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Background

Headache is a major neurobiological disorder, affecting one third of the world's population. It is estimated that up to 10 million people visit the general practitioner for chronic headache in the United States. Headache can be classified as migraine, tension-type, sinus and cluster. Tension-type headache should not be confused with migraine, which is characterised by recurrent attacks of mostly one-sided, severe headache, although some patients suffer from both types of headaches. Tension-type headache is the most common type of primary headache and the disability attributable to it is larger worldwide than that due to migraine.

Neuralgia is a stabbing, burning, and often severe pain due to an irritated or damaged nerve. The nerve may be anywhere in the body, and the damage may be caused by several factors including aging, diseases such as diabetes or multiple sclerosis and an infection, such as shingles. It is a sudden, brief and recurrent (refractory condition) pain of the nerve.

Bell's palsy, also known as acute idiopathic facial paralysis, is an acute peripheral facial neuropathy which is the most common cause of lower motor neuron facial palsy. The incidence of Bell's palsy is about 11 to 40 per 100,000 adults each year, and Bell's palsy is known as a non-fatal disease. Most patients recover spontaneously within three weeks.

Motor dysfunction is a frequent and widely recognised complication that often follows stroke. Stroke represents the third leading cause of mortality in Malaysia. Preliminary data found that, on average, 92 stroke admissions occurred each day across all Malaysian healthcare facilities nationwide. Of these admissions, 40.0% of stroke afflicted patients were of younger age-groups (less than 60 years old). Post-stroke survivors were often burdened with disabilities, with estimates of almost seven out of 10 stroke-afflicted survivors being activities of daily living (ADL)-dependent.

Guillain Barre is a rare neurological disorder in which the body's immune system mistakenly attacks part of its peripheral nervous system; the network of nerves located outside of the brain and spinal cord. Guillain Barre can range from a very mild case with brief weakness to nearly devastating paralysis, leaving the person unable to breathe independently. Guillain Barre is estimated to affect about one person in 100,000 each year.

Transverse myelitis is one of the rarest diseases of the nervous system affecting one or more segments of the spinal cord. Approximately 40.0% of patients with transverse myelitis have pain as their presenting long-term symptom.

Despite extensive research efforts on numerous treatment modalities, patient still pursuit for alternative treatment in attempt to further improve the outcome of the disease as mentioned above, such as acupuncture. Acupuncture is defined as the needling of specific points of the body. It is one of the most widely used complementary therapies in many countries. It is claimed that being a relatively simple, inexpensive and safe treatment compared to other conventional interventions, acupuncture has been well accepted by Chinese patients and is widely used to improve motor, sensation, speech and other neurological

functions in patients. As a therapeutic intervention, acupuncture is also increasingly practiced in some Western countries.

Hence, this technology review was requested by Neurology Department, Hospital Pulau Pinang, to provide the best available evidence related to acupuncture for the above purpose.

Objective

To evaluate the efficacy, safety and cost-effectiveness related to acupuncture for neurological disorder; headache, refractory neuralgia, Bell's palsy, post-stroke, Guillain Barre and transverse myelitis.

Methods

Electronic databases were searched through the Ovid interface; Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1946 to Present EMBASE - 1946 to April 17 2020, EBM Reviews – Health Technology Assessment 4th Quarter 2016, EBM Reviews – Cochrane Database of Systematic Reviews 2005 to May 1, 2020, EBM Reviews – Cochrane Central Register of Controlled Trials March 2020, EBM Reviews – Database of Abstracts of Review of Effects 1st Quarter 2016, EBM Reviews – NHS Economic Evaluation Database 1st Quarter 2016. Searches were also run in PubMed, INAHTA and US FDA. Google was used to search for additional web-based materials and information. Additional articles were identified from reviewing the references of retrieved articles. Last search was conducted on 6 May 2020.

Results and conclusion:

A total of 445 titles were identified through the Ovid interface and PubMed. There were 25 articles included in this review which consist of seven systematic reviews and meta-analysis, one systematic review alone, 13 randomised controlled trials (RCT), and two retrospective studies, one prospective observational study and one cost effectiveness and cost analysis study.

There was substantial evidence on acupuncture on headache, Bell's palsy and post-stroke. However, most of the studies have high risk of bias due to inappropriate randomised sequence generation, lack of allocation concealment, inadequate level of blinding, poor description of patient withdrawals from the studies and the adverse events and hence, varying the quality of the included trials. Nevertheless, the evidence showed that acupuncture may reduce headache frequency and improve response rate to treatment. The evidence was inconclusive for Bell's palsy. As for post-stroke patients, the evidences showed acupuncture may improve ADL. As for other outcomes means, the results were inconclusive.

For refractory neuralgia, Guillain Barre and transverse myelitis, there was insufficient evidence to assess the efficacy of acupuncture in these group patients.

There were studies reported on adverse events namely, haematoma and ecchymosis, migraine attacks and headache after treatment, pain and fatigue, seizure, and stomach discomfort. Meanwhile, none of the clinical trials reported any serious adverse events. Acupuncture was approved by United States of Food and Drug Administration (USFDA) in 1996 and classified as Class II (special control).

In term of cost-effectiveness, acupuncture was suggested to be clinically relevant benefit and cost-effective in certain sectors. In Malaysia, the cost per session varies according to scope of treatment ranges between RM35 to RM315. However, acupuncture service is being provided for RM20 per session at Traditional and Complementary Medicine Unit in Ministry of Health hospitals as per *Perintah Fi (Perubatan) (Pindaan) 2017*.