creams.[3] Skin prick test (SPT) is an established method to diagnose type-1 allergic reactions like food allergens, drugs or inhalant allergens on intact skin.[8] Application of TC on the skin can reduce the wheal response significantly to allergens in prick testing. The histamine SPT has been used to detect the potency,[9] as well as the duration of action[10] of TC. Since TC will reduce the size of histamine wheal following prick testing, we were able to prove the presence of topical steroids in fairness creams. We suggest histamine wheal test as a simple method to detect the presence of steroids in topical preparation.

The potency of steroid adulterant was unknown and hence, we are unable to comment on the effect based on the potency of the TC in the product. However, we plan to conduct a study to assess histamine wheal suppression using different potency steroids.

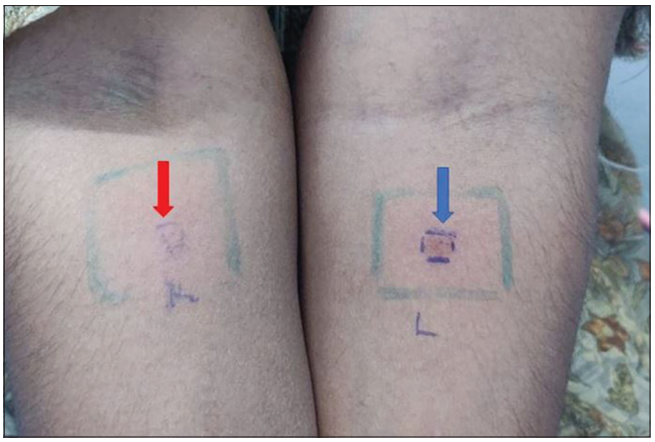

Figure 2: Orthogonal diameter of histamine wheal test in first patient—size of the wheal is smaller in the test area (red arrow) compared to control site (blue arrow)

Declaration of patient consent

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

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Nil.

Conflicts of interest

There are no conflicts of interest.

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