



CASE REPORT

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## IgG food hypersensitivity: A potential hidden precipitant for chronic spontaneous urticaria A case report

Emad Abdulkader Koshak<sup>a</sup>, Ali Fahad Atwah<sup>b</sup>, Hanan Mohammed Yaqoob Ahmad<sup>c\*</sup>

<sup>a</sup>Department of Internal Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

<sup>b</sup>Department of Pediatrics, Faculty of Medicine, King Abdulaziz University, Rabigh, Saudi Arabia

<sup>c</sup>Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

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### Abstract

**Background:** While the link between foods and chronic spontaneous urticaria (CSU) is controversial, many immunological mechanisms have been proposed to establish a causal relationship.

**Objective:** To explore the potential benefit of avoiding immunoglobulin G (IgG)-mediated food hypersensitivity as a triggering factor in a case with CSU.

**History:** The patient is a 50-year-old woman who complained of CSU for 1 and half year, which responded partially and temporarily to antihistamine medications. Of interest, it started 6 months after she followed an oat-rich diet. Her Urticaria Activity Score 7 was 23 out of 40.

**Results:** Specific immunoglobulin E responses to common food and inhalant allergens were negative. A food-specific IgG antibody test was conducted, and it was mainly elevated for chicken eggs, rye, sweet pepper, gluten, garlic, wheat, and pineapple. Avoiding these foods had a curative effect on the CSU over a 2-month period.

**Conclusion:** To the best of our knowledge, this is the first case report of symptoms of CSU that resolved after identifying and avoiding food items with IgG antibodies. Furthermore, well-controlled studies are advocated to verify the potential role of IgG food hypersensitivity in the pathogenesis of CSU.

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\*Corresponding author: Hanan Mohammed Yaqoob Ahmad, Faculty of Medicine, King Abdulaziz University, P.O. Box: 80215, Jeddah 21589, Saudi Arabia. Email address: [Hanan.m.y.ahmad@gmail.com](mailto:Hanan.m.y.ahmad@gmail.com)

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## Introduction

Chronic spontaneous urticaria (CSU) is a distressing skin disorder characterized by recurring itchy skin wheals that persist for 6 weeks or longer without any identifiable cause or trigger. Worldwide, CSU is a growing health problem with an approximate point prevalence of 1%.<sup>1</sup>

The etiology of CSU remains unknown, with various postulated exacerbating factors, including infections, drugs, foods, and immune system abnormalities.<sup>2</sup> Recently, autoimmunity has been advocated in up to 50% of CSU patients through both immunoglobulin G (IgG) and E (IgE) autoantibodies.<sup>3</sup>

The relationship between food and CSU is a controversial topic. Some patients' symptoms may improve with pseudoallergen-free and low histamine foods.<sup>4</sup> However, a systematic review revealed a low level of evidence for a diet advantage in CSU symptoms.<sup>5</sup>

Since CSU is often self-limiting, some authors recommend avoiding universal IgE allergy testing, as it may lead to unnecessary food avoidance. Conversely, patients with refractory CSU to medications should be referred to an urticaria specialist for further evaluation.<sup>2</sup>

More recently, alternative testing for food intolerance using IgG antibodies could help as a guide for exclusion diets with clinical benefits in some chronic diseases.<sup>6,7</sup> Therefore, the purpose of this case report was to explore any potential role of IgG food testing in a patient with CSU.

## Case History

A 50-year-old Saudi woman visited the allergy and immunology clinic at Ekthar Medical Center in Jeddah, Saudi Arabia, in October 2017. Her main complaint was an increasingly itchy, erythematous skin rash for a week. She has had similar recurrent incidents associated with itchy wheals more over both upper limbs for a period of one and a half years. The wheals manifest more in the morning in response to scratching and are exacerbated by stress.

Usually, the symptoms resolve spontaneously after hours or partially after an oral H1-blocker antihistamine (Cetirizine 10 mg). But, she had visited the emergency department several times because of episodes of a severe generalized itchy urticarial skin rash, which improved after intramuscular antihistamine and corticosteroid. In addition, she had discontinued other medications, such as calcium, magnesium, and multivitamins for months without any improvement.

Additionally, she also complained of recurrent respiratory symptoms like a stuffy nose and occasional shortness of breath. Of interest, her skin and respiratory symptoms appeared after 6 months of following a diet for weight loss. She has no known allergies to food or medications and no family history of similar complaints.

At the clinic, her severity of urticaria was 23 out of 42 for a week using the Urticaria Activity Score 7 (UAS7). Her physical examination was normal, except for a few erythematous wheals, mainly on the skin of the upper limbs.

Laboratory investigations showed a normal total blood count, liver function test, urea, electrolytes, erythrocyte

sedimentation rate, complements, C-reactive protein, thyroid function, antinuclear antibodies, and thyroid antibodies. The total IgE test was marginally raised at 112 IU/mL. Specific IgE antibodies to 30 common food allergens (SA-R) and 30 common inhalant allergens (SA-R) were negative.

An enzyme-linked immunosorbent assay for measuring IgG-specific antibodies to 90 different food items in the serum, with the trade name Imupro® and developed by R-Biopharm, was ordered. An elevated IgG antibody to food (above 7.5 µg/mL) was found as follows: 18.1 µg/mL for chicken egg, 17.6 µg/mL for rye, 15.3 µg/mL for sweet pepper, 14.2 µg/mL for gluten, 10.2 µg/mL for garlic, 9.6 µg/mL for wheat, and 9.0 µg/mL for pineapple.

Thereafter, the patient was diagnosed with CSU and allergic rhinitis. She was advised to avoid all the foods with elevated IgG in her diet and to take an antihistamine, Loratadine 10 mg, up to four tablets daily as needed.

After avoiding the IgG positive foods, the patient's urticaria symptoms improved after 2 weeks, the USA7 score decreased to 10, and then disappeared completely within a 6-week period. Her nasal symptoms also improved and became intermittent, and it responded well to antihistamines taken as needed.

This case report was initiated after obtaining informed consent from the patient and the Ekthar Medical Clinic administration.

## Discussion

CSU consists of different phenotypes, and, hence, an accurate medical approach is necessary for its treatment. Patients often ask for dietary interventions, because they are simple, cost-effective, and may benefit some patients with refractory CSU, but there are no precise tools to detect them.<sup>8</sup>

Several promising biomarkers are under focus to predict the efficacy of dietary intervention for the treatment of CSU.<sup>9</sup> A study of 240 children with CSU has shown that food sensitization could predict inadequate treatment response.<sup>10</sup>

There are limited references in the literature about IgG food testing in CSU. Two studies from China on urticaria suggest that IgG antibodies to egg, milk, shrimp, and rice could be significant for diagnosis and treatment.<sup>11</sup> A study from Saudi Arabia included 61 urticaria patients and found that IgG antibodies were against cola nut, yeast, wheat, red kidney beans, peas, corn, and egg white.<sup>12</sup> In contrast, in a study from Italy on 73 patients with CU, 62% were IgG-positive to foods, but none showed any adverse reactions to them.<sup>13</sup>

The exact role of IgG food tests in the diagnostic algorithms of allergic disorders is highly controversial and awaits determination. It may be potentially considered in refractory CSU if there is discordance between patient history and specific IgE tests or if late symptoms occur after food.

The main limitation of IgG food tests is the lack of support in the guidelines from most allergy societies due to insufficient evidence.<sup>2,14</sup> Hence, this case report may provide some evidence of the benefit of avoiding foods based on IgG food tests that may reflect a patient's unique hypersensitivity phenotype in CSU cases.

In conclusion, to the best of our knowledge, this is the first case report of CSU that was cured by identifying and avoiding IgG-sensitive foods in Saudi Arabia. Despite the controversy in the guidelines, the IgG food test could be considered potentially useful in some uncontrolled CSU. Well-controlled studies are needed to verify the role of identifying and avoiding IgG-sensitive foods in subtypes of CSU.

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## Conflicts of Interest

The authors declare no conflict of interest.

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