

Airborne contact dermatitis in a patient with type I and IV sensitivity to chicory

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Vegetables, including chicory, can be responsible for allergic reactions, most frequently as IgE-mediated immediate reactions (type I) with urticaria. Delayed hypersensitivity reactions (type IV) in terms of allergic contact dermatitis are also possible, notably because of the sesquiterpene lactones present in many vegetables. Moreover, protein contact dermatitis can occur, and is clinically characterized by eczema, positive scratch test results with food protein, and negative patch test results with the same items. Both atopic dermatitis and occupational exposure, for example in bakers, farmers, and cooks, have been described as risk factors for protein contact dermatitis (1).

Case Report

A 36-year-old woman with a history of atopic dermatitis presented with cheilitis and eczema on her eyelids, hands, and forearms (Figs 1 and 2). She had previously worked,



Fig. 1. Cheilitis.

for > 5 years, in a market garden, for instance with lettuce and chicory. She described acute pruritus and transitory redness (urticaria) when she was in direct or airborne contact with various vegetables, such as chicory, tomato, potato, and celery.

As one example, on the day before the consultation, the patient's mother was cooking a chicory soup under the kitchen exhaust hood. The patient, who was free of eczema at that moment, did not touch any vegetable, but was only present in the kitchen. She felt an

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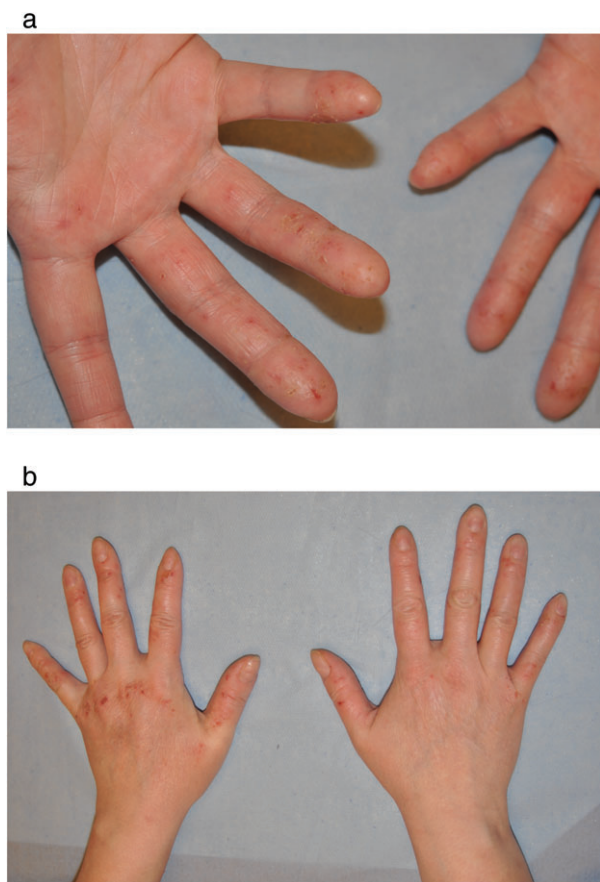


Fig. 2. (a,b) Hand eczema with marked involvement of fingers.

immediate itching on her face, neck, and arms, and eczema appeared a few hours later. This was repeated several times, and the patient was also re-exposed under medical supervision, and this triggered the same reaction. The patient had no other symptoms of type I allergy to chicory, for instance when eating this vegetable raw and cooked.

We performed prick tests with a commercial latex (i.e. *Hevea brasiliensis*) extract, and prick-to-prick tests and scratch tests with several vegetables and fruits, namely chicory, banana, celery, leek, and potato. Patch tests were performed with the European baseline series (Chemotechnique, Vellinge, Sweden; Trolab®, Hermal, Reinbek, Germany) and vegetables (raw and cooked) 'as is'. The prick test and the prick-to-prick test readings after 20 min showed only positive reactions to chicory, the reaction being more pronounced with the cooked material than with the raw material. The scratch tests gave positive results for chicory, banana, tomato, and celery (Figure S1). The patch tests gave negative results on day (D) 2 but a positive result on

D4 for chicory (Figure S2). Patch tests gave negative results for sesquiterpene lactone mix and Compositae mix. Total IgE was elevated at 111 kU/L; levels of IgE specific for chicory and other vegetables were not available. IgE specific for latex and birch was not detected.

The patient was treated with a corticosteroid cream for 3 weeks. She was also advised to avoid direct and indirect contact with chicory, which proved helpful in relieving the symptoms.

Discussion

This patient may have presented concomitant immediate and delayed hypersensitivity, which is not unusual in atopics. She may have had an urticarial reaction to some proteins, and contact allergy with a delayed reaction to sesquiterpene lactones other than those contained in the sesquiterpene lactone mix and the Compositae mix, which gave negative results when tested in the baseline series. It is possible that occupational exposure was the source of sensitization. The association between type I and type IV reactions may also be explained, as suggested by Singleton et al. (2), by the production of anti-hapten antibodies through skin sensitization. In humans and experimental models of skin sensitization, it has been shown that Th1 and Th2 cells may help B cells to produce antibodies, including IgE.

Protein contact dermatitis is also possible in this case; however, it is uncommon to observe positive patch test reactions (3). Airborne protein exposure triggering protein contact dermatitis would also be unusual. However, cases of facial airborne protein contact dermatitis have been reported among bakers in contact with flour proteins (4).

Anaphylactic reactions to raw and/or cooked chicory after ingestion (5) or airborne exposure (6) have already been described in the literature. In the present case, the prick-to-prick and patch test reactions were, surprisingly, more strongly positive with cooked chicory than with raw chicory. Our assumption is that proteins are not completely denatured by cooking temperatures, or are indeed heat-stable, or that there is production of a new allergen during cooking. It is also likely that cooked vegetables, which are softer than raw vegetables, may have better skin contact during the tests and therefore evoke a stronger positive skin reaction.

Supporting Information

Additional Supporting Information may be found in the online version of this article:

Figure S1. Positive prick-to-prick tests and scratch tests with potato (P), chicory (Ch) and celery (Ce) compared to histamine (H) codeine (C) and glycerosaline solution (–).

Figure S2. Patch tests read at day 4: chicory raw and cooked +.

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H

C

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P

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CHICON

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