LED BLUE LIGHT EMOLED THERAPY TO ACTIVATE CHRONIC WOUND: A CASE STUDY

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INTRODUCTION

American College of Surgeons define chronic non-healing wounds as wounds that have failed to progress through a timely sequence of repair, or one that proceeds through the wound healing process without restoring anatomic and functional results.

Many of these wounds are stalled and caught in a recurrent inflammatory phase, unable to progress to the next phase of proliferative stage with new tissue growth. Complex biomechanical changes in wound cellular level require inflammatory macrophage to polarize from M1 pro-inflammatory cells to M2 anti-inflammatory macrophage, creating a favorable wound environment and extracellular matrix that bring about tissue granulation, angiogenesis and epithelialization.

A new treatment option utilizing LED Blue light irradiate on stalled wound 1-2 minutes once-a-week had shown encouraging clinical results in various publication 1-6. Emoled Photobiomodultaion (PBM) therapy is a hand-held medical device that shines a blue beam onto the wound bed. The blue light (400-430nm) wound excite flavins in the wound, increase the cell's energy, enable M1 transition to M2 anti-inflammatory macrophage phenotypes, stimulates reactive oxygen species (ROS) & encourages release of pro-angiogenic factors (VEGF) in a cellular level. The blue light could activate and kick-start stalled wound to rapidly transition to a healing status, enable it to progress to proliferation stage of healing.

METHOD

In a private hospital setting, a patient with poorly healing surgical wound was recruited. Patient has history of leukemia remission, the poorly healing surgical wound occurred because patient had sustained fracture and post operatively had skin infection and breakdown.

Dressing used were hydrocolloid, wound gel, fiber dressing as standard treatment to heal but progress was slow. The wound was in a chronic condition for 4 months and it was not progressing to granulate fast enough.

Emoled blue light PMB exposure was beamed onto the wound bed and surrounding periwound area for 60 seconds every week. Aim was to have four sessions of exposure to kick-start a chronic wound to granulation status.

RESULT

The wound showed positive response. More granulation tissue appearing on the 2nd & 3rd visit, with a little non-viable tissue occasionally. Slight cleansing & removal of non-viable tissue, continued with standard care plus Emoled Blue light PMB exposure. Significant red, granulating tissue can be seen building up on 4th visit. There is an improvement in periwound skin and healthy pinkish epithelization tissue can be seen clearly surrounding the wound bed.

The use of Emoled blue light photobiomodulation showed good progress in granulation and epithelization. Subsequently, normal dressing was used for the final closure.

CONCLUSION

Emoled Photobiomodulation (PBM) LED blue light 400-430nm adjunct therapy once-a-week used with wound dressing is activating the chronic wound bed. The unique blue light exposure is helping to reverse chronicity in just 4 shines, once weekly. It kick-started a chronic wound back to the normal healing path and is useful to speed up wound closure in poorly healing wound.

Reference

1. *Photobiomodulation of Human Fibroblasts and Keratinocytes with Blue Light: Implications in Wound Healing. Alfieri, D et al. Biomedicines 2021, 9, 41.*
2. *Effectiveness of Blue light photobiomodulation therapy in the treatment of chronic wounds. Result of the Blue Light for Ulcer Reduction (B.L.U.R.) Study. E. Ricci et al. Italian Journal of Dermatology and Venereology 2021 Sep 09.*
3. *Use of Blue Light in the Management of Chronic Venous Ulcer in Asian Patients: A Case Series. Khoo V B, Soon S, Yap C J, et al, September 04, 2021, Cureus 13(9): e17703.*
4. *Effects of photobiomodulation with blue light on diabetic foot ulcers: a case series report, Harikrishna, N, et al. Wounds Asia 2021, Vol 4 Issue 3.*
5. *Contribution of photonic therapies to the healing process of chronic wounds: case studies. Michele Vernaci and Pietro Paolo Vernaci. Wounds International 2020. Vol 11 Issue 4*
6. *Blue light effects in human keloid fibroblasts, F. Rossi et al, Proc. SPIE 10861, Mechanisms of Photobiomodulation Therapy XIV, 1086107, 7 March 2019.*

1st visit (9 Sept)

2nd visit (15 Sep)

3rd visit (23 Sep)

4th visit (30 Sep)

5th visit (7 Oct) Wound granulating normally.

Stopped Emoled treatment and continue with standard wound treatment.

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