

Immediate contact urticaria caused by hydrolysed wheat proteins in a child via maternal skin contact sensitization

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Immediate contact urticaria caused by hydrolysed wheat proteins via direct skin sensitization with creams, shampoos or soaps has been reported, infrequently, in adults.

Case Report

A 3-year-old boy with a history of asthma, atopic dermatitis and food allergy to mustard was referred for urticaria on both arms and facial angioedema immediately after he had applied his mother's body moisturizing cream onto her skin. Prick tests were performed according to previously published methods (1), with the Stallerpoint®

device (Stallergenes®, Antony, France), and commercially prepared extracts (Stallergenes®), moisturizing cream (Yves Rocher®, La Gacilly, France) and its 26 components provided by the manufacturer (Yves Rocher®). Control tests for prick tests were performed with histamine (positive control) and normal saline (negative control). Wheal diameters were measured 15 min after the skin test was applied, and were reported as mean wheal diameter. A prick test wheal diameter at least 3 mm larger than the negative control was considered to be positive. Multiple sensitization to mustard (6 mm), pistachios (23 mm), cashew (15 mm), chestnut (6 mm) and pine nuts (6 mm) was found. A positive response was observed with the moisturizing cream (11 mm), and positive responses were also observed with the macadamia nuts (6 mm) and the commercial hydrolysed wheat protein (4 mm), which were listed in the cream's composition. Secondary prick tests with 26 components of the cream confirmed the responsibility of hydrolysed wheat

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Fig. 1. Prick tests with components of the cream: prick tests with hydrolysed wheat protein with a positive pseudopodal reaction (arrow next to number 24).

protein with a pseudopod reaction (Fig. 1) and the absence of a reaction to macadamia nut oil, which was also present in the formula. The child continued to eat normal wheat proteins without any tolerance problem. The wheat prick test gave a negative result. Wheat flour-specific IgE (f4) was positive at 0.61 kU/l, and gluten-specific IgE (f79) was non-significant at 0.24 kU/l. Wheat protein fraction-specific IgEs were negative (glutenins, gliadins, and albumins/globulins). HWP-specific IgE was positive (2.96 kU/l), and ω 5-gliadin-specific IgE was negative.

Discussion

This is the first report of IgE-mediated contact urticaria caused by hydrolysed wheat protein in childhood with a

probable sensitization by proxy via maternal skin contact facilitated by atopic dermatitis. This was the first time the child had been in direct contact with this cream, which his mother had been applying daily, all over her own body, for 3 months.

Delayed hypersensitivity to hydrolysed wheat protein is well known in the context of contact dermatitis caused by hair cosmetics (2–5). However, immediate contact urticaria caused by hydrolysed wheat protein is rare. The first case was described in 2000, and 17 cases involving adults have been reported to date, implying direct cutaneous sensitization (6–9). There are specific features: possible lengthy sensitization (several months or even several years), the possibility of severe anaphylaxis if exposure is oral, and a theoretical absence of a reaction to the ingestion of non-modified wheat protein. A recent study noted the possible association with wheat-dependent, exercise-induced anaphylaxis (8). Another study suggested the opposite conclusion, indicating a different specificity of the IgE elicited against gliadins (owing to partial hydrolysis of the gluten protein, leading to the exposure of neoallergens) (10).

Avoidance is difficult, given the ubiquity of hydrolysed wheat proteins in the food industry as emulsifying agents and in the cosmetics industry for their texturizing properties. Although they are required to be listed in cosmetic ingredients lists, this is not required for European food labels. A pragmatic approach would be to avoid all hydrolysed wheat proteins globally. The avoidance of normal wheat protein should not be advocated whilst there is insufficient data regarding the possible relationship between exercise-induced anaphylaxis and allergy to hydrolysed wheat proteins.

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