



Insights of Brain Stimulation

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DESCRIPTION

Electrical stimulation of the nervous system is used in the treatment of motion disorders, pain and epilepsy. Stimulation consists of the placement of an electrode, which is connected to a generator placed subcutaneously. This applies to the treatment of movement disorders, chronic pain states and epilepsy so here we will discuss neurostimulation and their kinds of Brain stimulations such as vagus nerve stimulation (VNS), Repetitive Trans Cranial Magnetic Stimulation (rTMS) and Magnetic seizure therapy (MST), deep brain stimulation (DBS).

Parkinson's disease is the most common surgical movement disorder in patients. Stereotactic techniques developed in the 1950s were used to create lesions in the pallidum and thalamus. With the introduction and widespread use of L-dopa (l-3, 4-dihydroxyphenylalanine) these ablative approaches have been declining for some time. In the early 1990s, patients with Parkinson's disease became increasingly interested in the use of surgical techniques when they did not respond to pharmacological agents or became intolerant to their side effects. Injuries of the inner section of the Globus pallidus have seen tremendous resurgence. With improvements in imaging and intraoperative microelectrode recording, deep brain stimulation soon replaced ablative approaches in the surgical treatment of these patients. Stimulation induces reversible inhibition of neural activity, which is adjusted according to the clinical condition demand. The sub thalamic nucleus turned the Globus pallidus into a selective target. Sub thalamic nucleus stimulation is highly effective in treating stiffness and akinesia. Tremor is best resolved by stimulation of the ventral intermediate nucleus of the thalamus.

Spinal cord stimulation is used to treat chronic pain, dystonia and bladder dysfunction. Patients usually undergo a trial of stimulation in which the wire electrodes are placed percutaneously and attached to an external generator. If the characteristics improve, permanent wire electrodes or paddle electrodes are placed and connected to a programmable generator placed subcutaneously. The exact mechanism of action

is unknown. The most common indication is the so-called post laminectomy syndrome, especially when the leg pain is worse than the back pain. There is also some benefit for patients with chronic regional pain syndrome. It has not been found to be routinely effective in the treatment of cancer pain.

Vagus nerve stimulation (VNS) is a treatment that involves sending an electrical impulse to the vagus nerve. It is used as an additional treatment for certain types of epilepsy and treatment-resistant depression. Common side effects are cough and shortness of breath. The mechanism of action is unclear, but the core of the solitary passage is thought to be due to co-stimulation of the hypothalamus, amygdala, islands, and the center of the higher cortex of the hypothalamus of the cerebral cortex. Stimulation of the left vagus nerve reduces the incidence of epilepsy, but rarely results in epilepsy-free patients.

Repetitive transcranial magnetic stimulation (rTMS), electromagnets send magnetic pulses painlessly to stimulate nerve cells in areas of the brain involved in mood control and depression. It is thought to activate areas of the brain where depression activity is reduced. Most TMS providers are aware that TMS success rates range from 70% to 80%. This means that the majority of patients will experience significant relief after treatment. About 50% of people experience complete remission. In other words, one treatment does not show symptoms of depression.

Magnetic seizure therapy (MST) has been studied as an alternative to electroconvulsive therapy, which is known as an effective treatment for suicidal tendencies in the treatment of refractory major depression, with promising results. MST is a potential alternative to ECT that does not compromise memory. In the current study, consecutive patients with MDD agreed to undergo MST via the prefrontal cortex according to an open-label protocol.

Deep Brain Stimulation (DBS) is a neurosurgical procedure that uses electrodes and electrical stimulation fitted to treat motion disorders associated with Parkinson's disease (PD), significant tremor, dystonia and other neurological conditions.

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