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Second degree burn to mustard powder

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Abstract

Mustard seeds and powder are commonly used in homeopathic and traditional medicines, in which they are believed to have both anti-microbial and anti-inflammatory properties. They are therefore utilized in the treatment of conditions ranging from arthritis to respiratory congestion. Herein, we present a patient with a second degree burn who used mustard powder in the form of a mustard plaster to treat chest congestion. She experienced second degree burn wounds to the lower neck and chest, and recovery with complete re-epithelialization following topical silver sulfadiazine, liberal emollient therapy, and triamcinolone ointment. This case highlights the potential danger of inappropriate use of topical homeopathic remedies such as mustard powder and details a successful treatment regimen.

Keywords: mustard powder, mustard seed, mustard plaster, chemical burn, allyl isothiocyanate

Introduction

Allyl isothiocyanate (AITC) is readily released from plants of the Cruciferae family, including mustards, following interaction with water [1, 2]. Many homeopathic and traditional medicine remedies rely on this property to formulate “mustard plasters,” which are formed by mixing water with either mustard seeds or mustard powder. These mustard plasters can then be applied topically and are used for anti-microbial and anti-inflammatory properties.

AITC has been shown to exert bactericidal effects on gram-negative bacteria in vitro [1], which has led to the use of topical mustard plasters to treat conditions

such as respiratory congestion. AITC is additionally posited to have anti-inflammatory effects, leading to the use of topical mustard plasters to treat conditions such as arthritis [3]. Despite its popularity in homeopathic regimens, topical mustard plasters must be used with caution, as prolonged application has been shown to lead to severe phytocontact dermatitis [3, 4]. In fact, the majority of homeopathic regimens recommend limiting use to less than 15 minutes [3].

Case Synopsis

A 61-year-old woman experienced second degree burn wounds on the lower neck and chest following application of a topical mustard plaster for chest congestion.

The patient reported mixing three tablespoons of mustard powder with three tablespoons of water. She applied the plaster directly to her skin and noted significant irritation and heat within the first ten minutes. After one hour, the patient washed the mixture off.

The next day she was seen by her primary care physician who noted florid erythema of the chest and prescribed fluocinonide 0.05% cream. Over the next 24-48 hours, the patient experienced significant skin sloughing and increased pain, and was transitioned to a regimen of daily topical silver sulfadiazine. She presented to dermatology clinic after one week of this therapy, and was noted to have a large pink plaque on her lower neck and chest that was mostly re-epithelialized with a few remaining denuded areas (**Figure 1A**). The patient was asked to apply petrolatum ointment daily and triamcinolone 0.1% ointment as needed for irritation. She returned



Figure 1. Second degree burn resulting from topical mustard plaster application. A) Second degree burn wounds on the lower neck and chest seven days after topical application of a mustard plaster for one hour. B) Resolution with resultant post-inflammatory changes after three months.

to clinic three months later with post-inflammatory hyperpigmentation without residual pain or irritation at the site (**Figure 1B**).

Case Discussion

The use of mustard powders and seeds, often in the form of mustard plasters, is common in homeopathic and traditional medicine regimens for the treatment of both infectious and inflammatory conditions. Herein, we report a case of a 61 year-old woman who used a topical mustard plaster for respiratory congestion and suffered second degree skin burns after leaving the plaster in place for one hour. In this case, she was initially treated with topical silver sulfadiazine and then encouraged to use liberal petrolatum ointment daily and topical triamcinolone 0.1% ointment, allowing her wounds to heal with post-inflammatory hyperpigmentation. This case demonstrates the potential danger of the inappropriate use of topical homeopathic remedies such as mustard powder and describes a successful treatment regimen.

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