

Case Report

Urticaria in Skin Care with Skin Cream Containing a Wheat Compound and Prompt Treatment at Home

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Abstract

Skin care is a basic treatment for children suffering from eczema. However, almost all individuals are not adequately aware of the pitfalls hidden in skin care. We herein report that a skin cream containing a wheat compound induced acute urticaria. An 8-year-old boy with no history of a wheat food allergy used a skin cream containing a wheat compound. Acute urticaria appeared on all parts applied with the skin cream immediately after application. The acute urticaria disappeared after treatment at home involving removal of the skin cream (taking a bath), an oral anti-histamine drug, and a steroid ointment. Skin creams that contain a wheat compound can induce acute urticaria. Prompt treatment, which can be performed at home, can prevent the allergic reaction from progressing. We should be aware of the pitfalls in skin care. We should also learn prompt treatments for unexpected allergic reactions as prehospital care.

Key words

Skin cream; Urticaria; Wheat allergy

Introduction

Skin care is a basic treatment for children suffering from eczema.¹ There are various kinds of skin creams, and some contain compounds derived from nature.^{2,3} Although skin care is common, almost all individuals are not adequately aware of the pitfalls hidden in skin care. We herein report that acute urticaria was induced by a skin cream containing a wheat compound. Furthermore, we describe that prompt treatment at home involving removal of the wheat compound (taking a bath), an oral anti-histamine drug, and a steroid ointment prevented the allergic response from progressing.

Case Report

An 8-year-old boy had occasionally suffered from eczema since he was 6 months of age. He had no history of immediate hypersensitivity in a food allergy, food-dependent exercise-induced anaphylaxis, or bronchial asthma. The boy had often been treated with various skin creams obtained from pharmacies.

He applied a skin cream containing a wheat compound. Within a few minutes after application, acute urticaria with terrible itching appeared on all parts applied with the skin cream (Figure 1A & 1B). His father, a paediatrician, diagnosed as immediate hypersensitivity and instructed him to take a bath to wash off the skin cream. After removal of the skin cream, the boy took medicine. Specifically, he took diphenhydramine (single dose, 0.15 mg/kg), an oral anti-histamine drug, and applied alclometasone dipropionate ointment, a steroid ointment. All of the urticaria disappeared within 30 minutes of treatment and did not recur (Figure 1C & 1D). The allergic reaction was thus prevented from progressing into erythroderma, anaphylaxis, and stridor.

We raised two possibilities as causes of the immediate hypersensitivity. The first was a wheat allergy. This was

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because skin creams that contained the same ingredients except for the wheat compound did not cause such immediate hypersensitivity on his body. The second was contamination with mites, *Staphylococcus aureus*, or molds. These microbes are often considered to be causes of contamination in skin creams.⁴ To evaluate the possibility of a wheat allergy, we investigated serum allergen-specific immunoglobulin E (IgE) antibodies by a fluorescence enzyme immunoassay. The results showed that the boy had multiple allergies (Table 1). Anti-wheat, *Dermatophagoides pteronyssinus* (*Der p*), aspergillus, and alternaria-specific IgE were 1.38 UA/mL (class 2), 165 UA/mL (class 6), 0.37 UA/mL (class 1), and 1.76 UA/mL (class 2), respectively. *Der p* is a type of mite, and aspergillus and alternaria are species of molds. These results suggested that wheat, mites, or molds caused the immediate hypersensitivity. To evaluate contamination by mites,

molds, and *S. aureus*, we performed some experiments. Mitey Checker (Sumika Environmental Science, Osaka, Japan), an immunochromatography method,⁵ did not detect any mite antigens. Use of Sanita-kun Yeasts and Molds and Sanita-kun *Staphylococcus aureus* (both from JNC, Yokohama, Japan), as sheet culture media,⁶ did not detect the corresponding microbes. In the microscopic examination, we did not detect any live mites and microbes as well as dead ones. These findings suggested that mites, molds, and *S. aureus* were not involved. Thus, we suggested that the cause of acute urticaria in the patient was the wheat compound.

Discussion

The present case highlights two important clinical issues. First, skin creams containing a wheat compound can induce acute urticaria in a patient with no history of a wheat food allergy. Second, prompt removal of the wheat compound and medication with an oral anti-histamine drug and a steroid ointment can prevent the allergic response from progressing.

Regarding the first issue, we found that a skin cream containing a wheat compound induced acute urticaria in a patient with no history of a wheat food allergy. In previous reports, hydrolysed wheat caused severe contact dermatitis when individuals used cosmetics containing this component.⁷ Some patients with hydrolysed wheat-induced contact dermatitis showed symptoms of a wheat food allergy before or after using such cosmetics.⁸ However, the present patient did not show any symptoms of a wheat food allergy either before or after this episode. The patient includes wheat in his regular diet. These findings suggest that having no history of a wheat food allergy is insufficient to predict the risk of allergy to skin creams containing a wheat compound. Although we considered a skin prick test to investigate direct evidence for IgE reaction, the patient



Figure 1 Process of acute urticaria in the present case. Acute urticaria appeared on the right shoulder (A) and left leg (B) immediately after application of a skin cream containing a wheat compound. All urticaria disappeared within 30 minutes after treatment (C, D).

Table 1 Results of the fluorescence enzyme immunoassay

Antigen	Category	Value (UA/mL)	Class
Wheat	Grains	1.38	2
<i>Der p</i>	Mites	165	6
Aspergillus	Molds	0.37	1
Alternaria	Molds	1.76	2

Der p: *Dermatophagoides pteronyssinus*

did not agree to undergo the test. Still we regarded the contact reaction in the present case as IgE reaction because the symptom showed the characteristics of IgE reaction. First, the symptom appeared immediately after application. Second, acute urticaria with itching was the typical symptom of IgE reaction. Furthermore, treatment using an anti-histamine drug and a steroid ointment was effective.

For the second issue, we report that prompt removal of the wheat compound and medication with an oral anti-histamine drug and a steroid ointment prevented the allergic response from progressing in our patient. We recommend that patients should proceed in this manner as prehospital care if they notice symptoms following application of a skin cream that produces acute urticaria at home. We also suggest that clinicians should transmit this information to their patients as prehospital care. An acute allergic response often progresses from immediate hypersensitivity including acute urticaria with itching to life-threatening stages such as erythroderma, anaphylaxis, and stridor.⁹ Once anaphylaxis occurs, intramuscular administration of epinephrine (adrenaline) followed by volume support, nebulised bronchodilator use, intravenous administration of glucocorticoid, anti-histamine drugs, and steroid ointments is required to save the lives of patients.¹⁰ Some patients with previous experience of an anaphylactic episode possess epinephrine (adrenaline) for self-administration as prehospital care.¹⁰ However, individuals who have never experienced anaphylaxis are not equipped with epinephrine (adrenaline). There is no equipment for volume support, nebulised bronchodilator use, and intravenous administration in regular homes. In our patient, the allergic response was prevented from progressing by prompt treatment involving removal of the wheat compound (taking a bath), an oral anti-histamine drug, and a steroid ointment. This treatment is a quick and easy method that can be performed at home.

Skin care is such a basic treatment for repeated eczema episodes that many individuals who suffer from eczema regularly use skin creams.¹ However, almost all individuals are not aware of the pitfalls hidden in this common treatment. Indeed, the acute urticaria in this case was an unexpected phenomenon for the boy and his parents. Based on this case report, we propose that people who use skin creams containing certain compounds for the first time should initially try a small amount to check whether

immediate hypersensitivity such as acute urticaria occurs.

In conclusion, skin creams containing a wheat compound can induce acute urticaria in a patient with no history of a wheat food allergy, and prompt removal of the wheat compound and medication with an oral anti-histamine drug and a steroid ointment can prevent the allergic response from progressing. We must be aware that pitfalls can be hidden even in usual skin care. In addition, we should learn and transmit information for adequate treatment for unexpected symptoms as prehospital care.

Declaration of Interest

None

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