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Letter to the Editor

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Localized heat-induced urticaria is a physical urticaria resulting in an eruption of itchy wheals, angioedema, or both when exposed to heated material.¹ Diagnosis usually is clinical, and a heat challenge test is necessary to distinguish localized heat urticaria from other similar forms of chronic urticaria such as dermatographic urticaria or delayed-pressure urticaria. The heat challenge test is performed by applying a heated object to the skin or by submerging the patient's hands in warmed water until an urticarial response is observed. A positive test would present with pruritus and wheals typically appearing within minutes and lasting up to 2 hours after stimulus.² In contrast, dermatographic urticaria is characterized by the presence of marked erythema and wheals by mechanical irritation (ie, a scratch), irrespective of the temperature of the trigger.³ Similarly, in delayed-pressure urticaria, a patient would display a reaction upon sustained-pressure application on the skin, with wheals appearing on average 6 hours after pressure is applied and lasting up to 72 hours in severe cases.⁴ Severe urticarial cases may be associated with systemic reaction and occasionally progress to anaphylaxis.¹ These patients exhibit flushing, nausea, diarrhea, dizziness, and syncopal episodes when exposed to either physical or mechanical triggers.^{5,6} There have been only approximately 53 cases of heat-induced urticaria reported worldwide since its initial description in 1924,³ although it is thought that many cases go undiagnosed. Ingestion of hot beverages or meals, prolonged exposure to hot water, and even warmed objects have been described as triggers.^{7,8} The etiology remains unclear, but factors such as local release of histamine,⁸ activation of the complement pathway,⁹ or prostaglandin D2 release have been suggested.¹⁰ There is no sole management for localized heat-induced urticaria since chronic urticarias have varying degrees of response to treatment. Medically oriented options include nonsedative antihistamines as a first-line pharmacologic agent for patients in whom chronic urticarias cause significant lifestyle change. Not all patients may respond to treatment, and some may worsen. Secondary medications include antileukotrienes, corticosteroids, or

immunomodulating therapies. Alternatively, avoidance of stimuli is another method of managing chronic urticaria for those patients who can cope with mild lifestyle changes.¹

We recently provided facial rejuvenation treatments to a patient with heat-induced urticaria. Given its rarity, there are few reports that associate other sources of heat such as lasers, intense pulsed light, or electrocautery with this condition. We report our experience with aesthetic facial surgery in the setting of heat-induced urticaria and heat-generating modalities. A 58-year-old woman sought consultation to address face and neck dermatochalasis, brow ptosis, upper eyelid dermatochalasis, and midface volume loss. She also requested treatment of solar lentigines and redness of rosacea. During the evaluation, she disclosed her condition of localized heat-induced urticaria, diagnosed 1 year prior. Her first clinical manifestation of symptoms commenced 2 years prior when she noted a wheal appearing on her thigh after topical exposure to a warm coffee mug for 10 minutes. Additional triggers identified were hot showers and prolonged exposure to sunlight, thereby adding solar urticaria³ to the diagnosis of heat-induced urticaria. Dermatographic urticaria was excluded in our patient since her symptoms were not related to mechanical irritants, while delayed-pressure urticaria was excluded due to symptoms being associated only with heat-related sources regardless of the amount of pressure applied to the skin. She denied any associated systemic symptoms. After evaluation, pan-facial rejuvenation was performed in 3 stages to minimize the risk of adverse systemic reactions. BroadBand Light (BBL; Sciton, Inc, Palo Alto, California) treatments were planned at a

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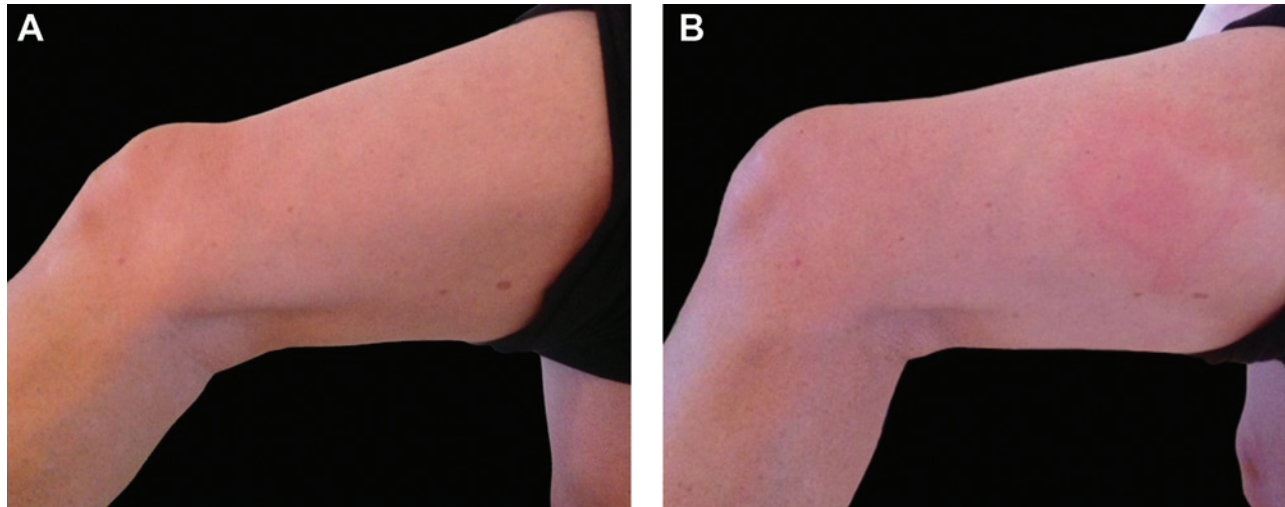


Figure 1. A 58-year-old woman with localized heat-induced urticaria. (A) Patient's leg before exposure to warmed object. (B) Urticarial reaction secondary to a 10-minute exposure to a warmed object.

separate visit after a “test spot” treatment in the retroauricular region.

Prior to the procedure, we consulted with the patient's dermatologist to verify whether prophylaxis with antihistamines was necessary or if there was a history of systemic reactions to prior episodes. Since our patient coped well with avoidance of physical triggers, the physician did not recommend pharmacologic therapy as a method of preventing an urticarial reaction during surgery. In some instances, the use of medication was shown to have increased the incidence of a urticarial reaction.¹ Stage 1 consisted of Dysport (Tercica Inc., Ipsen Group, Brisbane, CA, and Medicis Aesthetics Inc., Medicis Pharmaceutical Corporation, Scottsdale, AZ) to the glabella and lateral canthus, lateral browpexy, and upper blepharoplasty. As an intraoperative precaution, we had appropriate medication prepared in anticipation to a systemic reaction to electrocautery. Postoperatively, our patient was kept under observation for 2 hours and then discharged with a family member. After the first postoperative day, the patient recuperated normally and exhibited no evidence of delayed urticarial reaction¹⁰ to electrocautery. The second stage was completed with a suture suspension platysmaplasty and lateral superficial muscular aponeurotic system resection rhytidectomy. Drains were removed on the first postoperative day, and no reaction was noted. Two weeks later, the retroauricular region was “spot tested” with the BBL device using a 560-nm filter at 10 J/cm², a 20-ms pulse width, and 20°C cooling. No urticarial response was observed after 10 minutes, and the patient consented to facial and décolleté exposure to BBL. She underwent 3 full-face passes and a total of 36 pulses with no urticarial response. Two weeks after initial BBL treatment, she underwent a second treatment to include the face, neck, and décolleté region, using a 560-nm filter at 12 J/cm², a 20-ms pulse width, and 20°C cooling applied for a total of 82 pulses.

After treatment without reaction, she was discharged with appropriate follow-up. She recovered uneventfully and verified her overall satisfaction with the final aesthetic result by utilizing the Satisfaction with Facial Appearance Overall, Aging Appearance Appraisal, and the Age Appraisal Visual Analog Scale (VAS) of the Face-Q Patient-Reported Outcome Measure questionnaire. The questionnaire was sent to the patient's home during the fourth postoperative month (see appendix, available online at www.aestheticsurgeryjournal.com). With regard to the symmetry, balance, freshness, and how rested her face looked, she answered she was somewhat satisfied with the results. When questioned how the face looked when she first woke up and under bright lights, she also responded she was somewhat satisfied. She answered she was very satisfied with the way her face looked at the end of the day, how her face looked in photos, her facial proportion, and her facial profile. In the Aging Appearance Appraisal, she marked definitely disagree to looking older than what she wanted to be in photos, being worried about how old she appeared, not looking like herself in the mirror, and appearing so old that she did not recognize herself. When questioned about looking older than what she wanted to be and being bothered by how old she looked, she marked somewhat disagree. Finally, on the Age Appraisal VAS, she marked as looking approximately 6 years younger than her actual age. These findings strongly support satisfaction with her procedure using this validated outcomes tool.

DISCUSSION

Literary investigation was of essence since heat-localized urticaria remains an elusive immunological condition with incompletely elucidated triggers. Reactions to electrocautery, laser treatment, and intense pulse light had not been



Figure 2. A 58-year-old woman with localized heat-induced urticaria undergoing surgical facial rejuvenation. The patient underwent a staged process in which stage 1 comprised an upper blepharoplasty, browpexy, and Dysport of the upper and midface. Stage 2 was completed with a suture suspension platysmaplasty, lateral superficial muscular aponeurotic system resection rhytidectomy, and intense pulse light treatment. (A, C) Frontal and oblique views of the patient preoperatively. (B, D) Frontal and oblique views of the patient 4 months postoperatively.

reported to our knowledge. Although rare, systemic systems are plausible and vary from degree of exposure.^{6,8} These are commonly found in female patients with a history of atopy

and present with immediate heat urticaria—a urticarial rash appearing within 15 minutes of exposure to a trigger. Delayed heat urticaria is characterized by a reaction occurring

30 minutes or longer, has no association with systemic symptoms, and is not associated with a history of atopy.⁹ In some cases, a delayed urticarial reaction may ensue hours after exposure and last for days.¹¹ Reactions to aesthetic surgery (or other surgery), electrocautery, laser treatment, and intense pulse light had not been reported to our knowledge. Our patient was at a higher risk to present with systemic symptoms due to her urticaria commencing within 5 minutes of exposure. Fortunately, she never reported incidences of systemic reaction and reacted well to both surgical procedures involving electrocautery and healed well without a delayed urticarial response.

Previous reports describe varying reactions to different temperatures without specific mention of light-based treatment. One study described diffuse erythema and mild edema occurring upon exposure to warmed water of 35°C, with pruritus commencing after a 4-minute bath at 45°C.¹² In another case report, erythema commenced within 2 minutes of a warmed beaker of 50°C being placed on the arm and failed to show response to temperatures ranging from 35°C to 46°C.¹³ Our patient reacted upon 5 minutes of exposure to a warmed mug (average temperature of 60°C) with urticaria, with a wheal appearing shortly thereafter. The reaction would be confined only to the area exposed, a classic symptom associated with localized heat urticaria³ (Figure 1A,B). It was therefore difficult to ascertain at what temperature our patient would have an urticarial reaction when high-temperature devices were utilized.

Phototherapy's goal is to raise the chromophore to 70°C while ensuring the surrounding tissue remains at a safe level between 45°C and 50°C. These temperatures are modifiable, providing the physician the ability to choose a personalized temperature range for each patient. The Sciton BBL utilizes twin flash lamps in a complementary fashion to deliver uniform energy across the treatment area. Integrated cooling is another important factor. The device has a sapphire crystal cooling plate that features both pre- and post-cooling temperatures that can range from 0°C to 30°C, immediately affecting the treatment area. This modality would provide the least amount of exposure to heat and allow the operating physician to adjust the filter setting so as to minimize the heat source followed by appropriate cooling. As anticipated, she reacted well to BBL treatment without evidence of systemic or localized symptoms. In the end, we were able to achieve a pleasing cosmetic result without the presentation of urticarial symptoms in the patient (Figure 2A-D).

In conclusion, common forms of aesthetic facial rejuvenation are applicable to a wide variety of patients. Comorbidities may alter treatment planning as was the case with this patient. Recommendations for surgical treatment in this population would greatly vary on the degree of reactivity to physical triggers. As was our case, the likelihood of the patient reacting adversely to treatment was lower since she had no history of systemic symptoms, no oral symptoms, and

no history of atopy. She also did not require medication to manage her symptoms on a day-to-day basis. We ensured the procedure was completed safely by performing reviews of the relevant literature and modification of our treatment plan through staging. Additionally, further precautions may need to be taken in patients who present with immediate-type urticaria with systemic symptoms and require pharmacologic intervention for treatment. These patients may require an overnight stay in the hospital as well as corticosteroids prior to the procedure to prevent adverse events secondary to local heat exposure. Review of the relevant literature and modification of our treatment plan allowed us to deliver aesthetic improvement in a safe manner. We were able to provide facial rejuvenation with heat-based modalities to our knowledge to the 54th patient with localized heat urticaria reported in the literature without significant side effects. Broadband light and electrocautery appear to be safe in this patient population if proper precautions are taken.

Disclosures

Dr Centeno is on the speakers bureau and receives research funding from Sciton, Inc., and a trainer for Medicis Aesthetics. Dr Gonzalez has no disclosures to declare.

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