Codetron in Rehabilitation of Chronic Pain Patients

Dr Angelica Fargas-Bahjak

This paper was presented at the Third World Congress of Scientific Acupuncture in Prague — ICMART '88.

Abstract
Acupuncture is one of the oldest healing methods which is used in traditional medicine. In modern medicine we are witnessing a renaissance of this ancient treatment applied mainly in the management of chronic pain. A number of modern technological changes are being applied to replace, or modify, the classical needle treatment. Among many of the modalities used at present are light, in the form of laser, and electrical stimulation. CODETRON TENS, the novel addition to Transcutaneous Electrical Nerve Stimulation (TENS), has been evaluated in a clinical trial, over a two year period, in a multidisciplinary pain clinic on patients who came for acupuncture therapy. Indications, effectiveness and experiences with this form of treatment are presented.

KEY WORDS: CODETRON TENS, ACUPUNCTURE LIKE STIMULATION, MULTIDISCIPLINARY PAIN CLINIC, CHRONIC PAIN PATIENTS.

In the Western World acupuncture is incorporated into the majority of chronic pain management programmes. Results achieved in analgesia may not measure up to the results obtained by our Chinese colleagues. However, if one examines and compares the practice of acupuncture in the West and East, the differences are obvious.

1. We offer therapy intermittently once per week. An optimal effect may not be achieved due to large gaps in the acupuncture sessions with inadequate time spent in therapy.

2. The therapy sessions may be stopped prematurely after one or two successful treatments, despite not achieving maximal benefit.

3. Acupuncture is abolished as an ineffective modality if after the fifth or sixth treatment the desired effect is not achieved.

4. Due to the complexity of training in acupuncture, the competence of the Acupuncturist may vary to a great extent, at least in our area where both doctors and non-doctors are allowed to practise acupuncture.

5. And last, but not the least important, is psychological and cultural reservation toward such a modality as acupuncture, resulting in fear of needles and an unfamiliarity with such a treatment approach.

On the other hand, we have Transcutaneous Electrical Nerve Stimulation (TENS) which has been accepted well in Western medicine. Results achieved in analgesia are comparable but the effectiveness of TENS in chronic pain patients declines with time. This decline could be due to the phenomenon of habituation when the brain filters out constant continuous repetitive stimulation. Habituation may be avoided if stimuli are sent in a random order because the brain cannot anticipate and adjust to such stimuli. Aiming for TENS which could deliver acupuncture like stimulation with "fe chi" sensation.

Figure 1
Left: Weak evoked potentials obtained from a conventional TENS. The brain rapidly filters out monotonous stimulation, causing obliteration of the evoked potential.

Right: Robust somatosensory evoked potentials produced by CODETRON TENS. Such electrical potentials have been linked to the release of pain-relieving substances.
which activates Type II and III muscle afferents, and to overcome the habituation phenomenon, a Canadian scientist developed a novel TENS called CODETRON. The device delivers random stimuli from six electrode pads. The stimulus locus switches from one electrode to another in a random sequence resulting in each stimulus being perceived by the brain as novel. This phenomenon was demonstrated by comparing Evoked Brain Potential from the somatosensory cortex between CODETRON TENS and conventional TENS. The results taken from somatosensory evoked brain potential, stimulating the median nerve at P6, showed that CODETRON strategy enhanced the potential at late peaks. This may suggest that this enhances access to higher centres. (Figure 1)

The Acupuncture Clinic, an integral part of a Multidisciplinary Pain Clinic, at McMaster University Health Science Centre was one of the first centres to perform clinical testing of CODETRON. The results are from an uncontrolled clinical trial over a period of two years. The aim of this testing was to find conditions which would benefit most from this type of therapy, to see the acceptance and effectiveness of this modality, and to identify potential areas of therapy. All patients were chronic pain syndrome patients who were referred to the Clinic by their family doctor, pain specialist, or other consultant.

Over a period of two years, 137 patients received CODETRON therapy in conjunction with other pain management strategies. The patients were offered CODETRON therapy if they required acupuncture. The majority of patients required two to six office therapies each, each therapy lasting 30 minutes. More than 50% of the patients had Home Care Units for a certain time, from two weeks to three months. Patients were instructed in its use and were intermittently checked about the placement of the leads. Home Units were given only to patients who had more than two to three hours pain relief after two office therapies. Using a modified Visual Analogue Scale (VAS), pain relief achieved was evaluated.

Conditions treated with CODETRON were:

**CHRONIC LOW BACK PAIN**
Caused by: Degenerative — osteoarthritis of spine, hip, knee
— spinal stenosis
— disc degeneration
Neurological — nerve root compression

**HEAD, NECK AND SHOULDER PAIN**
Caused by: Degenerative — osteoarthritis of cervical spine, shoulder, hands
— Myofascial Syndrome — soft tissue injury
— whiplash

**NEUROPATHIC PAIN**
— Postherpetic Neuralgia
— Postsympathectomy pain
— Peripheral Neuromas (postoperative)
— Sympathetic Dystrophy

**DYSMENORRHOEA**
— Pelvic Pain

An improvement in pain level >30% was achieved by 107 patients at the end of their treatment in the pain clinic, as compared to their initial pain level. Diagnosis and pain relief were as follows:

<table>
<thead>
<tr>
<th>Diagnosis and Pain Relief %</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster headaches</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Tension headaches</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Generalised myofascial pain</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Neck and shoulder</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Frozen shoulder</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Dysmenorrhoea and PID</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Osteoarthritis cervical and hips</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Osteoarthritis knee</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Back pain</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1. Degenerative and lumbar pain</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2. Post-laminectomy</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>3. Accident related</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4. Spinal stenosis</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5. Sciatica</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>6. Fibrosis</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7. Anachondritis</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Post thoracotomy pain</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Sympathetic dystrophy</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Tendinitis</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ulcerative colitis</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Neuralgia</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Post herpetic Neurigia</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Traumatic</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Pain of undetermined origin</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Brachial plexus avulsion</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Hemiparesis — hemiplegia</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ca of pancreas</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Drug consumption was decreased in all patients who obtained an improvement in pain level. They also found themselves more ambitious and energetic. There were a few important factors which greatly influenced response, especially in patients who had Home Care Units.

**POSITIVE factors were:**
1. Experimentation and observation of response readjustment by the patient.
2. Education and belief in the ability to obtain help.
3. Acceptance of strong stimulation.
4. Addition of other modalities and/or use of other techniques of pain control (massage, heat, exercise, back classes, learning relaxation response, etc).
5. Dietary adjustments: elimination of junk food; addition of vitamins, neurotransmitter precursors, essential fatty acid supplements.

**NEGATIVE factors were:**
1. Decreased understanding.
2. Language barrier.
3. Decreased manual dexterity.
4. Dependency (on other member to administer therapy).
5. Drugs such as narcotics, diazepam, corticosteroids and β blockers.

**Conclusion**
We were implementing more than one modality for treatment. Therefore, it is difficult to describe or evaluate the response due to CODETRON TENS only, but it became clear that CODETRON TENS is a valuable tool in the management of chronic pain, and perhaps is more effective than acupuncture due to its ability to allow patients to perform self therapy on a daily basis. Because we are dealing with patients who suffer from a chronic pain syndrome, the comprehensive programme of pain management is of vital importance.

**CODETRON TENS** delivers an acupuncture like stimulation and has become a valuable complementary modality in the comprehensive pain management approach.

_Dr A Fargas-Babjak, MD, FRCP(C)_
Associate Professor of Anaesthesia
McMaster University,
Hamilton, Ontario,
Canada.


---

**The International Medical Council for Acupuncture and Related Techniques**
is a council set up to embrace all medical acupuncture societies, to encourage research into the subject and to provide a powerful political voice to promote the acceptance of acupuncture in a medical setting.

ICMART sponsors a World Congress of Scientific Acupuncture held in alternate years. It also sponsors smaller international conferences organized by member societies.

It is hoped that the majority of major medical acupuncture societies will join ICMART.

For further information and enquiries concerning membership please contact the: General Secretary of ICMART
Rue De L'Amazone, 62
1050 Brussels
Belgium
Codetron in rehabilitation of chronic pain patients

Angelica Fargas-Babjak

Acupunct Med 1989 6: 54-56
doi: 10.1136/aim.6.2.54

Updated information and services can be found at:
http://aim.bmj.com/content/6/2/54

Email alerting service

These include:
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://www.bmj.com/company/products-services/rights-and-licensing/

To order reprints go to:
http://journals.bmj.com/content/subscribers

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/