

Acupuncture and Pain Management

Acupuncture has been used as a therapeutic modality for thousands of years. It became popular in the U.S. after President Richard Nixon made his famous trip to China in 1972. The reporter James Reston had acupuncture for the complications of appendectomy. And photographs and films on acupuncture anesthesia were spread around the world.

According to the most recent statistics from the National Health Interview Survey, More than 14 million Americans have tried acupuncture. The study found that nearly six percent of Americans have had acupuncture to help alleviate chronic pain, up from just one percent of patients a decade ago.

The traditional theory holds that acupuncture maintains and balances the flow of Qi in the human body. Qi interconnects living and inanimate objects in nature and the universe. The flow of Qi in the human body must stay fluid and in balance macroscopically, as individuals relate to their environment, and microscopically, as organ functions interact. Disturbance in the flow of Qi can cause an imbalance and eventually manifest as disease.

Qi flows in channels which connect the whole body in complex patterns. During acupuncture treatment, by inserting fine needles into appropriate points along the channels, the Qi flow in the body can be realigned to restore internal homeostasis.

Clinical studies consistently show that acupuncture can be an effective form of pain management for musculoskeletal, inflammatory, and neuropathic pain. Meta-analyses of randomized controlled trials provide evidence for acupuncture's effectiveness in migraines, osteoarthritis and chronic back, neck and shoulder pain. Acupuncture is also shown to be effective for spine-related disorders, fibromyalgia, myofascial pain, tendinitis, neuropathy, carpal tunnel syndrome, tennis elbow, menstrual cramps, dental pain, sports injuries, neuropathic pain such as post herpetic neuralgia, post nerve injury pain, burning mouth syndrome, perineal burning pain, as well as cancer pain and symptoms related to the condition itself and side effects from treatment.

Acupuncture has a sound physiological basis. Modern research shows that internal pathology can be diagnosed with surface evaluation and be treated through stimulation activate somatovisceral and viscerosomatic reflexes. The sensation associated with acupuncture needle manipulation is related to the activation of skin receptors, muscle fibers, nerve endings, etc. Stimulation of these tissues may influence visceral structures and remote somatic structures.

Acupuncture's effect on pain inhibition can be explained with the gate control theory. Large, myelinated sensory afferents synapse on inhibitory interneurons in the dorsal horn of the spinal cord, when activated, can inhibit the activation of second-order neurons that receive input from the smaller nociceptor fibers.

There are more research on pain perception and inhibition on a biochemical level. Inhibition of pain at the level of the brain has come to be understood well through the role of endogenous opioids and the descending pain inhibitory system. Endogenous opioids, such as endorphins, dynorphins, and enkephalins, are peptides that act in the Central Nervous System to modulate pain. It has been determined that beta endorphin and serotonin levels increase in plasma and brain tissue through acupuncture application. The descending inhibitory system travels from the hypothalamus and periaqueductal gray, through the medulla to the dorsal horn of the spinal cord. In this system the opioid action takes place and inhibition of the afferent nociceptive information occurs. Acupuncture research has shown that it has a role in activating this descending inhibitory system.

A research show that with acupuncture stimulation A delta and C afferent fibres in muscle send signals to the spinal cord, where dynorphin and enkephalins are released. The afferent pathways continue to the midbrain, triggering excitatory and inhibitory mediators in the spinal cord. The ensuing release of neurotransmitters serotonin and norepinephrine onto the spinal cords leads to pain transmission being inhibited both pre- and post-synaptically in the spinothalamic tract. Finally, these signals reach the hypothalamus and pituitary, triggering the release of adrenocorticotrophic hormones and beta-endorphin.

Acupuncture has also been shown to suppress the gene c-Fos expression in the spinal cord and the brain, suggesting a possible neuromodulatory mechanism that is independent of endogenous opioid release.

In recent years, research has included positron emission tomography, single-photon emission computed tomography, and functional magnetic resonance imaging studies to observe the effects on the brain of acupuncture needling. The effects are widespread and open to interpretation, but there is evidence that the limbic system plays a significant role in acupuncture-induced analgesia. Electroacupuncture stimulation was shown to modulates the hypothalamus-limbic system.

While acupuncture is effective it is also safe. The rates of side effects are substantially lower than that of many drugs or other accepted medical procedures used for the same conditions. An analysis of 12 prospective studies that surveyed more than a million treatments showed the estimated risk of a serious adverse event with acupuncture to be 0.05 per 10,000 treatments, and 0.55 per 10,000 individual patients. The most common adverse effects are occasional bruising, very minor bleeding (particularly among individuals taking blood thinner), and temporary exacerbation of symptoms.

To achieve complete resolution of symptoms, it is also important to understand the underlying cause, to have enough treatment sessions, to integrate acupuncture treatment with nutritional and lifestyle changes, exercise, good physiotherapy, attention to perpetuating factors, and ergonomic adjustments.