

# ***PHYSIOTHERAPY MANAGEMENT FOR PATIENTS WITH TRIGEMINAL NEURALGIA***

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## **Background**

Trigeminal neuralgia is a neuropathic pain syndrome that affects the trigeminal or 5<sup>th</sup> cranial nerve, one of the most widely distributed nerves in the head. It is characterized by severe unilateral paroxysmal facial pain, often described by patients as the “the world’s worse pain”. The diagnosis is made by general practitioners in 27 per 100,000 people each year in the United Kingdom (Bennetto, Patel, & Fuller, 2007). Almost twice as many women are affected as men. The incidence gradually increases with age and is rare below 40. In Hong Kong, about 1,500 patients have been diagnosed with trigeminal neuralgia in the Hospital Authority in 2013; and about 15% of cases have been referred for physiotherapy service (source from CDARS 2013).



## **Physiotherapy Management**

The aims of physiotherapy management are to decrease pain and functional limitation, and to improve quality of life. Treatments include the use of electro-physical agents and acupuncture to relieve pain during acute onset. Manual therapy, exercise therapy for Temporomandibular Joint (TMJ) as well as self-massage for facial muscles can also help to restore patients’ functions.

### **Transcutaneous Electrical Nerve Stimulation**

Transcutaneous electrical nerve stimulation (TENS) currently is one of the most commonly used forms of electroanalgesia. Various clinical reports exist concerning the use of TENS for various types of conditions including



neurogenic pain. The analgesic mechanism of TENS composes of physiological block and endogenous pain inhibitory system, and gate control theory.

Recent study demonstrated that continuous bursts of TENS for 20-40 days over the path of the affected nerve was effective in controlling pain among patients with Trigeminal Neuralgia (Singla, Prabhakar, & Singla, 2011). The electrical stimulation delivered by a TENS unit reduced pain through nociceptive inhibition at the presynaptic level in the dorsal horn, thus limiting its central transmission. Besides, studies also showed marked increases in beta endorphin and met-enkephalin with low-frequency TENS, with demonstrated reversal of the antinociceptive effects by naloxone. These effects have been postulated to be mediated through micro-opioid receptors (Sluka & Walsh, 2003).

The analgesic effect of TENS can also be explained by the gate-control theory. According to the gate-control theory of pain, stimulation of large diameter afferents by TENS inhibits nociceptive fiber evoked responses in the dorsal horn, and prevents central transmission of the nociceptive information to the cortex. The proposed mechanism for closing the gate is inhibition of the C-fiber nociception by impulses in activated myelinated fibers (Sluka & Walsh, 2003).

### **Interferential Therapy**

Interferential therapy (IFT) is another electro-physical modality commonly used for pain management in clinical situations. IFT is the application of alternating medium frequency current (4,000 Hz) with amplitude modulated at low frequency (0–250 Hz). Several theoretical physiological mechanisms such as the gate-control theory, increased circulation, descending pain suppression, block of nerve conduction, and placebo have been proposed in the literature to support the analgesic effects of IFT (Palmer & Martin, 2002).

Recent studies demonstrated the effectiveness of IFT to reduce neuropathic pain. Soomro, Hamid, Yamin, & Bibi (2012) illustrated the effect of IFT on reducing pain for patients with trigeminal neuralgia by having them received fifteen sessions of IFT with treatment duration of thirty minutes. The intensity of the impulse varied according to patient's tolerance. The results suggested that IFT could be considered as one of the electro-physical modalities in reducing pain for trigeminal neuralgia.

### **Acupuncture**

Acupuncture is commonly used as an alternative pain-control modality for the treatment of several chronic pain diseases. The analgesic effect of acupuncture is due to increased levels of mediators, including endorphin, enkephalin and serotonin, in the plasma and brain tissue (Cabýoglu, Ergene, & Tan, 2006). Acupuncture is a highly safe procedure, with few complications reported. Most reported adverse effects were minimal and included bruising or hematoma at the needle site (White, Hayhoe, Hart, & Ernst, 2001).



Sert, Usta, Muslu, & Gozdemir (2009) evaluated the effect of acupuncture treatment on pain control for patient with trigeminal neuralgia. Results showed that six weeks of acupuncture treatment, with frequency of three times per week, was useful to reduce the pain intensity for patient with trigeminal neuralgia.



### **Manual Therapy**

If trigeminal neuralgia symptoms are augmented by cervical spine syndromes such as temporomandibular joint (TMJ) syndromes and facet joint problems, a trial of manual therapy for those concurrent symptoms is worth considering for the purpose of lessening the debilitating impact to patients.



Grgić (2010) reported that a course of manual therapy of the cervical spine to a patient with trigeminal neuralgia could significantly reduce pain in the cervical spine area, but also an improvement of trigeminal neuralgia. The results suggested that manual therapy could be one of the treatment options for trigeminal neuralgia (Grgić, 2010).

### **Alternative Noninvasive Electrical Stimulation**

Recent studies showed that Repetitive Transcranial Magnetic Stimulation (rTMS) demonstrated long-lasting analgesic effects following stimulation to the motor cortex (Khedr, Korb, Kamel, Ahned, Sadek, & Rothwell, 2005). The effect lasted for over several weeks with no adverse complications reported. Transcranial Direct Current Stimulation (TDCS) over the motor cortex was also reported to be effective in chronic trigeminal neuralgia patients (Antal, Terney, Kuhn, & Paulus, 2010). However, further study to demonstrate their treatment effectiveness was suggested.

### **Self-management**

In addition, home-based exercise therapy for TMJ as well as self-facial massage can also be incorporated into treatment regime to improve patients' functional capability.

### **Conclusion**

Chronic facial pain significantly affects daily living and functional performance of patients. The etiology of trigeminal neuralgia may not be easy to diagnose and it is difficult to treat. Studies demonstrated that physiotherapy intervention could be an effective treatment adjunct to medical management of the patients with trigeminal neuralgia symptoms.

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