

Clinical Outcome of Ichthyosis Treated with Continuous Wave CO₂ Laser

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Case Report

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ABSTRACT

Inherited genetic congenital ichthyosis is a rare heterogeneous group of skin disorders present at birth and throughout life. Some children have normal skin at birth and develop scaling and roughness in the early years of life. The associated scaly patches of skin can be disfiguring and are known to cause significant amounts of psychological stress to those affected. Treatments in the literature range from retinoid, keratolytics, ultraviolet light, herbal skin care products, thick over the counter moisturizers and dietary supplements. We report a case of congenital ichthyosis successfully treated with fractionated CO₂ laser to improve cosmesis.

INTRODUCTION

Ichthyosis vulgaris is a rare disease characterized by dry scaly skin and altered skin barrier function ^[1]. They often present at birth and remain present throughout life. Occurring in approximately 1 out of every 100,000 to 300,000 births, it is characterized by large, polygonal, grayish brown, hyperkeratotic scales ^[2]. This disorder has been linked to several null mutations in the filaggrin gene that can produce a decrease or even absence of filaggrin in the skin ^[3]. The disorder can be associated with other congenital disturbances but is generally not life-threatening, although the disease can cause significant psychological stress to those affected ^[4].

CASE PRESENTATION

A 56 year old woman living in California was referred to Toyos Clinic in Nashville, TN by her sister for treatment with fractionated laser resurfacing after her sister underwent a similar treatment for aging. The patient reported a diagnosis of ichthyosis vulgaris by biopsy which affected a few of her other family members but none of her 7 siblings. She had previously undergone topical tazorotene treatment, ultraviolet treatment and had tried multiple over the counter products with no appreciable improvements. She reported no other medical issues related to ichthyosis but had a history of fever blisters. She had multiple plates like polygonal areas of large brown, firmly adherent scales of variable size all over her body, with many confluents on her trunk and hands (**Figures 1-4**). She had no ophthalmologic pathology apart from age appropriate nuclear cataracts.



Figure 1. Multiple brown scales.



Figure 2. Dry scars.



Figure 3. Dry scars.



Figure 4. Dry scars.

The patient underwent one treatment with MIXTO fractional CO₂ (MIXTO Lasering USA, San Ramon, CA) with the 300 μm hand piece. Power was 14 W, 20% density coverage and index of 6. The patient was treated with two passes of this intensity and was discharged with a mild topical cleanser, a moisturizer and physical sunblock. The patient had evaluations pre-operatively and at 5 weeks post-operative.

Here we describe the use of fractional CO₂ laser to successfully reduce the appearance of hyper-keratotic scales along with anti-aging treatment. Successful management of these patients often requires the expertise of dermatologist, geneticists, ophthalmologists and physiotherapists. The management is typically focused at minimizing symptoms and moisturizing. Keratolytics help with exfoliation and retinoids help reduce the production of cells [5].

CONCLUSION

A literature search of PubMed shows this is the first published case report outlining successful fractionated laser treatment of hereditary ichthyosis. Laser resurfacing with fractional CO₂ is an effective method of improving the cosmetic appearance of patients with ichthyosis vulgaris. It can be used as an adjunctive treatment along with retinoids, keratolytics and emollients to maximize successful outcomes [5]. Patients should be offered genetic counseling and provided with psychological support to assist in coping disease which sometimes can be a disfiguring disease.

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