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CORRESPONDENCE

Cold-induced anaphylactic shock during playing in a thigh-deep river: A pediatric case

Acquired cold urticaria (ACU) is a physical urticaria characterized by localized skin reactions after cold exposure. Patients with ACU are reported to develop systemic reactions after extent cold exposure, most commonly triggered by complete cold water immersion, but rarely by localized contact with cold liquids or ice.[1]

A four-year-old girl complained of itching while playing in a river on a summer day. The water was thigh-deep, and her legs, which were entirely in the water, were flushed all over (Figure 1). Her face and lips were cyanotic, and she lost consciousness and finally could not move herself. Shortly after, her parents removed her from the water and warmed her up, and the symptoms gradually disappeared. There were no signs of insect bites, and no unusual food had been eaten before the episode.

Her hands itched while holding ice cream cones, and her tongue swelled when she ate ice cream. There were no episodes of night sweats, headaches, joint aches, or fever. She had no other medical disorders in the past and had no family history of atopic diseases or cold urticaria.

On laboratory workup, the serum total IgE level was 32 IU/ml, and cryoglobulins were not detectable. Cold stimulation test using a cold stimulation device Temp*Test*®4.0 (Emo Systems GmbH, Berlin, Germany), induced wheals at 4–17°C and erythema at 4–19°C (Figure 1). Therefore, she was diagnosed as primary ACU with CTT estimated 17°C.

We instructed her to keep her skin warmer than 20°C based on CTT of 17°C and to basically avoid cold environment and foods. In addition, we permitted her to swim for less than 30 min in indoor heated and outside pools on hot days and prescribed antihistamines for prevention of symptoms.

The prevalence of ACU is 0.05% in population and onset in mostly the 2nd to 4th decade of life.[2] Pediatric-onset cases are reported to experience systemic reactions more than adult-onset cases (25% vs 16.7%).[3]

Alangari et al.[4] reported that 11 out of 30 children (36.7%) with ACU experienced systemic reactions, mostly triggered by aquatic activities, which possibly involve cold exposure to wider body surface area for longer periods of time. In most previous case reports, systemic symptoms were triggered by swimming or cold environment, in which the patients' whole body was exposed. Our case was younger than the previous case report on systemic reactions triggered by localized exposure to cold water, which was aged 6.[5]

In cold urticaria treatment, avoiding cold stimuli depending on severity of individual patient is necessary for prevention of systemic reactions. The traditional ice cube test cannot assess CTT, resulting in uniform instruction of avoidance of all cold exposure. Recently, Temp*Test*® is recommended in urticaria guidelines to develop personalized treatment plans for ACU patients.[6]

ACU patients potentially involve systemic reactions in extensive cold exposure, sometimes with less than half of the patient's body exposed to cold water. This knowledge is inevitable for clinicians to help patients avoid life-threatening situations. Furthermore, evaluation of CTT should be considered for better patient self-management.

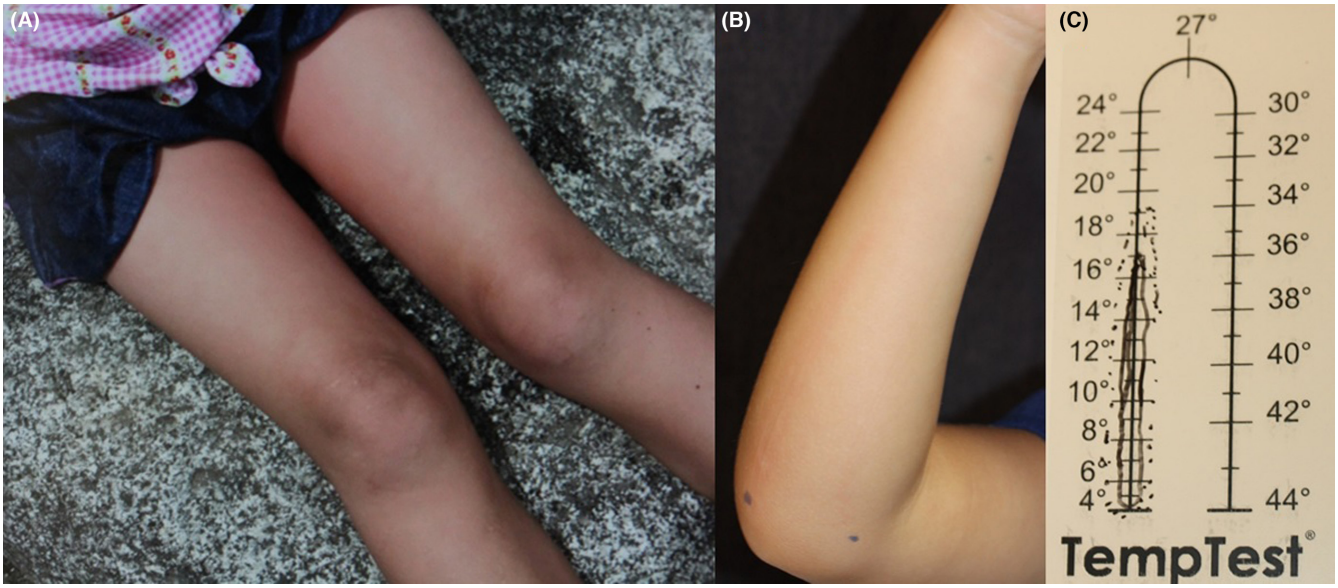

FIGURE 1 (A) Picture taken by her mother after removing her from the river. Flushing is seen in the larger part of her legs, which were entirely in the river. (B) Wheals and erythema triggered 10 min after placing the forearm on Temp*Test*®4.0 for 5 min. (C) Foil used for measuring wheals (full line) and erythema (dotted line)

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DECLARATION SECTION

Approval of the research protocol: No human participant was involved in this study.

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

Registry and the Registration No.: N/A.

Animal Studies: N/A.

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