

Role of Low Level Laser Therapy in Preventing Abnormal Scarring in Scald Burns

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Abstract

Low Level Laser Therapy has effect on cell proliferation, metabolism, angiogenesis, apoptosis and inflammation. This study is to assess the role of low level laser therapy (LLLT) in preventing abnormal scarring in scald burns.

Keywords: Low Level Laser Therapy; Scald Burns; Scar; Prevention.

INTRODUCTION

Burns injury is one of the important factors contributing to mortality in a developing country like India. Aim of this case report is to assess the role of Low level laser therapy in preventing abnormal scarring in scald burns patients. Clinical examination of the wound site before and after the use of Low level laser therapy was done. The normal pace of wound healing and epithelialization is at the rate of Imm/day.¹ Optimum recovery requires the wound bed and the patient to be fit. The advanced wound healing therapies aim to hasten the process of wound healing by expediting the advancement of epithelial edge of the wound.

Many newer techniques have been used to advance the epithelialization such as LLLT.²

MATERIALS AND METHODS

The study is done in a tertiary care hospital in South India. The subject is a 1 year old male child, alleged history of accidental fall of hot milk over the right upper limb and right side of chest. Patient sustained burn over right upper limb and right side of axilla and chest. He was admitted in Burns ICU managed with antibiotics, IV Fluids, analgesics and regular dressings done. He was posted under GA for Low Level Laser therapy. Following healing

of the wound non-invasive scar management was done. VSS score before starting scar management 4/13. VSS score improved to 1/13. Compression Garment given. Low Level Laser Therapy 5 sessions done following which the patient improved well (Fig. 3). Currently the general condition of the patient is fair.



Fig. 3: Patient during discharge after 5 sessions of LLLT

RESULTS

Low level laser therapy is useful in improving the wound healing of scald burns patients.



Fig. 1: 2nd Degree mixed scald burn involving 10% TBSA



Fig. 2: Low level laser therapy

DISCUSSION

Low level laser therapy is generated from Ga-As (gallium-arsenide) laser. Low level laser therapy acts by photobiomodulation. It has effect on cell proliferation, metabolism, angiogenesis, apoptosis and inflammation. Effective LLLT utilises wavelength of red to near infrared (600-1070 nm). LLLT acts on cytochrome c oxidase, promotes nuclear factor kappa b which promotes cell proliferation and anti-apoptotic action. It also upregulates VEGF which promotes angiogenesis. Low level laser is applied by scanning mode and adjusted to cover the region of the wound. Application is for 5-10 minutes per weekly session. It has a stimulatory effect on raw areas and wounds by improving granulation. It softens scars by reducing fibrous tissue formation, improves blood supply and promotes nerve regeneration. It has an anti-inflammatory action, the mechanism of which is not clearly elucidated.

CONCLUSION

Low Level Laser Therapy has stimulatory effect on raw areas and wounds by improving granulation. It is found to be useful in preventing abnormal scarring in scald burns.

REFERENCES

1. Hopkins JT, Mc Loda TA, Seegmiller JG, David Baxter G. Low level laser Therapy Facilitates superficial wound healing in humans: a triple-blind, sham-controlled study. *J Athl Train.* 2004;39:223-229.
2. Gaida K, Koller R, Isler C, Aytekin O, Al- M, Meissl G, Frey M. Low level Laser Therapy – a conservative approach to the Burns. 2004;30:362-367.
3. Gupta AK, Filonenko N, Salansky N, Sauder DN. The use of low energy photon therapy (LEPT) in venous leg ulcers: a double-blind, placebo-controlled study. *Dermatol Surg.* 1998;24:1383-1386.
4. Widgerow AD, Chait LA, Stals R, Stals PJ. New innovations in scar management. *Aesthetic Plast Surg.* 2000;24:227-234.
5. Van der Helder CJ, Hage JJ. Sense and nonsense of scar creams and gels. *Aesthetic Plast Surg.* 1994;18:307-313.
6. Nouri K, Vidulich K, Rivas MP. Lasers for scars: a review. *J Cosmet Dermatol.* 2006;5:14-22.

7. English RS, Shenefelt PD. Keloids and hypertrophic scars. *Dermatol Surg.* 1999;25:631-638.
8. Kitchen Ss, Partridge CJ. A review of low level laser therapy. *Physiotherapy.* 1991;77:161-168.

