

Acupuncture with Lasers for Stroke and Neurorehabilitation

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Short Communication

Regardless, low-level laser therapy, also known as photobiomodulation, is still contentious. The lack of widespread acceptability among the medical establishment and the general public can be attributed to two factors. To begin with, there is a great deal of misunderstanding and disagreement over the molecular, cellular, and tissue mechanisms of action of LLLT [1]. Second, while creating LLLT protocols, a wide range of parameters (such as wavelength, fluence, irradiance, treatment duration and repetition, pulse, and polarisation) can be set [2]. Furthermore, in laser treatment, there is a biphasic dose response, which refers to the fact that raising the total "dose" of the laser, either by increasing the power density or by extending the illumination period, may have the opposite impact of the benefit gained with lower doses. These are the factors to consider [3].

The emergence of light-emitting diodes (LEDs) as alternate light sources for LLLT in recent years has added to the confusion. These devices emit light with similar wavelengths to lasers, but with higher output peaks (i.e., less monochromatic) and no coherence [4]. LEDs are 100 times less expensive than laser diodes in terms of milliwatts, and the LLLT community is now debating their relative merits. The mechanisms considered to operate at the molecular and cellular levels in LLLT are discussed in this article. In the realm of neurology, several of the most fascinating uses of LLLT may be found (both central and peripheral). Non-invasive transcranial laser treatment can be used to treat a variety of significant brain disorders and injuries. In the peripheral nervous system, LLLT can be used to efficiently mend nerves and alleviate pain [5].

Red, infrared, violet, green, and, for the first time, yellow lasers were used to illuminate human heads (supplied by the Department of Anatomy, Medical University of Graz). Various forms of laser light were used to demonstrate that commercially available technology can penetrate the human skull (BL-10 L lux meter, volt Craft, Hirschau, Germany). At the highest point of the skull (electroencephalogram (EEG) location), the results were repeatable, and each laser modality received a total of nine measurements. The yellow laser is now only available for research reasons from Weber Medical in Lauenförde, Germany, and the Medical University of Graz [6].

Stroke is one of the most common causes of death worldwide. According to fresh data given at the 21st World Congress of Neurology in Vienna at the end of September 2013, more than 600,000 Europeans have a stroke each year. Young people are becoming more common among the sick. Even if a person survives a stroke, he or she will be incapacitated for the rest of their lives, and around one-third of those who are involved in nursing care will become substantial nursing cases. Because of a shift in the age pyramid, stroke rates are expected to rise in the next decades [7].

An ischemic stroke is caused by an abrupt interruption in blood supply to

the brain veins in the majority of cases. In Austria, for example, emergency treatment is provided in so-called stroke units, which are supposed to be ready in 45 to 60 minutes. Treatment may begin two hours after the stroke, after a thorough assessment [8].

The impact of laser acupuncture on spasticity in spastic cerebral palsy children

Cerebral palsy is a term used to describe a group of permanent motor development disorders and body postures that impede activity. The illness is linked to central nervous system damage or lesion during the prenatal, perinatal, and postnatal periods, when the central nervous system is still developing. Cerebral palsy is the most common cause of spasticity in children, accounting for up to 80% of cases. Children with cerebral palsy were found to be 2.11 per 1000 live births. It is estimated that 1 to 5 per 1000 live births in Indonesia. Spasticity that has been present for a long time causes anatomical alterations such as bone subluxation or dislocation, joint contractures, or muscle modifications into fibrotic tissue [9].

The goal of traditional therapy for spastic cerebral palsy has been to improve function while minimising consequences. Acupuncture is a medical practise that is also an effective nonpharmacological therapy for various paediatric disorders. Laser acupuncture is a type of acupuncture that has few adverse effects and is suitable for youngsters. Low-intensity laser light stimulation of acupuncture sites can cause a photobiostimulation reaction in cells and tissues. Although laser acupuncture does not have the same mechanical effect as manual acupuncture, it stimulates the signal transduction pathway in a comparable fashion. Changes in the balance between excitatory and inhibitory inputs of motor neuron groups are one of the hypotheses that have been proposed to explain spasticity. Acupuncture studies have shown that laser acupuncture reduces spasticity in children with spastic cerebral palsy, with biochemical changes at the cellular and tissue level hemodynamic changes during stimulation, and effects on brain neurotransmitters, as well as the autonomic nervous system. The goal of this study is to see if laser acupuncture at the GV20 Baihui, GV14 Dazhui, LI4 Hegu, GB 34 Yanglingquan, and LR3 Taichong points will help children with spastic cerebral palsy lower their Modified Ashworth Scale (MAS) scores [10].

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