

VIGNETTE IN CONTACT DERMATOLOGY

Corn contact urticaria in a nurse

Wendy Liu and Rosemary L Nixon

Occupational Dermatology Research and Education Centre, Skin and Cancer Foundation Victoria, Melbourne, Victoria, Australia

SUMMARY

A 33-year-old nurse presented with persistent hand dermatitis. Radioallergosorbent tests showed moderate to strong reactions to latex, avocado and banana. Despite avoidance of latex gloves, she failed to improve. Patch testing was negative. Prick testing showed a negative reaction to latex, but a strong reaction to corn, with relevance to cornstarch powder present in many medical examination gloves. She was diagnosed with corn contact urticaria, irritant contact dermatitis and type I hypersensitivity to latex fruits.

Key words: contact dermatitis, cornstarch, fruit, glove, latex, occupational, powder.

CASE REPORT

A 33-year old intensive care nurse presented with a 12-year history of hand dermatitis ever since she started nursing. She also had a history of asthma and seasonal hay fever. She described an intermittent, itchy, blistering eruption confined to her hands, which improved away from work. She also described an 'itchy throat' when she ate bananas, avocado, kiwi fruit and cantaloupe. She did not experience any symptoms when blowing up balloons.

Based on preliminary investigations prior to patch testing (Table 1) the patient was advised to avoid latex gloves and 'latex-fruits'. She switched from wearing latex gloves to nitrile gloves. Despite avoidance of latex, her hand dermatitis had failed to improve by the time of patch testing. She reported a tingling and itchy sensation in her fingers immediately after wearing both powdered and non-powdered nitrile gloves.

She was patched-tested to an extended European standard series of allergens (Chemotechnique Diagnostics,

Table 1 Preliminary investigations

Total serum IgE	731 kU/L [†]
Specific serum IgE to latex	Very high level (class 4)
Specific serum IgE to avocado	High level (class 3)
Specific serum IgE to banana	Moderate level (class 2)
Specific serum IgE to kiwi fruit	Low level (class 1)

[†]Reference range – mean 14 kU/L, two standard deviations 120 kU/L.

Malmö, Sweden), rubber series, antiseptic series, cosmetic series and her own samples. Patch testing was performed using Finn Chambers® on Scanpor Tape® (Epitest OY, Tuusula, Finland) applied to the patient's back for 48 hours. Readings were performed at 48 and 120 hours post application. She reacted to both nickel (5%, 1+) and cobalt (1%, +/-), for which the relevance was presumed to be old.

She then underwent prick testing, which showed a definite positive reaction to corn (Hollister-Stier Laboratories, USA) (Fig. 1). On questioning, she did not describe any reaction to dietary corn. A prick to latex was negative.

The patient was advised to avoid gloves containing cornstarch powder and recommended an Ansell® non-powdered disposable nitrile glove, which contains no cornstarch. Ansell does not use corn starch in the production of their latex and non-latex powder-free gloves (P. Cacioli, pers. comm, 2007). She was also advised to avoid latex products. Her hand dermatitis cleared following avoidance of cornstarch powder. Three months later, her hand dermatitis recurred in the setting of frequent hand washing when she was nursing a patient with melena. This was thought to be predominantly irritant contact dermatitis.

DISCUSSION

This patient was diagnosed with contact urticaria to corn, irritant contact dermatitis from wet work, and immediate hypersensitivity to latex fruits. As her *in vivo* prick test was negative to latex, the high level of IgE in the *in vitro* radioallergosorbent test to latex is likely to be a result of a cross-reaction to latex fruits. She also had allergies to nickel and cobalt of presumed past relevance. This case illustrates the importance of multiple factors contributing to occupational hand dermatitis.

Correspondence: Dr Wendy Liu, Occupational Dermatology Research and Education Centre, PO Box 132, Carlton South, Vic. 3053, Australia. Email: wenyuan_liu@hotmail.com

Wendy Liu, PhD. Rosemary L Nixon, FACD.

Submitted 19 October 2006; accepted 4 February 2007.

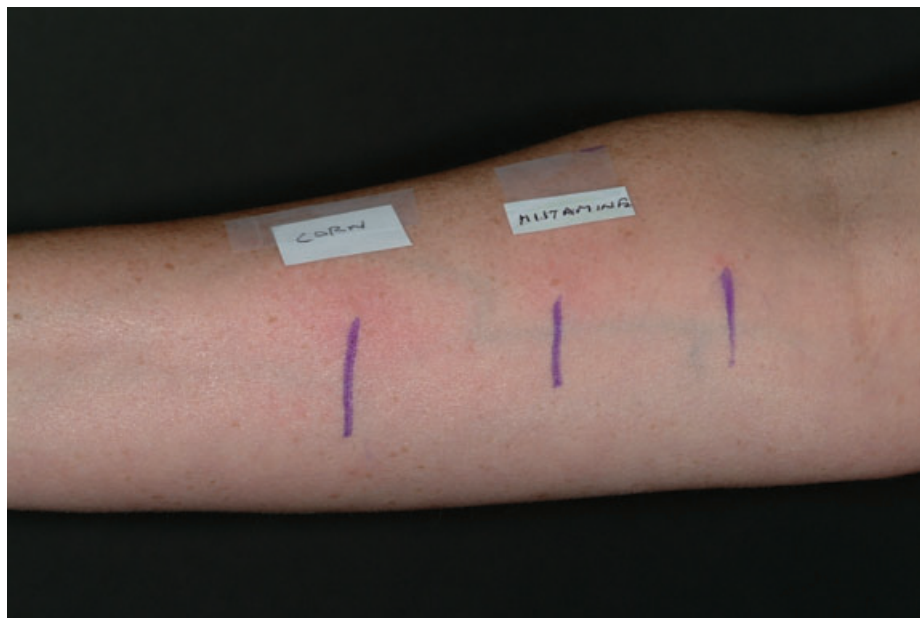


Figure 1 This patient developed a positive reaction when prick-tested to corn.

Cornstarch is derived from corn and is used as a donning agent in glove manufacturing. It is first separated from other chemical constituents of corn such as protein, oil and fibre fractions through a wet milling process and then produced by hydrolysis.¹ Cornstarch comprises 7–13% protein that can be immunogenic.^{2,5} This patient had symptoms that were suggestive of immediate hypersensitivity to both powdered and non-powdered nitrile gloves. Cornstarch powder is often used in the production of both powdered and 'powder-free' gloves.⁴ In the case of 'powder-free' gloves, cornstarch powder is washed off by a chlorination process to a level below 2 mg per glove.⁴ It is therefore possible for cornstarch powder to be present in small quantities in some 'powder-free' gloves.

There are reported cases of contact urticaria caused by cornstarch in the literature. The first reported case was a patient who developed an anaphylactoid reaction to cornstarch present in surgical gloves.⁵ This was followed by other reports of type I hypersensitivity caused by cornstarch powder present in surgical gloves among health-care workers.^{6,7} Persistent dermatitis caused by immediate hypersensitivity to cornstarch in clothing⁸ and cornstarch in paper adhesive⁹ have also been reported. In a patient with suspected hand dermatitis from handling cornflour, a serum IgE specific for a salt-soluble corn protein was identified,⁵ providing direct evidence for cornstarch-induced protein contact urticaria.

It is important for clinicians to consider multiple contributing factors in the often complex setting of occupational hand dermatitis. The presence of type I hypersensitivity to corn may be under-recognized. Clinicians should therefore consider both latex and corn allergies in health-care

workers with irritant contact dermatitis and using disposable latex gloves.

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