Exhaustive Diagnosis of Heat Urticaria in a Regular Clinical Practice: Report of 2 Cases

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J Investig Allergol Clin Immunol 2024; Vol. 34(1): 56-57
doi: 10.18176/jiaci.0915

Key words: Chronic urticaria. Induced urticaria. Heat urticaria. Urticaria diagnosis. Hives.

Palabras clave: Urticaria crónica. Urticaria inducible. Urticaria por calor. Diagnóstico de la urticaria. Habones.

Heat urticaria (HU) is a subtype of chronic inducible urticaria (CIndU) that is characterized by the appearance of pruritic wheals after exposure to or direct contact with a hot stimulus [1-7]. These wheals can be localized (limited to areas closest to the heat source) or generalized and can have an immediate or a delayed onset [2-4]. However, in the study of HU, other causes of chronic urticaria (CU) should be ruled out [2,5].

We report 2 cases of women with localized HU where other subtypes of CU were ruled out and the triggering threshold temperature was determined. Written informed consent was obtained from the patients for publication.

The first case involved a 57-year-old woman (a clinical assistant) with hypothyroidism and a 2-year history of recurrent episodes of evanescent and itchy hives appearing within minutes of exposure to or direct contact with different heat sources. The hives appeared in the area of direct contact or the body part closest to the heat source and sometimes remitted spontaneously. The second case involved a 50-year-old woman (a professional cook) with a 9-month history of recurrent episodes of transitory itchy hives on direct contact with a frying pan. Her hives disappeared after therapy with antihistamines and oral corticosteroids. None of the patients had mucosal lesions, systemic symptoms, or a history of urticaria in other situations. Both tolerated walking in the sun, physical exercise, and sweating and reported impaired quality of life due to their symptoms.

To confirm the diagnosis of HU, we performed a challenge test with a beaker filled with hot water at 40ºC placed on the forearm (the water was heated in a microwave oven, and its temperature was measured with a cooking thermometer). The result was positive in both cases (Figure, A). Once the diagnosis was confirmed, we performed several tests to rule out other causes of CU (supplementary online summary table).

The results were either negative or normal for complete blood count, biochemistry, thyroid profile, complement and immunoglobulin levels, antinuclear antibody titers, and tryptase levels. A blunt-force dermographism test was also negative. Cholinergic urticaria (CholU) and solar urticaria (SU) were ruled out after we performed an outdoor free running test and an intradermal methacholine test for CholU and a direct sunlight (outdoor) exposure test and a visible light (slide projector) exposure test for SU. To exclude autoreactivity, we performed an autologous serum intradermal test (ASIT) at room temperature according to the protocol proposed in the consensus report of the European Academy of Allergy and Clinical Immunology task force (Figure, B) [8].

To confirm the etiology and pathogenesis proposed by Fukunaga et al [6], we performed an ASIT after heating the serum to 40ºC and 60ºC and then waiting 20 minutes at room temperature, as established in the protocol of Carballada et al [7], before applying it to the patient's forearm. Both patients developed a wheal at the application site when the serum was heated to 60ºC. The ASIT was also performed on healthy controls at room temperature and after heating the serum to 40ºC and 60ºC. None developed a wheal.

Finally, to determine the threshold temperature, we performed successive heat provocation tests with a beaker filled with water at different temperatures (starting at 30ºC

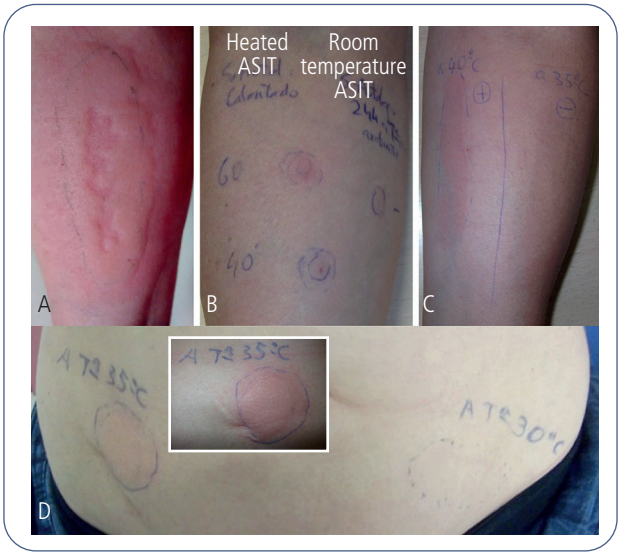

Figure. Diagnostic test results. A, A well-demarcated wheal after a heat challenge test using a beaker filled with water at 40ºC. B, A negative ASIT result at room temperature and 40ºC, with a positive result after heating to 60ºC. C and D, Threshold temperature of 40ºC and 35ºC in the first and second patient (detail in inset), respectively. ASIT indicates autologous serum intradermal test.

and increasing by 5ºC each time the test was negative). The threshold temperature was 40°C for the first patient and 35°C for the second patient (Figure, C and D).

Both patients were successfully treated with second-generation oral antihistamines (cetirizine) and were advised to avoid exposure to heat sources if possible. After 11 years in the case of patient 1 and 9 years in the case of patient 2, both maintain excellent control with occasional doses of antihistamines.

CIndU, a subtype of CU, is classified into physical urticaria (triggered by pressure, sunlight, heat) and nonphysical urticaria (triggered by active or passive body warming and water) [1,3-5]. HU is a rare skin disorder [2-7] with an unknown prevalence in patients with CIndU [3,5]. It can be diagnosed using a TempTest supplemented with a heated ASIT to confirm etiology and pathogenesis [5,6]. Other subtypes of CU should be excluded, even though they are clinically very different.

Diagnosis is confirmed with a calibrated dermographometer (FricTest) in symptomatic dermographism [1]. In the case of CholU, it is based on exercise, passive warming [1,3], or a methacholine intradermal test [3]. In SU, diagnosis is based on a negative sunlight exposure test (visible light) or PhotoTest (UV-B and UV-A wavelengths) result [3], and in autoreactivity to serum components on a positive ASIT result at room temperature [9].

The etiology and pathogenesis of HU are unknown. Fukunaga et al [6] suggested that the serum of affected patients may contain a large molecule (not IgE) that is activated by heat and can promote mast cell degranulation and histamine release, as demonstrated by a positive heated ASIT and a negative room temperature ASIT result [5-7]. In the cases we report, the heated ASIT was positive at a temperature higher than the threshold temperature. The mean threshold temperature for HU is 44ºC [2-5].

Therapeutic options for heat urticaria are limited [3], and treatment should always be individualized based on patient characteristics. As a prophylactic measure, we recommend avoiding exposure to heat sources as much as possible, although this is not always possible for all patients (eg, cooks and hairdressers). The first-line treatment is nonsedating H1 antihistamines (increasing the dose up to 4-fold), although sedating H1 antihistamines, H2 antihistamines, or short courses of oral corticosteroids can be added [1-5]. In cases of poor response, heat desensitization [2,3,5] (after which histamine release no longer increases with heat exposure [6]) or omalizumab (off-label) could be used for better control of symptoms [1,2,4,7].

Although a detailed clinical history and a positive TempTest or positive heat challenge test would be sufficient to diagnose HU, it is advisable to make a differential diagnosis with more common subtypes of CIndU. Here, we show how it is possible to perform an exhaustive diagnosis of this rare skin disorder [2-7], which has many differential diagnoses, using standard equipment available in routine practice instead of the recommended medical equipment [1]. Our approach can help to improve patient management.

Funding

The authors declare that no funding was received for the present study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Previous Presentation

This study was presented as a case report at the "IV encuentro monográfico de urticaria GEIDAC", Segovia, Spain, 2022.

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Manuscript received December 29, 2022; accepted for publication May 18, 2023.

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