

Vesicles and Venice: A True Story, But What is the Explanation?

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Kristian Thestrup-Pedersen is sharing his thoughts about pompholyx, a disorder all dermatologists will be familiar with. The question is whether pompholyx is an external or internal disorder.



All dermatologists will be familiar with pompholyx or dyshidrotic eczema as it is so characteristic in its symptoms and can be very difficult to treat.

Fig. 1 shows the palm of a patient just returned from a visit to Venice. The question is, does Venice induce vesicles? This case, at least, appears to show that it does.

The story is straightforward: the patient is a 39-year-old man of Italian origin who had always had dry and sensitive skin. At the age of 13–14 years he began to experience eruptions of vesicles in his palms, especially when the weather changed from spring to summer, lasting approximately 2 weeks. He experienced these eruptions once or twice per year.

In 1998, he moved to Denmark, and his eczema stopped. He works in a slaughter house and has never suffered from eczema because of that. However, each time he returns to Venice he develops pompholyx (see Fig. 1), which starts almost as soon as he reaches the airport. This has occurred 11 or 12 times. Epicutaneous testing has proved negative.

A literature search on pompholyx adds the following observations:

- Most patients are women (113 of 153 patients, e.g. 76% in one study), age range 20–40 years (1). Most patients have vesicular eruptions of the palmar skin (60%), 33% of both palmar and plantar skin, and only 4% of plantar skin alone (2).
- Between 15% and 50% of patients have previously experienced an atopic disorder (3, 4), although other studies did not find a statistically significant association (1, 5).
- Seventy-five percent of patients were smokers in one study (3), another study only observed the statistical association among male patients (1).
- Contact allergies, as defined by positive patch tests, were observed from 67.5% (3), 40% (2), to approximately 15–20% (1), whereas one study could not confirm a statistical association with nickel allergy (5).

- Of 17 patients who were allergic to sesquiterpene lactone, 14 had contact allergy to Swedish ragweed extract and all but one had hand eczema of the pompholyx type (6).
- Of 202 patients (68 males and 134 females) who were patch-test-negative and had vesicular hand eczema, 55 had flares of eczema when orally challenged with metal salts (nickel, chromium and cobalt). Of 56 patients put on diets to reduce their daily intake of metals, 36 had improvement or clearing of their eczema after one month of dieting (7).
- Pompholyx eruptions have been described within one month of high-dose intravenous immunoglobulin therapy (for other reasons) in 4 and 3 patients (8, 9).
- Treatment of hyperhidrosis with botulinum toxin (Botox) led to improvement of pompholyx eczema in 6 of 7 patients (10) and in 6 patients (11).
- The described patient appeared to have a clear association between humid and warm conditions and his outbreaks of pompholyx/vesicular hand eczema.



Fig. 1. Pompholyx on the palm of a 39 year-old-man.

The most important question is: Is pompholyx an external disease, e.g. caused by contact allergies, or is it an internal disorder, e.g. hyperhidrosis?

I consider pompholyx primarily to be an internal disorder, in which the epidermis of the palms, but also the soles, is shed as a graft-versus-host reaction. The disease in most patients is of cyclical nature: sudden eruption of vesicles followed by scaling, fissures and a near-normal skin until the cycle continues. Why so? I suspect that the epidermis of the palmar/plantar skin for unknown reasons suddenly expresses antigens, which the immune system recognizes as foreign. This theory is supported by findings that immunosuppression, and especially the use of cyclosporine, can lead to dramatic improvement of the eczema although there are no good systemic investigations of this. Because pompholyx breaks the skin barrier with an underlying active immune inflammation, contact sensitization becomes frequent. However, studies on provocation with allergens, especially metals, have not provided convincing evidence that it is a pure allergic condition.

A Swedish study demonstrated how nicotine receptors are expressed in the palmar skin of patients with pustular palmoplantar pustulosis (12), and subsequently showed that when they stopped smoking 8/12 patients experienced disappearance of their pustulosis (13). However, Meding et al (14) observed among 13,452 individuals with 3,493 smokers that 437 (12.5%) reported hand eczema being equal to what was observed among non-smokers.

Humidity may cause a change in epitope expression and could be an underlying factor in this patient. It is therefore interesting that preliminary reports indicate that Botox injections can have dramatic effects on disease expression (10, 11).

A PhD project is imminent. Small 3 mm biopsies can easily be taken from diseased and healthy-looking skin for histological and molecular biology investigations. As there are many suitable patients in our clinics, this is a straightforward project for a young energetic Nordic dermatologist.

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