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CASE REPORT

Anaphylaxis that develops following application of egg white on an area of burn

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ABSTRACT

Anaphylaxis is the most clinically severe type of IgE-mediated allergic reaction since it develops rapidly and is often life threatening. This case was presented to demonstrate that in patients with egg allergy, anaphylaxis can also develop the following contact of egg with injured skin (besides oral intake).

Keywords: Anaphylaxis, burn area, children, egg allergy.

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INTRODUCTION

Anaphylaxis is the most clinically severe type of IgE-mediated allergic reaction since it develops rapidly and is often life threatening.[1] Foods are the most common cause of anaphylaxis in childhood. Milk, egg, nuts, and fish, in particular, are foods that most frequently trigger anaphylaxis episodes in the 1st years of life.[2] Although anaphylaxis caused by foods generally develops following oral intake, it is known that, in rare cases, anaphylaxis may also develop by inhalation or contact with the agent.[3] This case was presented to demonstrate that in patients with egg allergy, anaphylaxis can also develop the following contact of egg with injured skin (besides oral intake).

CASE REPORT

A 16-month-old male patient was admitted to our emergency clinic due to a second-degree burn on his left arm with a diameter of about 4*4 cm. The second-degree burn had developed following the accidental spilling of hot water on his arm an hour before admission. After his mother applied egg white on the area of burn by thinking that it would help relieve the pain, the patient developed complaints of ear and eyelid swelling and retching followed by sleepiness. His mother had then applied an intramuscular injection of adrenaline (0.15 mg) with an adrenaline autoinjector shown in Figure 1. The patient was brought to our emergency clinic immediately afterward. The personal history of the patient is summarized in Table 1. The allergy skin tests performed on the patient at our clinic and the laboratory results are summarized in Table 2.

The vital signs of the case were examined in an emergency clinic. The patient's arterial blood pressure was 100/50 mmHg, while his oxygen saturation was 100%, and his maximum heart rate was 180/min. His physical examination revealed no pathological signs other than generalized urticarial plaques all over the body, widespread dryness of the skin, localized eczematous areas, and a burn scar on the left arm. The patient was followed up in the hospital for 24 h with a pre-diagnosis of anaphylaxis. His clinical signs regressed and improved during follow-up, and no additional pathological signs were observed. The case was discharged from the hospital with a recommendation of oral steroid treatment for 3 days and antihistamine treatment for 7 days. The patient's family was once again trained on excluding certain foods from the diet and on the use of the adrenaline autoinjector. The patient's follow-up at our clinic is continuing. Oral provocation with egg yolk was also planned.

DISCUSSION

The first allergy-related clinical presentation of our case was a Type 1 IgE-mediated slight reaction involving an urticarial rash that developed following oral intake of food. The second clinical presentation of the patient involved anaphylaxis, which is the most severe form of Type-1 allergic reaction that develops following dermal contact with the food. Contact urticaria may develop as a hypersensitivity reaction after the contact of the specific allergens with the skin.[4] Impairment of skin epidermal barrier functions may lead to clinical anaphylaxis associated with systemic symptoms by increasing the number of antigens absorbed through the skin.[3] Our case has already been existing with atopic eczema, and the associated skin burn increased damage in the skin barrier, predisposing to the development of a severe reaction.

Figure 1: Adrenaline autoinjector application.

Table 1: Personal history data of the patient

Age (month)	Clinical history
History of delivery	• 44 weeks, 3390 g, by c/s
3rd month	• Diagnosis of atopic eczema
6th month	• A short time after the first intake of egg white, pa-tient was admitted to our emergency clinic due to rashes over his body. • The patient's physical examination revealed exten-sive urticarial plaques all across his body. The le-sions regressed completely with antihistamine treat-ment. • The patient was referred to the department of pediat-ric allergy and immunology for diagnostic tests.
7th month	• The patient began to be followed in our clinic with a diagnosis of egg allergy. • Elimination of egg was recommended. • Family was trained on adrenaline autoinjector use.

Recognizing clinical signs and early intervention are life-saving in anaphylaxis. There is a case report in the literature presenting a case admitted to the emergency clinic following the application of egg white over an area of burn; however, this case was not diagnosed with anaphylaxis at an early stage.[5] In our case; following the application of egg white to the area of the burn, the mother considered that the clinical presentation of her son might be related to anaphylaxis and hence decided to administer adrenaline using an adrenaline autoinjector. This was an important approach for recognizing and treating anaphylaxis at its earliest stages. Alternative treatments

Table 2: Laboratory results of the patient

	7th month	16th month	Normal values
Eosinophil (%)	5.6	1.1	<5
Serum total IgE (ıu/mL)	17.3	–	2–97
Tryptase (ng/L)	–	19.3	<11.4
Skin tests for allergies (mm)			
Egg white	5*5/15	11*7/35	<3
Egg yolk	7*8/17	4*4/25	<3
Histamine	7*9/18	5*6/25	< 3
Values of specific IgE (kU/L)			
Egg white	13.6	5.59	≤0.35
Egg yolk	3.03	0.96	≤0.35

such as the application of egg white to areas of burn are commonly used in Turkey. However, such practices may result in fatal anaphylaxis in individuals with egg sensitization.

CONCLUSION

For patients with food allergies; recommending the prevention of inhalation and contact with the allergen (in addition to the prevention of oral intake), and training families on the use of adrenaline autoinjector, may prove to be life-saving measures.

Statement

Informed Consent: Written, informed consent was obtained from the patient's family for the publication of this case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – ZŞE, SÖ; Design – ZŞE, SÖ; Supervision – ZŞE, SÖ; Resource – ZŞE, SÖ; Materials – ZŞE, SÖ; Data Collection and/or Processing – ZŞE, SÖ; Analysis and/or Interpretation – ZŞE, SÖ; Literature Search – ZŞE, SÖ; Writing – ZŞE, SÖ; Critical Reviews – ZŞE, SÖ.

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