Importance of customized treatment with antimicrobial dressing and biophotonic

therapies in a chronic venous ulcer: Case report



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Objective: Venous Ulcer (UV) reflects the most advanced stage of chronic venous insufficiency, corresponding to 70% to 90% of lower limb ulcers, with a high recurrence rate. Individuals with chronic ulcers in the lower limbs have a significant impact on their quality of life. Biophotonic therapies, such as photobiomodulation therapy (PBMT) and photodynamic therapy (PDT), use Low Level Laser Therapy and LED light for various medical applications. These therapies have been shown to be effective in overcoming physiological impairments such as inflammation, accelerating the wound healing process and decrease pain.

The aim was to present a case report of hard-to-heal venous leg ulcer treated by a combination of PDT, PBMT, and the application of antimicrobial dressing.

Methods: A case study on a 70-year-old male patient with infected venous ulcer on the medial malleolus of the right leg. The wound has persisted for more than 30 years, despite the different treatments applied, including, different dressings, as well as the used of several medicines of oral and topical application. Patient was retired due to disability, impacting his social and work life in a productive age group. We performed the combination of three tools for its treatment: PBMT (Fig.1), PDT (Fig.2) and silver hydrofiber dressing (Fig.3).

Results: The recorded VAS showed a reduction in pain that started before treatment (Fig. 5) from 9 and after a few sessions the pain went to zero. Pain alleviation was achieved on the 1st day of treatment. The size of the ulcer area significantly decreased within 16-28 weeks, without the presence of infection (Fig. 6 and 7).

Furthermore, there was a reduction in analgesic consumption until it was no longer necessary. The patient returned to work and to carry out his daily activities. The use of correct dressings and biophotonic therapies are essential in the treatment of venous ulcers.





Figure 6 – After 16 weeks of treatment. Decrease in pain and lesion size.

PDT was performed two times per week with 1% methylene blue and Red Laser (λ =660 nm, power=100mW, and energy=12J/point), targeting ulcer area. PBMT was performed one time per week with Red and Infrared Laser (λ =660 nm + 808 nm, continuous wave, contact mode, power=100mW, and energy=2J/point), targeting ulcer area and around the lesion, in healthy areas (Fig.4). Visual analog scale (VAS) was performed before and after the clinical protocol at each visit.



Figure 7 - After 28 weeks of treatment. Significant reduction in venous ulcer with improved quality of life.



Figure. 1 - Laser Elite Duo DMC, Brazil.



Figure. 2 - PDT with 1% methylene blue in venous ulcer (2 x per week).





Figure. 3 - Silver hydrofiber dressing (Aquacel Ag).



Figure. 4 - PBMT with red and infrared Laser in venous ulcer (1 x per week).

I have no conflict of interest.