



ELECTRICAL STIMULATION AND BELL'S PALSY –A REVIEW

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KEYWORDS :

Bell's palsy is an acute disorder of the facial nerve, which produces full or partial loss of movement on one side of the face. The facial palsy gets completely better without treatment in most, but not all, people. Physical therapies, such as exercise, biofeedback, laser, electrotherapy, massage and thermotherapy, are used to hasten recovery.

Idiopathic facial palsy, also called Bell's palsy, is an acute disorder of the facial nerve, which may begin with symptoms of pain in the mastoid region and produce full or partial paralysis of movement of one side of the face (Adour 1982; Valença 2001). Its cause is not known (Peitersen 2002). It is said it may be because of a viral attack but how the virus damages the facial nerve is uncertain (Gilden 2004).(1)

Idiopathic facial palsy (Bell palsy) is the most common peripheral lesion of the cranial nerves and the most common mononeuropathy. The clinical presentation of facial nerve palsy depends on the pathophysiology, location, and severity of the lesion. It has been seen in previous studies that about two-thirds of patients progress to full recovery. Within 3 muscles residual symptoms may persist in about one-third of the patients and approximately 5% are seriously handicapped with permanent disfigurement or sequelae. These patients are usually associated with significant axonal loss, and some permanent facial weakness may remain.(2,3,4)

Electrical stimulation can cause contraction of muscles that have lost innervations as per (Sheffler and Chae, (2007) and helps in nerve regeneration and expression of growth-related genes (Geremia et al., 2007) (5,6)

Regeneration following nerve injury requires various processes including the survival and regrowth of neurons, budding of nerves, as well as axonal elongation, connection and synapse formation. It is currently believed that electric stimulation may be able to affect the early stage of nerve regeneration, such as the survival of neurons and budding of nerves. Future studies need to cover the entire course of nerve regeneration (Lal et al., 2008).(7,8)

Ohtake et al also completed a review of the available literature and found 2 studies that showed positive associations between e-stim and clinical outcomes (Farragher 1987 and Targen 2000). However, since there were no control groups in these studies they did not feel that the outcomes could be contributed to e-stim and could have likely been due to "the natural tendency for spontaneous recovery from Bell palsy.(9)

Teixeira et al completed a review of the published research about the use of electrostimulation (e-stim) or exercise for patients with Bell's palsy.

In this review, one study found that e-stim appeared to speed recovery (Flores 1998) and one study found that the group treated with e-stim had worse quality of movement than a control group (Manikandan 2007). This review concluded that there is insufficient evidence of significant benefit or harm from e-stim or exercise.(10)

Seventh nerve damage affects all the muscles of facial expression. Clinically, the most important consequence is paralysis of the upper eyelid on the affected side. This results in deficient wetting of the ocular surface, leading to corneal drying and ulceration, which could impair vision. Corneal protection measures range from lubricating ointments, (which can themselves blur vision) to a variety of surgical procedures, such as tarsorrhaphy and lid-tightening. Procedures intended to improve dynamic eyelid function include nerve crossover and muscle graft, whereas eyelid closure can be improved using gold weights(11) Electrical stimulation using transcutaneous electrical nerve stimulators units can improve voluntary eye closure, apparently because of a reduction in stiffness of eyelid mechanics, rather than an improvement of muscle function. Investigation of alternative stimulation regimens is warranted.(11)

There is evidence to suggest that denervated facial muscles may respond to electrical stimulation. Facial muscle fibers have been observed 20 to 30 years after denervation. The facial muscles of expression are predominantly fast twitch and should respond more readily to electrical stimulation than denervated slow-twitch muscle.12 Also, electrical stimulation has a greater effect on small than on large muscle groups. Therapeutic electrical stimulation has already been used with some success in Bell's palsy, 1415 although 84% of patients with Bell's palsy recover spontaneously without treatment(11,12,13,14,15)

Various conservative approaches are used in treating Bell's palsy but electrical stimulation is found to be effective in recovery post bells palsy.

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