

CASE REPORT

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Anaphylaxis in Cold Induced Urticaria: A Case Report and Review of the Literature

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ABSTRACT

Cold-induced urticaria is considered as a subtype of physical urticaria and also the second most common type of chronic inducible urticaria. Contact with cold surfaces or the environment may cause systemic reactions, especially during aquatic activities. A 22-year-old female patient with a history of sulfa drug allergy began her condition 2 years before the presence of generalized pruritic erythema with hives as well as 2 episodes that had been characterized by facial angioedema and syncope 3-5 minutes after being in contact with cold air or surfaces. On both events, she had just been outdoors on a cold, winter day. She was suspected to have cold-induced urticaria; thereby she had a positive reaction to the ice cube test. Due to the previous episodes of anaphylaxis, the patient was trained to administer intramuscular epinephrine. After 4 weeks of starting the treatment with antihistamines, no new events or injuries had occurred. Cold-induced urticaria may cause life-threatening reactions. The rate of anaphylaxis in these patients is low however, this case is presented to inform the importance of identifying this type of systemic reaction and preventing strategies.

Keywords: Anaphylaxis; Epinephrine; Urticaria

INTRODUCTION

Cold-induced urticaria is a subtype of physical urticaria and is the second most common type of chronic inducible urticaria. Cold-induced urticaria can be primary or secondary, depending on the cause. Primary forms are defined when a trigger cannot be determined. Secondary cold-induced urticaria has been reported to be associated with bacterial and viral

infections, medications, Hymenoptera stings, hematologic malignancies, and immunotherapy¹. This disorder has been reported to have a prevalence of 0.05%, with a higher frequency in women and young adults.² Contact with cold surfaces or environment may cause systemic reactions, from generalized urticaria to anaphylaxis with symptoms involving the respiratory, gastrointestinal, and cardiovascular systems, especially during aquatic activities³.

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CASE PRESENTATION

We present the case of a 22-year-old female patient

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with a history of sulfa drug allergy, her condition began 2 years prior with the presence of generalized pruritic erythema with hives as well as 2 episodes that had been characterized by facial angioedema and syncope 3-5 minutes after being in contact with cold air or surfaces. On both events she had just been outdoors on a cold, winter day and was taken to the emergency room, treated with hydrocortisone, chlorpheniramine, and ranitidine with an improvement of symptoms. No epinephrine was administered, and she regained consciousness on her own. Anaphylaxis cofactors such as infectious disease, menstrual cycle, comorbidities, and medication consumption were ruled out. After being discharged she started using 10 mg/day of cetirizine as preventive treatment during the winter months, so these events had not appeared since then. The patient was referred to our allergy service and complete clinical history was carried out suspecting anaphylaxis and cold-induced urticaria. The ice cube

test was performed under cautious surveillance, applying it onto the patient's forearm (Figure 1a) which was removed after 5 minutes. She presented intense itching and a wheal 50 mm x 50 mm (Figure 1b) in the area where the ice pack was placed, considering it a positive test. No further symptoms were developed. The patient also presented with edema and mild erythema in the palm of her hand after being in contact with a cold bottle for 5 minutes or cold air (Figure 1c and 1d). Due to the previous episodes of anaphylaxis, the patient was trained to administer intramuscular epinephrine, as our country has no auto-injectable epinephrine. Rupatadine was indicated at a dose of 20 mg/day and the importance of avoiding exposure to cold surfaces and environment was discussed. After 4 weeks of starting treatment, no new events or injuries had occurred.

The ethics committee approval code is AL21-00008.

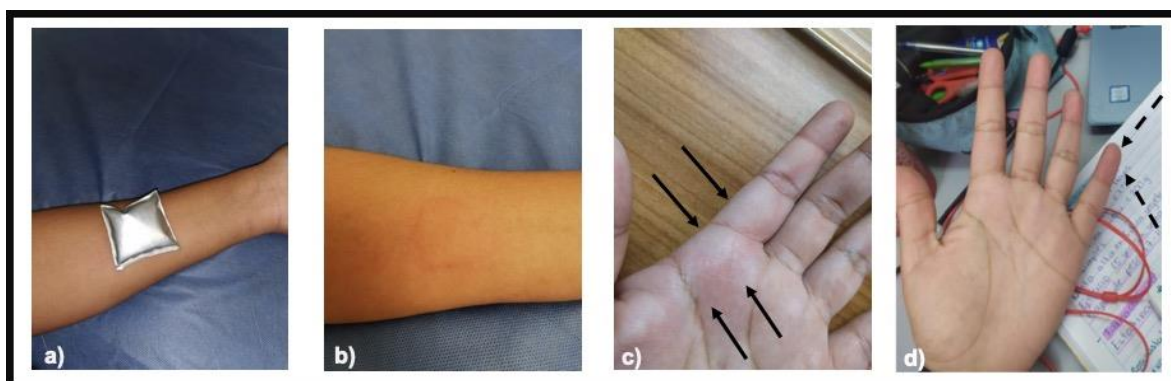


Figure 1. a) Ice cube test performed applying it onto the patient's forearm; b) Positive ice cube test with a 50 mm x 50 mm wheal, c) Black arrows show edema and mild erythema in the palm of hand after being in contact with a cold bottle for 5 minutes; d) Dashed arrows show erythema on fingertips after being exposed to cold air.

DISCUSSION

The patient developed a combination of both typical cold-induced urticaria (TCU) characterized by the appearance of wheals only in cold stimulated areas and confirmed by a positive response to the specific cold stimulation test (CST) and atypical presentation (ACU). The diagnosis of ACU includes either negative CST, systemic manifestations, cold-dependent dermographism, cold-induced cholinergic urticaria, delayed cold urticaria, or localized cold-reflex urticaria.⁴ Deza et al, described 74 patients, the most common trigger was cold water in 73%, and only 28%

were atypical. They divided the severity into 3 groups Group I had only localized urticaria or angioedema, group II had generalized urticaria with manifestations limited to the skin, and group III had also severe systemic reactions with respiratory symptoms or signs of hypotension. 47.3% of the patients had a group II severity disease, followed by 33.8% of group I and 18.9% of group III, which represents a considerable number of patients who may develop severe systemic reactions.⁵

A CST is considered positive if a cold stimulus of 0–4°C placed on the volar surface of the forearm for 5min triggers a weal after rewarming for 5–10 minutes.

TempTest is the only validated instrument that provides continuous temperature gradients from 4°C to 44°C and to identify both CSTT (critical stimulation time threshold) and CTT (critical stimulation time threshold).⁶ The test may be repeated at shorter intervals to establish the minimum time required for a weal induction (cold stimulation time test).⁷ The ice cube test is considered to have a sensitivity of 83% and a specificity of 100%. The Temp Test has been shown to have the same sensitivity and specificity as the ice cube test.⁸ However, the specificity of these test methods has been debated in a study that suggests that about a quarter of patients with cold-induced urticaria will have a negative cold-stimulation test.⁵ Stepaniuk et al, reported that of 59 patients who had a high probability of cold-induced urticaria based on medical history, 15.3% had a negative test. This may reflect the poor sensitivity of ice cube testing as a modality and question the usefulness of using challenge tests to make the diagnosis.⁹

For treatment, patient education is important to avoid exposure as well as pharmacological treatment. The administration of non-sedating H1-antihistamines is effective. Higher doses of antihistamines are more effective than standard doses in multiple case-control studies and do not increase the risk of adverse events.⁹ Omalizumab is effective in the treatment of cold-induced urticaria refractory to antihistamines, with no difference between the 150 mg and 300 mg doses in terms of symptom reduction.¹⁰

Cold-induced urticaria may cause life-threatening reactions. The rate of anaphylaxis in these patients is low however, this case is presented to inform the importance of identifying this type of systemic reaction and prevention strategies. Acknowledging cases like these is important so that primary care physicians can refer these patients properly and receive adequate treatment to avoid possible complications, which may be fatal.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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None

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