Research Article

Treatment of post burn scar by Laser

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Abstract
Burns are injuries of skin or other tissue caused by thermal, radiation, chemical or electrical contact Clinically, treatment is challenging despite a wide array of options including corticosteroids, radiation, lasers and surgery. There have been several case reports of improvement in mature burn scars after treatment with fractional CO_2 laser. Furthermore, burn scars are usually thick, wide and contracted, which may reduce the function of the anatomical region involved and result in deformity.
Keywords: Burn scar, Laser

Introduction

Acute thermal injuries requiring medical treatment affect nearly half a million Americans each year, with approximately 40,000 hospitalizations and 3,400 deaths annually (Gibran et al., 2013).

Thermal burns from dry sources (fire or flame) and wet sources (scalds) account for approximately 80% of all reported burns and can be classified based on the depth of burn (Kagan et al., 2013).

There are three basic types of scar depending on whether there is a net loss or gain of collagen (atrophic, hypertrophic scars keloid, and contracture) (Mowbrey et al., 2016). scar management has relied mainly on the experience of practitioners rather than on the results of large-scale randomized, controlled trials and evidence-based studies (Mustoe et al., 2002). Fractional CO_2 laser has been reported to achieve improvement in the appearance of mature burn scars, as well as, improvement in the dermal collagen arrange-ment and architecture (Ozog et al., 2013).

Patient & Method

The study included twenty patients presented with post burn scars recruited from the outpatient clinic, Dermatology, STD's and Andrology Department Minia University Hospital. Patients were fully informed about the procedure. consents were All Patients were subjected to a detailed thorough history taking including (age, systemic illness, and duration of the scar, culprit insult, previous treatment trials, previous reaction to laser and history of intake of retinoid), clinical examination, investigations, operative procedure and post-operative follow up.

A (3) mm punch biopsy was taken from the scar of each patient before treatment and 2 months after treatments. Digital photographs were taken for all burn scar before treatment and at the follow up, two months after the last laser session. We performed a statistical analysis using SPSS statistical package.

Results

Before treatment, the median value of Vancouver Scar Scale was 2, 2, 3.5 & 3 for Pigmentation, Vascularity, Pliability and Height respectively. With significantly decreased to 2, 1, 1 & 1 respectively after treatment ($p<0.001$ for all).

Discussion

This study aimed to evaluate fractional CO_2 laser in treatment of post burn scar.

The use of fractional ablative CO_2 laser in treating burn scars has increased, with some investigators considering it to be the treatment of choice, particularly for scars due to third-degree burns (Jawad et al., 2018). In Keen et al., study aimed to assess the efficacy and safety of fractional CO_2 laser treatment in the management of post-burn and post-traumatic scars, there were 77 females and 23 males (M/F ratio of 1:3.35). Improvement in scar vascularity by fractional CO_2 lasers occurred in our cases. Before treatment, the median value of Vancouver Scar Scale was 2, 2, 3.5 & 3 for Pigmentation, Vascularity, Pliability and Height respectively. with significantly decreased to 2, 1, 1 & 1 respectively after treatment ($p<0.001$ for all). And this might be explained by the dermal blood vessels becoming less trapped and more perpen-dicular to the epidermis as a result of collagen remodeling. This observation was also repo-rted by both Ozog et al., (Ozog et al., 2013) and Makboul et al., (Makboul et al., 2014).

Conclusion

laser can be effective and safe in treatment of post burn scars.

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References

1. Ozog DM, Liu A, Chaffins ML, et al., (2013) Evaluation of clinical results, histological architecture, and collagen expression following treatment of mature burn scars with a fractional carbon dioxide laser. JAMA dermatology 149: 50-57.
2. Gibran NS, Wiechman S, Meyer W, et al., (2013) American burn association cons-ensus statements. army inst of surgical research fort sam houston tx.
3. Kagan RJ, Peck MD, Ahrenholz DH, et al., (2013) Surgical management of the burn wound and use of skin substitutes: an expert panel white paper. Journal of Burn Care & Research 34: e60-e79.
4. Mowbrey K, Ferland-Caron G and Tredget EE. (2016) Important Developments in the Management of Fibroproliferative Scars and Contractures After Burn Injury. Burn Care for General Surgeons and General Practitioners. Springer, 239-259.
5. Jawad HA and Ibrahim AW. (2016) In Growing Toenail Treatment using Carbon Dioxide Laser. Iraqi Journal of Laser 15: 25-34.