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## CASE REPORT

# Lime-induced phytophotodermatitis

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## Abstract

Phytophotodermatitis, also commonly known as phototoxic dermatitis, is a common skin condition that occurs after contact with certain plants and subsequent exposure to sunlight. It is often confused with skin burns due to the blistering nature of its lesions. We herein report a case of phytophotodermatitis that developed in a 26-year-old male following contact with lime and subsequent exposure to sunlight.

## INTRODUCTION

Phytophotodermatitis, also commonly known as phototoxic dermatitis, is a common skin condition that occurs after contact with certain plants and subsequent exposure to sunlight. It is often confused with skin burns due to the blistering nature of its lesions.

## CASE REPORT

A 26-year-old male with a medical history of asthma and food allergy to nuts and legumes presented to the emergency department with pain and a non-pruritic erythematous skin eruption on the dorsum of both hands for three days prior to admission. On the day prior to admission, he developed large bullae over his middle and ring fingers. Prior to the onset of his symptoms, the patient was performing outdoor activities on a sunny day, mostly squeezing lime. The patient denied any fever, constitutional symptoms or similar experience in the past. His vital signs were stable. A physical examination revealed two continuous, tense bullae measuring ~3×3 cm along the dorsal aspect of the second and third digits of the right hand (Fig. 1). There

were no other identifiable skin lesions elsewhere. The patient had a normal x-ray of his right hand, and laboratory studies revealed a normal erythrocyte sedimentation rate, C-reactive protein, complete blood count, comprehensive metabolic panel and creatinine kinase level. Rheumatologic work-up was non-diagnostic including a negative serology for anti-nuclear antibody. The patient was evaluated by a dermatologist who made a final diagnosis of phytophotodermatitis secondary to lime exposure based on the clinical appearance of the lesion as it had a linear gravity pattern of pigmentation—a characteristic of phytophotodermatitis. The patient's condition was treated with a local application of cold water, and he was advised to follow up as an outpatient. On the outpatient follow-up, his hand blisters were drained, and he was prescribed a short course of tetracycline for primary prevention of infection. The lesion ultimately healed well without complication.

## DISCUSSION

Phytophotodermatitis is an inflammatory, non-immunologically mediated, cutaneous eruption which develops after exposure

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**Figure 1:** Clinical image of the hand showing large bullae along the extensor surface of the R hand with erythema of the adjacent skin.

to ultraviolet A (UVA 320–380 nm) radiation after contact with phototoxic agents found in certain plants (Table 1) [1]. These particular plants synthesize naturally occurring compounds known as furocoumarins (psoralen isomers) that precipitate phototoxic reactions [2]. After the affected skin comes in contact with furocoumarins and is subsequently exposed to UVA radiation, the psoralens damage cell DNA and membranes leading to cell death and epidermal injury [3]. Patients typically present with

skin blisters/vesicles or plaques that are burning or painful and that can evolve into irregularly shaped well-demarcated patches of hyperpigmentation. The time of onset of symptoms can range from hours to days after UVA exposure, and the skin lesions can last up to several months [1, 2, 4]. The acute stage usually heals in days, but the deep post-inflammatory hyperpigmentation changes may take weeks or months to resolve. Some mild cases may skip the painful burning or vesiculobullous phase and present with skin hyperpigmentation. These areas of hyperpigmentation can resemble streak-like marks (linear or serpiginous) or handprints from contact depending on the nature of furocoumarin exposure. The diagnosis is generally based on history taking and physical examination. The patients are often unaware of exposure/contact with psoralen containing plants and present with an irregular, well-demarcated lesion resembling a severe sunburn. Visually it shares similar features with other dermatological conditions, therefore, it is often misdiagnosed as cellulitis, allergic contact dermatitis or a fungal skin infection [2, 4]. Generally, the lesions are symptomatically managed with a cold compress and topical steroids. These measures help to minimize pain and the duration of symptoms; however, in some cases, this can lead to permanent hypopigmentation or hyperpigmentation [5].

## LEARNING POINTS

- Phytophotodermatitis is a fairly common condition, especially among children who tend to spend time outdoors.

**Table 1:** Common plants that can cause photodermatitis [6]

Plant	Genus	PHOTO	ALL-URT	A-CD
Angelica	<i>Angelica archangelica</i>	+	–	–
Anise	<i>Pimpinella anisum</i>	+	–	–
Bergamot orange	<i>Citrus aurantium v. bergamia</i>	+	–	–
Bishop's weed	<i>Ammi majus</i>	+	–	–
Bitter orange	<i>C. aurantium</i>	+	–	–
Burning bush, gas plant	<i>Dictamnus albus</i>	+	–	–
Carrot	<i>Daucus carota</i>	+	+	+
Celery	<i>Apium graveolens</i>	+	+	+
Chervil	<i>Anthriscus cerefolium</i>	+	–	–
Citron	<i>Citrus medica</i>	+	–	–
Cow parsley	<i>Heracleum sphondylium</i>	+	–	–
Cow parsnip	<i>Heracleum lanatum</i>	+	–	–
Creosote bush	<i>Larrea tridentata</i>	+	–	+
Dill	<i>Anethum graveolens</i>	+	+	+
Fennel	<i>Foeniculum vulgare</i>	+	–	+
Fig	<i>Ficus carica</i>	+	–	–
Giant hogweed	<i>Heracleum mantegazzianum</i>	+	–	–
Grapefruit	<i>Citrus paradisi</i>	+	+	–
Lemon	<i>Citrus limon</i>	+	+	+
Lime	<i>Citrus aurantifolia</i>	+	+	–
Lovage	<i>Levasticum officinale</i>	+	–	–
Orange	<i>Citrus sinensis</i>	+	+	–
Parlsey	<i>Petroselinum sativum</i>	+	–	+
Parsnip	<i>Pastinaca sativa</i>	+	–	+
Queen Anne's lace	<i>D. carota</i>	+	–	–
Rue	<i>Ruta graveolens</i>	+	–	–
Scurf pea	<i>Psoralea corylifolia</i>	+	–	–
Wild chervil	<i>Anthriscus sylvestris</i>	+	–	–
Wild parsnip	<i>P. sativa</i>	+	–	–

PHOTO indicates photodermatitis; ALL-URT, allergic urticaria; A-CD, allergic contact dermatitis [1].

- It is diagnosed clinically and can be easily mistaken for skin burns; therefore, it is important to raise physician awareness of the condition to avoid unnecessary testing.
- Treatment is conservative with symptom management including cold compresses and topical steroids. These measures help to minimize pain and the duration of symptoms, but may, however, fail to prevent temporary or permanent hypopigmentation or hyperpigmentation.

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