

Allergic contact dermatitis from natural rubber latex without immediate hypersensitivity

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Key words: contact sensitivity; natural rubber latex; lack of immediate hypersensitivity; thiuram mix; carba mix; occupational; health care workers; nurses; dental patients. © Munksgaard, 1999.

Natural rubber latex (NRL) is obtained from the *Heavea braziliensis* tree. Products such as gloves are formed from concentrated liquid NRL (1). Contact urticaria from NRL has frequently been reported. However, isolated delayed hypersensitivity to NRL has been thought to be rare.

Case Reports

Patient no. 1. A 42-year-old female nutritional support nurse presented with a 2-month history of itchy dry hands. She was treated initially with 1% hydrocortisone cream, but subsequently developed blisters on her hands, particularly the lateral fingers. Her job involved handling central lines, frequently requiring her to wear disposable NRL gloves. She had had previous episodes of eyelid dermatitis, apparently related to using powdered disposable NRL gloves. In 1988, she had an episode of acute generalized dermatitis which resolved spontaneously. She had had rhinitis as a child, her mother had asthma and her sister hay fever.

She was patch tested to the European standard, preservative, vehicle, medicament and rubber series, together with small samples of Ansell Conform gloves and Marigold gloves. On both D2 and D4, she had positive reactions (+) to NRL and Marigold rubber gloves (both inside and outside surfaces). All other patch tests were negative. She was also prick tested to latex extract (Alyostal ST-IR, Stallergenes SA, France) and had an allergen-specific IgE test to NRL (Pharmacia CAP method; fluorometric assay): both were negative.

Patient no. 2. A 78-year-old retired female shop assistant presented with a several-year history of a dry scaly eruption on contact with certain rubber products, occasionally associated with peri-orbital oedema. She would develop a sore mouth 24 h after dental treatment. She had a past history of hypertension, hypothyroidism,

and scalp psoriasis, but no family history of skin disease.

She was patch tested to the European standard, preservative, vehicle, emulsifier, cosmetic and facial and rubber chemicals. The results are summarized in Table 1 (thiuram mix and carba mix, each ++ at D2 and D4). A prick test with NRL extract (Stallergenes) was negative, as was her allergen-specific IgE to NRL.

Discussion

Delayed hypersensitivity to NRL was first described by Wyss et al. in 1993 (2), with a further case reported in 1996 (3), in both reports in the absence of contact urticaria and with negative prick tests and normal IgE levels. Van der Walle & Brunsweld (4) described 2 hairdressers with delayed hypersensitivity to NRL and no associated contact urticaria, and described 4 other cases (unpublished data), although patients were not tested for Type I hypersensitivity. Wilkinson & Beck (5) reported 5 patients with delayed hypersensitivity to NRL, with no associated immediate reaction: 1 was considered not clinically relevant and 1 only possibly relevant; of the 3 considered clinically relevant, all had reactions to other rubber chemicals. More recently, Wilkinson and Burd (6) reported 7 cases of delayed hypersensitivity to NRL; and 2 of these were positive to other rubber allergens: 4 of the 7 had a positive prick test, the test being negative in the other 3; none of these patients had allergen-specific IgE tests to NRL performed.

Patients with delayed hypersensitivity to natural latex are increasingly being recognized by the addition of NRL to rubber series for patch testing patients with suspected rubber hypersensitivity. The histories in both our patients suggested rubber allergy. Patient no. 1 showed isolated delayed hypersensitivity to NRL, while patient no. 2 had additional hypersensitivity to other rubber compounds. Both patients were patch tested with the same high-ammonia latex concentrate (supplied by the Malaysian Rubber Board). It is possible, though unlikely, that this concentrate could contain small traces of tetramethylthiuram disulfide (R. Davies, Malaysian Rubber Board: personal communication). However, if it did, this may be of relevance to patient no. 2.

We conclude that NRL should be included when patch testing patients with suspected rubber allergy.

References

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Table 1. Positive patch tests in patient no. 2

Series tested	Allergen (pet.)	D2	D4
thiurams	tetramethylthiuram monosulfide (0.25%)	+	+
	tetramethylthiuram disulfide (0.25%)	+	+
	tetraethylthiuram disulfide (0.25%)	+	+
	dipentamethylenethiuram disulfide (0.25%)	+	+
carbamates	bis (diethyldithiocarbamate) zinc (1%)	+	+
	bis (disbutylthiocarbamate) zinc (1%)	-	+
other rubber allergens	cyclohexyl thiophthalimide (1%)	-	+
	NRL (100%)	-	+

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Oral allergy syndrome with contact urticaria from cosmetic creams

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A 42-year-old woman had a personal history of infantile eczema and a family history of hay fever. At kindergarten age, she had had diarrhoea after eating citrus fruits and strawberries. Since 1996, she had undergone 2 kinds of changes: first allergic rhinitis during the spring months, outside of which she had slight symptoms of rhinitis only when an orange was being peeled; second, OAS and contact urticaria. She often had itchy wheals caused mainly, but not only, by eating fruit. During the 1st year that she had had rhinitis, she could not tolerate apples, and in the following year it was peaches, apricots and cherries. Eating these fruits resulted in OAS, manifesting itself as lip swelling, numbness of the tongue and swelling of the hand in which she held the fruit. Only apples caused her voice to become hoarse, and for less than 30 min; this had occurred 2× at the beginning of her illness.

The patient, after observing the harmful effects of the above-mentioned fruits, decided to test others before consuming them. Firstly, she would touch the fruit to be tested, then she would hold it in her hand for more than 10 min; next she would eat a small portion of it, and finally, after 30 min, she would consume a bigger portion. If there were still no adverse symptoms, she would conclude that the given food would be safe for her. Many other foods, during this initial testing, caused swelling of her hand or lips: pears, plums, sour cherries, lemons, oranges, sunflowers (including sunflower oil), caraway seeds, and both hazelnuts and walnuts. After peeling a banana, she would experience severe swelling of her hands, which would last several hours.

Independently from eating fruits, the patient would also have swelling after applying cosmetic creams containing plant extracts, especially those of chamomile or mango. Even though she would wash these creams off as soon as she felt itching, the swelling would continue for several hours.

Prick testing with plant pollen allergens and specific IgE testing was conducted (Table 1). Total IgE was 270 IU. Patch tests removed after 15 min were conducted as serial dilution tests with 2 contactants: chamomile oil 2.0%, 1.0%, 0.5% and 0.125%, and a distilled alcohol extract made from chamomile, Azulan (Herbapol, Poland) (20.0%, 10.0%, 5.0%, 2.5% and 1.125%). She was positive (immediate reactions) to all the Azulan dilutions. However, she was negative to all the chamomile oil dilutions. This may have been because of varying tolerance of thermostable and thermolabile antigens.

Occurrence of contact urticaria after using cosmetics containing chamomile and mango constitutes a peculiarity of this case. The positive reaction of this patient to the chamomile allergen on prick testing was the only one among 456 such tests conducted by us on patients with rhinitis.

Table 1. Results of the prick tests and specific IgE tests, related to symptoms

	Prick test (mm)		Specific IgE		Clinical symptoms
	wheel	flare	level	class	
hazel	5	20	1.03	2	rhinitis
alder	5	12	2.88	2	rhinitis
birch	4	18	5.77	3	rhinitis
oak	4	25	<0.2	0	rhinitis
sorrel	3	20	2.88	2	–
beech	3	8	–	–	–
black elder	3	6	–	–	–
artemisia	0	0	1.46	2	–
hop	2	1	–	–	–
chamomile					contact
fruit	5	7	–	–	urticaria
apple	6	25	–	–	OAS
hazelnut	3	8	–	–	OAS