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The Effectiveness Of Low Level Laser Therapy And Vitamin B Injections In Patients With Mental Paraesthesia After Third Molar Surgery.

Buljubasic R[1], Vucicevic Boras V[2]*, Loncar-Brzak A[2], Kuna T[3], Knezevic Kotarac A[3], Vidovic Juras D[3], and Brailo V[3].

[1]Clinical Hospital Dubrava, Av. Gojka Šuška 5, Zagreb, Croatia.
[2]Department of Oral Medicine, School of Dentistry, University of Zagreb and Clinical Hospital Center Zagreb, Zagreb, Croatia.
[3]Department of Oral Surgery, School of Dentistry, University of Zagreb and Clinical Hospital Center Zagreb, Zagreb, Croatia.

ABSTRACT

In medicine and dentistry, functional nerve recovery after trauma or surgical procedures is still hard to manage. We studied the use of low level laser therapy (LLT) in seven patients with chin paraesthesia after extraction of third molars. Laser therapy was performed with a galium-aluminum-arsenide (GaAlAs) laser wavelength of 830 nm. Each session was performed on every working day and lasted for 3 min (total number of 10 days).In three patients there were 20 sessions. Additionally, every patient was also given vitamin B_1, B_6 and B_{12} injections (Neurobion, Germany) every second day (total number of 9 injections). In all seven patients partial improvement was noticed however in none of the patients there was a complete remission. Therefore, we might suggest LLLT as an adjunct therapy.

Keywords: paraesthesia, low level laser therapy, vitamin B, oral surgery

Corresponding author

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INTRODUCTION

Functional nerve recovery is still not adequately managed in medicine. No established succesful treatments in all patients are available. In dentistry, usually after third molar surgery various sensory disturbances such as anaesthesia, paresthesia, dysesthesia, hyperalgesia, allodyinia, hypoesthesia or hyperalgesia might arise as a consequence (1). Incidence of lower alveolar nerve damage has been described up to 5.5%. Most of these sensory distrubances are transient and resolve after 8 weeks. There are several studies upon use of LLLT in patients after dental surgical procedures, mainly suggesting beneficial use of LLLT. LLLT effects mostly comprise of anti-inflammatory, analgesic and increased microcirculation effects (1). Additionally, it is widely known that vitamin B has beneficial effect in nerve recovery. De Oliveira et al. (2) reviewed literature that was so far published and concluded that LLLT accelerates and improves nerve regeneration. However, still data are conflicting probably due to the different variables such as wavelength, irradiation dose and type of irradiation. Recently, Merigo et al. (3) reported upon beneficial effect of LLLT in patients after oral surgery procedures which lead to the complete recovery of the nerves. Pol et al. (4) analysed 57 patients with chin, gingiva or lip paraestesia after LLLT which was apllied once a week during ten weeks.

The results of their study (4) showed that in 83.3% patients sensory recovery occurred. De Oliveira et al. (5) performed retrospective study on 125 patients and concluded that nerve recovery correlated with patients age and time between nerve damage and beggining of LLLT. The same authors (5) concluded that LLLT might have benefifical effect of sensory disturbances after oral surgical procedures.

MATERIALS AND METHODS

Therefore, the aim of this study was to evaluate use of LLLT and vitamin B injections in patients with mental paraesthesia after third molar surgery. This study was approved by the Ethical Committee of the University of Zagreb in Croatia and from every patient informed consent according to Helsinki II declaration was obtained. The inclusion criteria were: (1) sensory defect (paraesthesia) in the region innervated by mental nerve following removal of third molar (2) minimal duration of disturbance-two weeks. The exclusion criteria were other orofacial pain conditions due to odontogenic causes, vascular conditions (migraine, etc) and inability of patient to understand the text of the informed consent. None of the patients had systemic diseases nor took meds that might affect their pain. Laser therapy was performed with a galium-aluminum-arsenide (GaAlAs) laser (BTL-5000, www.btl.com) with wavelength of 830 nm. Each session was performed on every working day and lasted for 3 min (total number of 10 days).In three patients there were 20 sessions. There were two irradiation cycles during one session, according to the manufacterer's recommendations for the treatment of trigeminal neuralgia. First cycle was A and consisted of 12 J/cm^2, duty factor 100%, cont.area 1.00 cm^2, max power 100 mW, duration 2 minutes and second cycle was 6 J/cm^2, duty factor 80%, 10 Hz, area 1 cm^2, max power 100 mW, duration 1 min and 15 sec. In all patients laser application area was on the vestibular side to the mental nerve area. Additionally, every patient was also given vitamin B_1, B_6 and B_{12} injections (Neurobion, Germany) every second day (total number of 9 injections). Primary endpoint was patients' report on the relief of symptoms (0=no improvement,1=partial improvement, 2=complete improvement).

Table 1. Patients age and gender, duration of symptoms, number of sessions and outcome.

Gender	Age	Duration (months)	No. of sessions	Outcome
F	46	18	20	Partial improvement
F	29	18	10	Partial improvement
F	46	24	10	Partial improvement
F	67	1	10	Partial improvement
M	27	24	10	Partial improvement
F	32	2	20	Partial improvement
F	32	8	20	Partial improvement

Rochkind et al. (6) concluded that noninvasive 780-nm laser phototherapy can progressively improve nerve function in patients with long-term peripheral nerve injury. Frthermore, Gigo- Benato et al. (7) showed that 660 nm LLLT with low (10 J/cm^2) or moderate (60 J/cm^2) energy densities had ebenficial effect on the neuromuscular recovery after nerve crush injury in rats. Ozen et al. (8) treated 4 female patients with paraesthesia after third molar surgery by use of LLLT (GaAlAs laser, the irradiance used was 6 J per treatment site, applying 5 mW in continuous mode wave for 90 s in total of 20 treatments performed every second day). The same authors (8) reported that LLLT reduces long-standing sensory nerve impairment following third molar surgery. Saber et al. (9) found a significant difference in pain level between laser and placebo group after third molar surgery, but without any difference in pain duration between the two tested groups. Furthermore, Miloro and Repasky (10) proved a significant improvement of sensory recoevry after bilateral saggital split osteotomy by use of LLLT (4×6 J per treatment, along the distribution of the inferior alveolar nerve before surgery, 6 and 24 h after and on the 2nd, 3rd, 4th and 7th day). Khullar et al. (11) reported that LLLT showed subjective and objective sensory recovery on paraesthesias (820 nm, 4×6 J per treatment, in a total number of 20 treatments) due to the long standing neurosensory deficit of the inferior alveolar nerve. Although we are aware of the shortcomings of this study (small group of patients, no placebo group and also additional vitamin B injections as well as only partial improvement of disturbances) we would suggest application of LLLT and vitamin B injections in these patients.

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