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Successful Treatment of a Widespread Pemphigus Chronicus Familiaris (Hailey-Hailey) By Erbium-YAG-Laser

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Abstract

BACKGROUND: Familial chronic pemphigus or Hailey-Hailey disease (OMIM 169600) is a rare, autosomal dominant blistering skin disorder the genetic background are mutations of the *ATP2 C1* gene. The treatment is challenging.

CASE REPORT: A 48-year-old Caucasian female patient presented to the department with a relapse of her Pemphigus chronicus familiaris (Hailey-Hailey). No other medical diseases were known. On examination, we observed an otherwise healthy woman with widespread erosive lesions on the neck, axillae, groins, submammary fold and anal fold. She reported burning sensations and an unpleasant odour. The diagnosis had been confirmed earlier by histopathology of a skin biopsy with acantholysis, and the relapsing and remitting course. Family history was positive for father and brother. Since she had not responded well in the past to systemic retinoids and did not tolerate the adverse effects of these drugs, we suggested an ablative erbium-YAG laser treatment in general anaesthesia. Laser treatment was performed with the MCL 29 Dermablate (Asclepion Laser Technologies, Jena, Germany) on two occasions. We used a 5 mm focus, pulse energy of 1200 mJ at 8 Hz. The resulting superficial wounds were treated with an ointment containing fusidic acid 0.2% and betamethasone 0.1%. Wound healing was completed after 12 days. No adverse events were observed.

CONCLUSIONS: Ablative erbium-YAG therapy is an option for pemphigus chronicus familiaris, in particular in young women and patients who do not tolerate the adverse effects of retinoid therapy.

Introduction

Familial chronic pemphigus or Hailey-Hailey disease (OMIM 169600) is a rare blistering skin disorder that affects both sexes equally. It affects the skin folds predominantly. The inheritance is autosomal dominant. The genetic background is mutations of the *ATP2 C1* gene encoding for calcium transporter protein secretory pathway calcium ATPase SPCA1a in the Golgi apparatus [1].

These mutations are responsible for abnormal high cytosolic calcium and magnesium concentration. Since there is a functional coupling of SPCA1a and Orai1, the store-independent calcium entry becomes also affected [2].

The genetic findings translate into altered protein expression for focal adhesion, extracellular matrix receptors, protein digestion and absorption, and PI3K-Akt signalling leading to acantholysis and disturbed epidermal barrier function [3].

The disease causes a significant reduction in patients' quality of life by itching and burning sensations, oozing, superinfections and unpleasant odour. The course is chronic with frequent relapses and rarely longer remissions [4]. Topical treatment alone is most often not successful in improving the disease. Therefore, many other different treatments have been reported in low numbers of patients. Acitretin 25 mg/day, etretinate (up to 0.5 mg per kg of body weight/day), alitretinoin (30 mg/day) oral steroids (variable dosages), dapsone (100-150 mg/d),

methotrexate (15 mg/week), cyclosporine 0.2 mg/kg body weight/day), glycopyrrolate (1 mg/day), afamelanotide (16 mg subcutaneously on day 0 and day 30), thalidomide (2 x 100 mg/day), nalotrexone (4.5 mg nightly/day), apremilast (3 x 60 mg/day), oral vitamin D, botulinum toxin A injections, electron beam radiation, photodynamic therapy or dermabrasion [5], [6], [7].

Another option is ablative laser therapy. Side effects are minimal, and costs are lower compared to many systemic drugs. We report on erbium-doped yttrium aluminium garnet (erbium-YAG) laser therapy of familial chronic pemphigus.

Case report

A 48-year-old Caucasian female patient presented to the department with a relapse of her Pemphigus chronicus familiaris (Hailey-Hailey). No other medical diseases were known.

Previously, she had a topical corticosteroid ointment with only limited success. On examination, we observed an otherwise healthy woman with widespread erosive lesions on the neck, axillae, groins, submammary fold and anal fold. She reported burning sensations and an unpleasant odour.

The diagnosis had been confirmed earlier by histopathology of a skin biopsy with suprabasilar acantholysis, eccrine acantholysis, and dyskeratosis. There was an upper dermal infiltrate of neutrophils. The course was relapsing and remitting. Autoantibodies characteristic of autoimmune blistering disorders remained negative. Family history was positive for father and brother. Lesions remained restricted to frictional areas.

Since she had not responded well in the past to systemic retinoids and did not tolerate the adverse effects of these drugs, we looked for an alternative. Ablative erbium-YAG laser treatment was suggested, and a small area on the armpits was treated on a trial base. The effect was very good, and the healing was fast and uneventful. Therefore, we suggested the treatment of larger areas by erbium-YAG laser in general anaesthesia. Laser treatment was performed with the MCL 29 Dermablate (Asclepion Laser Technologies, Jena, Germany) on two occasions. We used a 5 mm focus, pulse energy of 1200 mJ at 8 Hz. The resulting superficial wounds were treated with an ointment containing fusidic acid 0.2% and betamethasone 0.1% (Fucicortcreme®, Leo Pharmaceutical Products Ltd. A/S). Wound healing was completed after 12 days (Figure 1). No adverse events were observed.

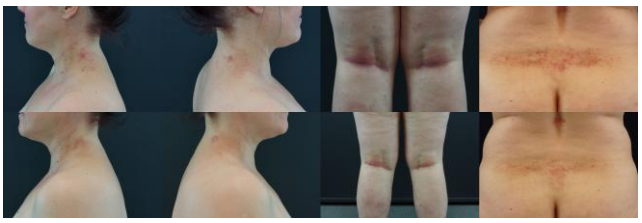

Figure 1: Morbus Hailey-Hailey. Upper row: Before treatment; Lower Row: Seven days after ablative laser therapy

Discussion

Familial chronic pemphigus resistant to conventional therapy may be treated by laser ablation. In the past, the only “curative” therapy of the disease was excision of lesional skin followed by split-thickness. The success of surgery is attributed to the removal of affected epidermal structures and a decrease in sweating and maceration. Laser therapy offers a less invasive treatment without the need for grafting on treated areas and has a tradition since 1987 [8]. Reepithelization occurs by hair follicle keratinocytes.

In the case of CO_2 laser, 5 to 25 W with continuous mode, defocused or pulsed long-term improvement or remission have been obtained in the majority of patients. However, pain, scarring and pigmentary changes are possible adverse effects [9]. Alexandrite laser (12-20 J/cm^2) has been employed with up to 13 treatment sessions. Hyperpigmentation is a possible adverse event [10].

The erbium-YAG laser is a solid-state crystal laser. The laser light of 2,940 nm is strongly absorbed by water. This prevents the laser cutting of skin and extensive scarring [11]. Partial to complete remission have been reported after erbium-YAG laser treatment during a follow-up of 8 to 12 months [12], [13]. This has been confirmed by the present investigation in a patient with widespread disease. Laser therapy should be considered in such cases. To improve tolerability in case of larger areas to be treated, general anaesthesia is recommended, while small areas can be treated under local anaesthesia.

The affected epidermis becomes substituted by keratinocytes from hair shafts leading to a re-epithelialization of the superficial wounds. SPCA1 has not been identified in hair shaft keratinocytes.

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