Two Rare Dermatologic Presentations:
Kikuchi Disease and Persistent Urticaria Following Laser Hair Removal

KIKUCHI DISEASE: A CASE REPORT
By Mac Machan, MD, Melissa S. Jacobs, MD, and Garth R. Fraga, MD

A 58-year-old Caucasian male was transferred from an outside hospital with a two-week history of intermittent fevers of unclear etiology, rash, and abdominal lymphadenopathy. Physical examination revealed erythema of the nose, malar cheek, ears, and neck as well as erythematous, slightly indurated macules and papules over the chest, back, and portions of the upper and lower extremities (Figure 1). There was single indurated red-pink plaque above the left knee. Work up from the outside hospital included a chest X-ray, which revealed a small right-sided pleural effusion. CT scan of the chest and abdomen showed celiac and right lower quadrant lymphadenopathy. Bone marrow biopsy and flow cytometry were found to be within normal limits. Pertinent medical history included hyperlipidemia and mitral valve prolapse with chordae tendinae rupture. Two sets of blood cultures were negative. Transesophageal echocardiogram showed no evidence of vegetations.

Complete blood counts were WBC 1700/uL, Hgb 11.9 gm/dl, hct 33.8%, and platelets 147,000/uL. His erythrocyte sedimentation rate (ESR) was 46 mm/h. Further diagnostic work up at our hospital included serologic tests for cryptococcus, cytomegalovirus, bartonella, brucella, rickettsia,
RESIDENTS’ REPORTS

Practical Dermatology
November 2012

Epstein-Barr virus PCR was also negative. At this point, dermatology was consulted. Biopsies demonstrated vacuolar interface dermatitis suggestive of autoimmune connective tissue disease (Figure 2); however, the patient did not fulfill the diagnostic criteria for systemic lupus erythematosus (SLE). ANA, C-ANCA, P-ANCA, and rheumatoid factor were negative. A full-body PET scan was ultimately performed and the patient was found to have cervical, axillary, mediastinal and abdominal lymphadenopathy. Excisonal biopsy of an axillary lymph node demonstrated patchy necrosis with abundant karyorrhectic debris, histiocytes, plasmacytoid lymphocytes, and an absence of neutrophils (Figure 3). A diagnosis of nodal Kikuchi disease was made. Immunohistochemical preparations on the cutaneous biopsy revealed the infiltrate was composed predominantly of CD8 (+) T-cells and CD163 (+) histiocytes supporting a diagnosis of Kikuchi disease with cutaneous involvement. His fever subsided with anti-pyretics and his cutaneous symptoms resolved over the next three weeks. He had no evidence of relapse during a 4-month follow up period.

**DISCUSSION**

Kikuchi disease (KD) is a benign, self-limiting necrotizing regional lymphadenopathy associated with fever. First described in 1972 by Kikuchi and Fujimoto in Japan, it was historically a disease of young Asian females, but has now proven to have a worldwide distribution affecting all ethnic groups. The etiology of KD remains unclear. A viral etiology has been suggested, but no clear role has been defined. Additional reported findings include fatigue, arthralgia, weight loss, leukopenia, anemia, and elevated ESR.

Skin involvement has been documented in up to 40 percent of patients. However, more recent reviews suggest this number to be lower, with 20-30 percent of patients exhibiting a cutaneous manifestation. A variety of non-specific cutaneous lesions, including erythematous macules, patches, papules, plaques, and nodules have been described in association with KD. Malar erythema was seen in 16 of 146 patients (11 percent). Several authors have reported an association between KD and SLE. Although the relationship is not yet completely understood, recent studies suggest 13 to 23 percent of cases of Kikuchi disease are associated with the development of lupus erythematosus. ANA may be positive in up to seven percent of cases. Clinicians and histopathologists should be aware cutaneous Kikuchi disease may mimic lupus erythematosus. Patients with a history of Kikuchi disease and cutaneous signs should be closely monitored for the development of SLE.

The authors have no financial disclosures or conflicts of interest to declare.
Adapted from a presentation given at the Cosmetic Surgery Forum 2011 in Las Vegas, NV (cosmeticsurgeryforum.com). This presentation was selected as one of the top 10 resident presentations at the meeting.


SEVERE URTICARIA AFTER 755-NM ALEXANDRITE LASER SURGERY FOR HAIR REDUCTION

By Paul Wirth, Jr. and Leon Kircik, MD

Laser treatment for hair reduction is one of the most common cosmetic procedures performed in the United States. Hypertrichosis of the face is a common condition. Women predominantly seek treatment for this. Time-honored approaches for facial hair reduction include bleaching, waxing, sugaring, and electrolysis.

Lasers have been a more recent method for hair reduction. Laser treatments are advantageous because they are painless, rapid procedures that are highly successful. The efficacy of lasers for hair reduction relates to the phenomenon of selective photothermolysis. All lasers generate a single monochromatic wavelength of light. Targeted tissue or chromophores absorb light of a single wavelength.

Taking advantage of the principle of selective photothermolysis, one can match a laser to a specific target’s absorption maximum for light energy and selectively destroy the target. In the case of hypertrichosis, lasers in the red or near infrared spectrum are chosen because the melanin pigment in the hair bulb absorbs these wavelengths of light. When the light energy is absorbed, the hair follicle is heated triggering anagen follicles to enter a prolonged telogen phase, resulting in the shedding of the terminal pigmented hair. In the case described here, the 755-nm alexandrite laser was chosen because of its ability to penetrate deeply into the skin and then be absorbed selectively by the hair bulb and not be absorbed by other chromophores in the skin such as water and hemoglobin. Melanin at the skin surface does compete with the hair bulb for the light energy.

To protect this pigment from thermal injury during treatment, the laser is equipped with a “dynamic cooling device.” This device emits a burst of 1,1,1,2 tetrafluoroethane, a spray cryogen that cools the surface of the skin an instant before the light energy is delivered. The “dynamic cooling device” thus protects the epidermis from unwanted thermal injury caused by melanin absorption that occurs during laser treatment. The effects of cryogen have been extensively studied.1,2

One advantage of laser treatment for the reduction of hair is that side effects are very rare. Reported here is a case of “severe urticarial” response that developed shortly after laser treatment for hair reduction of the face. Provocative testing suggests that the offending agent causing the urticarial response was 1,1,1,2 tetrafluoroethane, which was used to cool the epidermis.

CASE

A 43-year-old Caucasian female presented with unwanted pigmented terminal hairs of the chin, upper cutaneous lip, and beard area. She had no drug allergies or history of urticaria. She was taking no medication and had no medical problems. She had no history of cold-induced urticaria or solar urticaria. Prior to laser treatment she was anesthetized using 7% lidocaine/23% prilocaine topical cream applied one half hour prior to treatment. The anesthetic cream was removed with sterile saline gauge and she was treated with the long pulse alexandrite laser using 30 J/cm², a 10-mm spot size, a 3ms pulse duration and dynamic evolting settings of 30ms spray time with a 30ms delay before delivery of the laser pulse. She tolerated the procedure well and without incident.

The evening of the treatment she developed severe facial swelling and was started on aclovate cream. She was seen the next day and was noted to have severe urticaria of the facial skin limited to the areas of facial treatment.
The urticarial plaques were sharply demarcated and not evanescent. Aclovate cream was continued for three more days but the urticaria did not improve. The patient was started on systemic steroids, utilizing prednisone at a dose of 40mg each morning for one week. The urticaria gradually improved. After one week of the systemic steroids, the dose was reduced to 20mg each morning. By the end of the second week of systemic treatment, the eruption resolved and the steroids were stopped.

Four months later, the patient agreed to have provocative testing performed on her back. Topical cetaphil with 7% lidocaine/23% prilocaine as well as topical bacitracin (which was placed on the treatment site immediately after laser treatment) were placed on the back. The patient was also treated with a single pulse of 755nm light from the Alexandrite laser at a power setting of 30 J/cm², a 10mm spot size, and a 3ms pulse duration with and without 1,1,1,2 tetrafluoro-ethane cryogen spray set at a 30ms spray time with a 30ms delay. The patient had no previous history of cold urticaria and as a control a burst of liquid nitrogen was employed and released onto the patient’s back.

At 24 hours after testing, the sites of bacitracin and 7% lidocaine/23% prilocaine were negative for urticaria. The sites where liquid nitrogen and 755nm light with no cryogen were used were also negative for urticaria. The sites where cryogen (1,1,1,2 tetrafluoro-ethane) alone and 755nm light and cryogen were used developed a rapid, sharply demarcated urticarial response that resolved after 10 days of topical halobetisol.

In this case, 1,1,1,2 tetrafluoro-ethane was deemed to be the offending agent causing the patient’s urticarial response, based on simple provocative testing.

**DISCUSSION**

The advantages of laser treatment for hair reduction include efficiency, minimal to no pain, and minimal side effects. Severe persistent urticaria following laser treatment for hair reduction has been rarely reported. Bernstein reported four laser patients who developed severe urticaria after laser treatment for hair reduction. Four of their patients were treated with the long pulse alexandrite laser and one was treated with a long pulse Nd:YAG laser system (1,064nm neodymium-doped yttrium aluminum garnet). In all four cases, the urticarial reaction was treated with topical steroids and antihistamines and resolved in one week or less. In one case, the patient required two and a half weeks for the urticaria to resolve and required the use of systemic steroids.

None of the four patients treated by Bernstein had contact allergy testing and all had light energy plus 1,1,1,2 tetrafluoro-ethane cryogen for treatment.

Ishiguro et al. reported a case where a female patient developed an allergic pulmonary reaction (allergic alveolitis), which developed while performing laser surgery for hair reduction. The laser system that the patient was using employed 1,1,1,2 cryogen spray and upon rechallenge with cryogen her symptoms recurred. The investigators postulated that her allergic response was caused by the cryogen 1,1,1,2 tetrafluoro-ethane.

Severe urticaria after laser treatment for hair reduction using laser devices that use the cryogen 1,1,1,2 tetrafluoro-ethane is a rare complication. Recognition of this phenomenon is important for all physicians who treat these patients or help manage the side effects. More investigation will be necessary to further study this urticarial response after laser treatment.

Dr. Kircik has served as a researcher, consultant, or speaker for Allergan, Coria, Dermik, Calderma, Stiefel/GSK, Intendis, Obagi, OrthoDermatologics, and Triax.

Leon Kircik, MD, FAAD is Director of Derm Research, PLLC and Physicians Skin Care, PLLC. He is Clinical Associate Professor of Dermatology at Mount Sinai Medical Center and Indiana University School of Medicine.

One advantage of laser treatment for the reduction of hair is that side effects are very rare.

---