

ORAL PRESENTATION OP19

Evaluating High-Intensity Laser Therapy for Simultaneous Wound Healing and Neurological Deficits For Diabetic Peripheral Neuropathy : A Preliminary Case Series

Zubaidah Ahmad^{1,2*}, Nurul Asyikin¹, Azman Othman¹

¹Pain Wound Care Centre, Peringgit Health Clinic, Jalan Peringgit Melaka 75400 Melaka, Malaysia.

² Physiotherapy Unit, Peringgit Health Clinic, Jalan Peringgit Melaka 75400 Melaka, Malaysia.

ABSTRACT

Background and Objectives: Diabetic Peripheral Neuropathy (DPN) often leads to chronic diabetic foot ulcers (DFUs) due to impaired sensation and microcirculation. Traditional treatments frequently offer limited efficacy. This prospective case series evaluated the impact of High-Intensity Laser Therapy (HILT) on the simultaneous progression of wound healing and neurological status. **Methods:** Two patients with Type 2 Diabetes, active DFUs (Wagner Grade 1 or 2), and confirmed DPN were recruited from an outpatient Pain And Wound Care Centre. The 12-week intervention utilized a BTL-6000 HILT device twice weekly. The protocol involved two phases: periwound stimulation (12J/cm² at 4-5 W) for tissue regeneration and neural targeting (20 J/cm² at 6 W) along the tibial/peroneal nerves. Outcomes were measured via Wound Surface Area (WSA) and the Michigan Neuropathy Screening Instrument (MNSI). **Results:** The study achieved complete wound healing in all participants, with wound size reducing from 29.12 cm to 0 cm, 6 cm to 0 cm, resulting in a 100% wound resolution rate. Neurological deficits also demonstrated significant improvement. The Michigan Neuropathy Screening Instrument (MNSI) mean score significantly decreased from 3.00 ± 0.58 (neuropathic range) to 1.88 ± 0.63 (non-neuropathic range) (p = 0.0182). In addition, monofilament sensitivity improved with an average gain of +2.25 points (p = 0.0182), while ankle reflexes progressed from absent to reinforced or normal. **Conclusion:** This preliminary case series confirms that HILT is a potent dual-action intervention, achieving complete ulcer closure and significant neurological recovery by reducing mean MNSI scores below the diagnostic threshold. These findings serve as successful pilot work, proving the clinical efficacy of the dual-target protocol. This study provides a vital foundation for future randomized controlled trials (RCTs) to standardize HILT in diabetic foot care and prevent secondary complications.

Keywords: High-Intensity Laser Therapy (HILT) ; Michigan Neuropathy Screening Instrument (MNSI) ; Wound Healing ; Neuro-regeneration ; Diabetic Foot Ulcer (DFU) ; Diabetic Peripheral Neuropathy (DPN)

Corresponding Author:

Zubaidah Binti Ahmad

Email: zubaidah.ahmad@moh.gov.my