

Acupuncture as an Adjunct to Stellate Ganglion Block For CRPS

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Abstract

Complex regional pain syndrome (CRPS) is a form of severe chronic pain with a protracted course, varied etiology and different treatment modalities. There are two types of CRPS: Type 1 and Type 2. Multimodal pain management is recommended for CRPS. Sympathetic blocks in the form of Stellate ganglion block has been used since time immemorial as a form of diagnostic and therapeutic regional block in CRPS type1. There are a few subsets of patients who also require other supplementary and complimentary therapies for complete relief for their chronic pain. We hereby report a unique case of CRPS type 1 who presented with severe pain in the left arm, forearm and shoulder following a previous fracture of the left radius after a fall. The patient responded partially to left stellate ganglion block after failure of conservative management. Acupuncture is an ancient form of Chinese medicine with clinically proven benefits in a variety of disorders, including chronic pain. We used various acupuncture points in this patient, a week after the stellate ganglion block for a period of 2 weeks to achieve a near-total pain relief as well as significant improvement in arm movements. Acupuncture was supplemented by TENS (transcutaneous electrical nerve stimulation) to the affected arm and daily physiotherapy. This case highlights that with the timely use of acupuncture we can achieve complete pain relief in chronic pain patients, partially responding to regional blocks. The pain scores of the patient dipped from 9 on the NRS (Numeric Rating Scale) at the time of presentation to NRS 1 at the end of the treatment.

Keywords: Acupuncture, Complex regional pain syndrome, Stellate ganglion block; Chronic pain; Numeric rating scale.

Introduction

Complex regional pain syndrome is a form of chronic pain associated with autonomic and inflammatory features and characterized by spontaneous and evoked regional pain following an injury [1]. CRPS is divided into type 1 and type 2 on the basis of the absence or presence of major nerve injury. The IASP (International Association for Study of Pain) has highlighted a number of diagnostic clinical criteria for CRPS. Several central, peripheral, immune, genetic and inflammatory mechanisms are purported for explaining the occurrence of CRPS [2]. Our patient had CRPS type 1 following orthopedic injury to her left forearm. This chronic pain was resistant to standard medical management [3]. We hereby present the utility of acupuncture following sympathetic blocks in such patients for achieving near-complete pain relief and improved activity of the affected arm.

Case Report

A 45 years old female patient presented to the pain clinic with severe pain in the left upper extremity since 3 months, limiting her left upper limb movements and activities of daily living. She had

history of injury to the left forearm three months back, when she was diagnosed to have fracture of the lower shaft of the left radius, managed with below elbow plaster cast. Even after removal of the plaster following bone healing, her pain continued to persist and was not amenable to conservative management. In view of the intractable pain in her left shoulder, arm and forearm, she was unable to use her left upper extremity for activities of daily living. Pain also persisted during night time, adversely affecting her sleep, leading to psychosomatic illnesses. She also had decreased sweating of the left arm with hyperalgesia and mild edema of the hands. She did not show any improvement to conventional pain medications (Paracetamol, Diclofenac Sodium, Tramadol Hydrochloride, Gabapentin and Pregabalin). Physiotherapy to improve arm movements was not possible due to the severe chronic pain.

After routine investigations and consent, a diagnostic and therapeutic left Stellate ganglion was planned in the operation theatre. After mild intravenous sedation and cleaning-draping the neck, left stellate ganglion block was administered with 6ml of 0.2% Ropivacaine Hydrochloride (local anaesthetic) along with 80 mg of Depomedrol Hydrochloride (steroid). There was a measurable increase in the affected arm temperature suggestive of sympathetic block. Her NRS (Numeric Rating Scale) score

reduced from 10 before the block to NRS score of 5 within 2 hours of the block. Once the severe pain was reduced, she was more amenable to physiotherapy and other conventional therapies. In order to achieve further improvements in pain relief, Acupuncture was decided to be administered to the patient, as she did not show further improvements in NRS scores after one week of therapy. The following acupuncture points were used on the patient after proper counselling and consent: du 20; Li 4; Stomach 38, 36; SI 9; SJ 24; Li 15; and Ashi point.

In addition to daily acupuncture sittings, she also underwent TENS therapy to the affected arm, along with electro-acupuncture and physiotherapy sessions for 2 weeks. At the end of the treatment period, there were significant improvements in pain scores, arm movement range and general well-being. There was also a reduction in hand edema and hyperalgesia. All the vital parameters of the patient remained within normal limits during the entire treatment program.

Discussion

Chronic pain is defined as a pain persisting much beyond the usual course of an acute illness or beyond a reasonable time for the injury to heal or pain persisting for more than three months [4]. Chronic pain can be either nociceptive or neuropathic pain. Complex regional pain syndrome (CRPS) is a type of neuropathic pain and is divided into two types: CRPS 1 (Reflex sympathetic dystrophy) and CRPS 2 (Causalgia). The management of CRPS is generally multi-modal. The use of sympathetic block in CRPS type 1 is effective in most patients. In addition to regional blocks, other supplementary and complimentary therapies like acupuncture, TENS (Transcutaneous Electrical Nerve Stimulation), physiotherapy, laser treatment and electroacupuncture is extremely effective in achieving a complete cure and improve patient satisfaction.

Acupuncture is an ancient Chinese therapy where fine needles are inserted into various points on the body [5]. These acupoints are placed on definite meridians or energy channels on the body surface. Generally, acupoints have a higher neurovascular density and located between muscle groups. It is based on the theory that there two opposing and inseparable forces called yin and yang, maintaining a delicate body balance. An imbalance between yin and yang leads to blockade in the flow of Qi (vital energy) along the meridians, leading to various diseases.

The WHO (World Health Organization) has listed more than 400 acupoints along 20 meridians on the body. Electro acupuncture is a form of acupuncture where a focused electric current is applied to the needle at the acupoint. Other forms of acupuncture include Moxibustion, Laser acupuncture and Acupressure. The various purported mechanisms of action of pain relief with acupuncture include the following [6]:

- Release of spinal natural opioids like dynorphin, endorphin and enkephalin, which are potent modulators of pain.
- Melzack's gate theory of pain.
- Endogenous release of adrenocorticotrophic hormone.
- Relaxation of myofibrillary entanglement.

- Increase in local blood flow which can enhance the healing process.
- Creating a balance in the mesolimbic neural pain pathway.

The contraindications of acupuncture include bleeding diathesis, systemic sepsis, local cellulitis or burns or ulcers, uncooperative patient, needle phobia, use of anticoagulants or steroids and pregnancy [7]. Some of the rare adverse effects of acupuncture include local pain, syncope, bruising or hematoma formation, infection, allergic reaction, neurovascular damage or pneumothorax. These complications are largely avoidable by careful patient and acupoint selection.

Our patient was referred to the pain clinic after 3 months of medical and orthopedic management of her pain. At the time of presentation, her NRS was 10, which also interfered with her daily activities as well as preventing her from doing effective physiotherapy. After application of Stellate ganglion block, her NRS was 5, which did not reduce further. At the same time, she was more amenable to supplementary therapies. Daily acupuncture sittings were planned along with physiotherapy to the affected limb. Acupuncture demonstrated a favorable effect in our patient demonstrated by further reduction in NRS score to 1 at the end of treatment period as well as improvement in activities of daily living. This also led to an improvement in the sense of well-being of the patient.

This article illustrates that acupuncture can be effectively used for near-complete pain relief in carefully selected chronic pain patients after attaining initial analgesia with regional blocks [8]. Early institution of acupuncture along with physiotherapy and other supplementary therapies can produce better results, rather than initiating these as a last resort treatment modality. Gaining the patient confidence with proper counseling and maintaining realistic expectations out of the therapy are cornerstones of a successful outcome.

Conclusions

Complex regional pain syndrome (CRPS) has a protracted course and the chronic pain may sometimes be resistant to conventional treatment. Sympathetic blocks form the cornerstone of treatment for patients with CRPS type 1 along with medical management. Acupuncture is a promising modality for pain management in difficult to treat cases, especially with incomplete pain relief following blocks or medical management. Careful patient and acupoint selection are equally important.

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