

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

Zeynep Sengul Emeksiz MD, Sami Ulus PhD

EmeksizZS, Ulus S. Anaphylaxis that develops following application of egg white on an area of burn. 2018;1(1):1-2.

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 first 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 following contact of egg with injured skin (besides oral intake). 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 auto-injector (Figure 1).



Figure 1) Adrenaline auto-injector.

TABLE 1  
Personal history data of the patient

Age (month)	Clinical history
History of delivery	44 weeks, 3390 grams, by c/s.
3rd Month	Diagnosis of atopic eczema.
6th Month	A short time after the first intake of egg white, patient was admitted to our emergency clinic due to rashes over his body.
	A short time after the first intake of egg white, patient was admitted to our emergency clinic due to rashes over his body.
	The patient was referred to the Department of Pediatric 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 auto-injector use.

The patient was brought to our emergency clinic immediately afterwards. 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.

Table 2  
Laboratory results of the patient

Variables	7th Month	16th Month
Eosinophil (%)	5.60%	1.10%
Serum total IgE (iu/mL)	17.3	-
Tryptase (ug/L)	-	19.3
Skin tests for allergies (mm)		
Egg white	5*5/15 mm	11*7/35 mm
Egg yolk	7*8/17 mm	4*4/25 mm
Histamine	7*9/18 mm	5*6/25 mm
Values of specific IgE (KU/L)		
Egg white	13.6	5.59
Egg yolk	3.03	0.96

The vital signs of the case were examined in emergency clinic. The cases' arterial blood pressure was 100/50 mmHg, while his oxygen saturation was 100%, and 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 hours 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 hospital with a recommendation of oral steroid treatment for three days, and antihistamine treatment for seven days. The patient's family was once again trained on excluding certain foods from the diet, and on the use of the adrenaline auto-injector. Oral provocation test and contact provocation has not been done yet. These are limitations of our study. In addition, the level of tryptase observed at the time of anaphylaxis is high (19.3 µg/L), but the basal tryptase value of the patient is unknown. The patient's follow-up at our clinic is still continuing. Provocation tests with egg yolk were also planned. The patient's follow-up at our clinic is still continuing. Oral provocation with egg yolk was also planned.

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 reactions that develop following dermal contact with the food. Contact urticaria may develop as a hyper-sensitivity 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 amount of antigens absorbed through the skin (3). Our case has already been existing with atopic eczema, and the associated skin burn resulted in an increase of damage in the skin barrier, predisposing to the development of a severe reaction.

Department of Pediatric Immunology and Allergy, Health Science University, Turkey

Correspondence: Zeynep Sengul Emeksiz, Department of Pediatric Immunology and Allergy, Health Science University, Turkey. Telephone +90505 943 8022, e-mail drzeynep83@hotmail.com

Received: January 31, 2018; Accepted: February 28, 2018; Published: March 07, 2018



This open-access article is distributed under the terms of the Creative Commons Attribution Non-Commercial License (CC BY-NC) (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits reuse, distribution and reproduction of the article, provided that the original work is properly cited and the reuse is restricted to noncommercial purposes. For commercial reuse, contact reprints@pulsus.com

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 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 auto-injector. This was an important approach for recognizing and treating anaphylaxis at its earliest stages. Alternative treatments such as the application of egg white to areas of burn are commonly used in Turkey. However, such practices may actually result in fatal anaphylaxis in individuals with egg sensitization.

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 auto-injector, may prove to be life-saving measures. In addition, it is important to increase awareness of clinicians that anaphylaxis may develop with allergen contact, especially in the emergency departments; adrenaline administration should not be delayed.

---

#### REFERENCES

1. Lieberman P, Camargo CA Jr, Bohlke K, et al. Epidemiology of anaphylaxis: Findings of the American College of Allergy, Asthma and Immunology Epidemiology of Anaphylaxis Working Group. *Ann Allergy Asthma Immunol* 2006;97:596-02.
  2. Sicherer SH, Sampson HA. Food allergy. *J Allergy Clin Immunol* 2006;117:470-75.
  3. Roumpedaki E, Douladiris N, Papanaki A, et al. A child with anaphylactic reaction by egg remedy applied to burn. *Pediatr Allergy Immunol* 2014;25:606-08.
  4. Seitz CS, Trautmann A. Cosmetic facial peel-induced contact anaphylaxis: Chestnut allergy without latex-fruit syndrome. *J Investig Allergol Clin Immunol* 2011;21:494-95.
  5. Hansen S, Mecham N. Pediatric anaphylaxis: Allergic reaction to egg applied to burns. *J Emerg Nurs* 2006;32:274-76.
-