LASER THERAPY FOR PAIN ATTENUATION OF POSTHERPETIC NEURALGIA – A DECADE OF CHALLENGE

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We first reported the efficacy of laser therapy for pain attenuation in patients suffering from postherpetic neuralgia (PHN) in 1991,⁽¹⁾ and we have been using laser therapy for many patients with PHN for over a decade. PHN is a sequela of acute herpes zoster and is included in the category of neuropathic pain. The pain of PHN is usually described as a continuous aching and burning with frequent paroxysms of sharp and shooting pains in a radicular pattern corresponding to the affected areas. PHN will most certainly disturb sleep, appetite and activities of daily living, and always results in mild to extremely severe deterioration in the quality of life.

PHN is usually thought to be established 1 to 2 months after the onset of herpes zoster. Accordingly, the early treatment of the disease is strongly recommended. Among several strategies for herpes zoster, laser therapy is the first choice of therapy in the acute phase of herpes zoster since it is easy to apply, well-tolerated by all patients and side effect free as we have previously reported.⁽²⁾ The early initiation of laser therapy promotes wound healing and reduces both the pain associated with herpes zoster and the incidence of PHN.⁽³⁾ Even for patients who have developed PHN subsequent to an attack of herpes zoster, consecutive sessions of laser therapy can relieve the PHN pain, possibly promoting or accelerating the natural healing process. We have experienced that laser therapy is also effective in patients who have been suffering from chronic PHN, with histories of even longer than five years.⁽⁴⁾ Our intensive management regimen for PHN even to what some might consider as over-treatment, consisting of two sessions of laser therapy per day for 6 to 8 weeks, is much better than condemning patients to a life of misery and suffering.

We have also evaluated the effects of laser irradiation over the area of the stellate ganglion on pain inten-

sity and regional skin temperature in patients with PHN of the trigeminal nerve.⁽⁵⁾ A double-blind, cross-over and placebo-controlled study was conducted to preclude the so called 'placebo effect' which critics and some supporters alike have associated with laser therapy. The trial protocol compared three minutes irradiation with a 150 mW diode laser, 3 minutes with a 60 mW diode laser and 3 minutes placebo treatment. Each patient received 3 sessions of treatment on a separate day in a randomized fashion. Regional skin (facial) temperature measured by computerized thermography was increased following irradiation with the 150 mW and 60 mW lasers, whereas no changes were obtained by placebo treatment. Pain intensity measured by visual analogue scale (VAS) was decreased after 150 mW and 60 mW diode laser therapy but there was no change with the placebo treatment. The study also showed dose-dependent changes in the regional skin temperature and VAS scores. These results clearly demonstrated that the changes in regional skin temperature and decreased pain intensity were not placebo effects but the true effects of laser therapy. This study also confirmed that laser irradiation on the stellate ganglion produced a similar effect to stellate ganglion block. As we previously reported,^(6,7) pain attenuation may be produced by modulation of the sympathetic nervous system by laser irradiation. Safe, effective and easily applied LLLT on the area over the stellate ganglion can be strongly recommended for diagnosis and therapy of neuropathic pain syndromes which are usually indications for the much more technically demanding stellate ganglion block.⁽⁸⁾

In 1990 an editor of the journal *Pain* stated that lasers produce light and nothing more and that shining a little red light on tissue could not affect neural activity.⁽⁹⁾ The same editor went on to state that laser machines are not really very different from laser pointers

used in many lecture halls. None should give credence to his statements any more since, thanks to the efforts of basic research scientists over the last decade, an understanding of the mechanisms and pathways of laser-mediated pain attenuation is most certainly supporting rather than disproving our clinical data. Reduction of firing of nerve cells, in particular A delta and C fibers, decreases in the frequency and magnitude of the ascending transmission of noxious stimuli, and enhancement of the descending pain inhibitory system have been proved in many animal studies.⁽¹⁰⁻¹³⁾

Our clinical experience in the application of laser therapy for pain attenuation in PHN patients has been aggressively expanded to apply this treatment modality for various other types of chronic pain syndrome over the last ten years. Many tens of thousands of patients who have visited our pain clinic for a decade have benefited from laser therapy. It is noteworthy that not only pain attenuation but also the quality of life and activity of daily living have been markedly improved in these patients. Laser therapy has a very important role in our pain clinic and is an essential modality of pain attenuation.⁽¹⁴⁾ Currently a 1000 mW diode laser has been introduced for clinical use in LLLT. We and other users of this laser will start to report promising clinical data generated by the newly developed laser device. The future of laser therapy is surely bright.

Sapporo, Hokkaido, December 1998

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