

Photoallergic Reaction to *Ficus Pumila*

Case Report

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Abstract

Phytophotoallergic contact dermatitis has rarely been reported and seems to be under reported. We present a 47-year-old patient, who developed erythematous, unsharply marginated skin lesions on the dorsum of the hands and in the face after contact with various plants. Phototesting revealed a reduced MED (minimal erythema dose) as well as a positive photopatch test reaction to *Ficus pumila* leaves. A photoallergic reaction to this *Ficus* species has only rarely been described until now.

Keywords: *Ficus Pumila*; Photoallergic Reaction; Phytophotodermatitis; Psoralene; Furocoumarine.

Introduction

Photoallergic contact dermatitis is an uncommon reaction, which is induced by cell-mediated hypersensitivity: A photo-activated substance behaves as an hapten and elicits an immunologic response.

The main group of photo contact allergens are the absorbent sunscreen chemicals, but also plants containing furocoumarins are described.

A 47-year old male who initially admitted to our clinic for grouped blisters on the hands and in the face was diagnosed with a photoallergic reaction to a rarely described plant species.

Case Report

History

A 47-year-old patient presented in our outpatients department in the middle of April with skin lesions on both hands that existed since one week as well as with skin lesions in the face since 2 days. The patient reported to have collected *Humulus lupulus* (hop shoots) in the forest on a sunny day and cooked a stew with celery 3 days before. The patient, a trained biologist, also had a terrarium with *Ficus pumila* among other plants and trimmed plant growth

regularly. For 1 day the patient was treated with Aciclovir 400 mg 4x daily because the skin lesions on the hand were diagnosed as herpes simplex infection by colleague.

The patients past medical history were negative for other diseases and medications.

Skin Examination

The dermatological examination showed grouped blisters on the left hand and disseminated lesions on both hands up to the lower arms (Figure 1).

In the nasal and forehead area, strictly left-sided, grouped blisters were visible in the form of stripes on an erythematous base. Yellowish scabs were found in the nasal region (Figure 2).

The patient had Fitzpatrick skin type II.

In direct immunofluorescence (sample taken after treatment start with Aciclovir), HSV (herpes simplex virus) 1 and 2 as well as VZV (varicella zoster virus) were negative.

Treatment and Course

Systemic treatment with Prednisolone 60 mg with gradual step-

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Figure 1. Facial Skin Lesion on First Admission.**Figure 2. Skin Lesion of the Left Hand.**

wise reduction and topical therapy with Prednicarbate was started. Skin lesions improved rapidly, but reddening on hands persisted for approximately 2 weeks.

Allergy Diagnostics

Increasing UVB doses (25, 50, 100, 150, 200, 250 mJ/cm²) from TL 20W/12 light bulbs (Philips, Hamburg, Germany) with a main emission range of 275 to 365 nm (maximum approximately 315nm) were applied on the lower back of the patient.

The minimal erythema dose (MED) read after 24 h was decreased with 25 mJ/cm².

Photopatch testing with standard allergens (Almirall Hermal GmbH, Reinbek, Germany) as well as with hop shoots, *Apium graveolans* (celery), *Ficus pumila* was performed 3 weeks after first appearance of skin lesions according to the consensus methodology for Europe [1]. For the testing the patient brought part of celery bulb, single hop shoots and the ficus plant with stem and leaves. The identification of the plants was done by the patient himself, a biologist. Stem and leaves of *Ficus pumila* as well as the other plants were cut up into small pieces, put onto Finn Chambers and applied occlusively. The agents were applied in duplicate on the mid upper back skin on either side of the vertebrae. Stems and leaves of the *Ficus pumila* were mixed up in one Finn Chamber. After 24 h one side of the patch test was removed and the skin was irradiated with 5 J/cm² UVA (UVA 40W, Philips Electronics, Eindhoven, Netherlands). The other side remained unirradiated and served as control.

24 h after irradiation an unsharply demarcated erythema was visible in the irradiated area where *Ficus pumila* had been applied.

72 h after irradiation also papulo-vesicles and an infiltrate were visible (Figure 3).

The patient reported that burning and itching was strongest in this area 24 h after irradiation. All other tests substances as well as the dark control were negative.

Photopatch testing in controls was not done because of ethical reasons.

Discussion

Ficus pumila, which is native to East Asia (China, Japan, Taiwan) is also known under the name creeping fig and belongs to the mulberry family (moraceae). Its heart-shaped leaves reach a size of approx. 1-2 cm, the plant itself does, in contrast to other species of ficus, not bear fruits. Because it is easy to care for, it is a popular ornamental plant for terrariums and office rooms, but it is often also planted as a creeping plant near house walls [2].

Like umbelliferae and rutaceae, the milky juice of the creeping fig contains furocoumarines [3]. These α,β -unsaturated carbonyl compounds are photosensitizing in combination with UV irradiation and can cause burn-like reactions, as e.g. in case of Berloque dermatitis. Moist skin, e.g. during sweating and bathing, increases the penetration of the furocoumarines. In addition, furocoumarines can be carcinogenic due to UV-induced covalent binding of pyrimidine bases with DNA (cross-linking) [4].

In our part of the world, furocoumarines are found above all in the juice of the giant cow parsnip (giant hogweed heracleum) [5]. The furocoumarines bergapten and psoralen are used for the treatment of vitiligo and psoriasis (systemically and topically). There are reports dating back to 1400 B.C. about the application of psoralen for the treatment of vitiligo.

In the 1930s Stephen Epstein first distinguished between phototoxic and photoallergic reactions: In part of the volunteers painful erythemas occurred after injection of a photosensitizer (sulfonamide) within the first 24 h. With a latency of several days intense itching, highly inflammatory urticarial reactions were observed which were clearly distinguishable from the immediate reaction and were considered to be photoallergic [6].

Phototoxic reactions are obligatory in contact with the sensitizer, and show a dose-dependency. Usually phototoxic reactions are

Figure 3. Result of the Photo-Patch-Testing: on the Right Side Result of Irradiated Areas with Positive Reaction for *Ficus pumila*. Left Side Un-Irradiated Control Patch.



Figure 4. *Ficus pumila* from the Patients Terrarium.



described with blister formation, painful burning and sharply demarcated reddening. The reaction is sharply limited; e.g. the occurrence of Berloque dermatitis with trickle marks was observed after application of perfume and subsequent UV exposure. The reaction usually occurs with some latency and heals with long lasting hyperpigmentation.

In contrast to this, a photoallergic reaction occurs only after prior immunological sensitization to the respective photosensitizer. Clinically it is identical to an allergic contact dermatitis. The reaction is usually dose-independent and the developing erythema unsharply demarcated. This is defined as a so-called spreading reaction. A crescendo reaction in the photopatch test is typical for a photoallergic reaction [7-9]. Photoallergic reactions to 8-methoxy-psoralen were described [12].

In the present case, the patient possessed a humid terrarium with *Ficus pumila* which facilitates skin permeability for furocoumarins. Because of the long-term contact, sensitization may be assumed. The skin changes were not sharply demarcated and occurred also in the face which may have had indirect contact with the photosensitizer because the patient reported that he might have touched his forehead with his hand. Phototoxic reactions to figs are often described in the literature, but in contrast photoallergic reactions to this *Ficus* species are very rare [10-12].

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