DESCRIPTION OF METHODS

Electroacupuncture can be used for virtually all pain conditions where manual acupuncture is indicated.

The mechanisms behind acupuncture
The effect of both manual and electroacupuncture mainly results from activating the ergoreceptors in the musculature. About 75% of the points stimulated by manual acupuncture are muscular. Ergoreceptors are also stimulated by intense muscular activity.

Stimulating these receptors releases the body's own morphine-like substances - endorphins. Acupuncture also stimulates the touch fibers, which transfer the effect inward to the spinal column, according to the Gate Control theory.

Today we know more about the physiological mechanisms behind electroacupuncture than those behind manual acupuncture. Many studies have been done on various stimulation frequencies and their effect on the endorphin systems.

In general, electroacupuncture is thought to give a more intense, effective, and pleasant stimulation for the patient than manual acupuncture. Electrical stimulation is also easier to reproduce exactly, which is an advantage when you want to compare treatment results, for example in clinical studies.

Studies have shown that low-frequency electroacupuncture (up to 10 Hz) releases beta-endorphins on the brain-stem level and met-enkephalin on the spinal level. This effect is general - it occurs regardless of where the needles are applied and stimulated.

With high-frequency stimulation (15-200 Hz), dynorphins are released segmentally on the spinal level. Studies have also shown that high-frequency stimulation releases serotonin, which inhibits pain impulses on the spinal level. In contrast to low-frequency stimulation, high-frequency stimulation must be applied in the painful region - or segment.

Animal testing has shown that mixed-frequency stimulation, such as 2 Hz/100 Hz (Han stimulation), is optimal for releasing endorphins. Both dynorphin and enkephalin are released on the spinal level and beta-endorphins are released on the brain-stem level. This provides optimal conditions for maximum endorphin release, which would benefit for example patients with long-term pain. However, a risk of developing a tolerance level has been discussed with this type of stimulation.

ELECTROACUPUNCTURE TREATMENTS

A treatment always begins with one or two manual treatments to evaluate the patient’s reaction to needle stimulation. For optimum effect, the patient must be relaxed and not see the treatment as unpleasant. For this reason, it is a good idea to use needles that penetrate the tissue well when doing electrical stimulation.

Since a current has a limited spread in the tissue, the needles in a pair with current should not be further than 30 cm (12”) apart. Since the current spreads through the tissue, 1-3 needle pairs in the painful area are enough. Never place the needles closer than 3 cm (1-1/4”) from each other. For general release of beta-endorphins, stimulate 1-2 needle pairs on extrasegmental, distal points. The treatment time is 20-40 minutes.

STIMULATION METHODS

Both high and low-frequency stimulation should be felt clearly, but with absolutely no pain. With high-frequency stimulation (15-200 Hz), the patient should clearly feel paresthesia - tingling - and with low-frequency stimulation (up to 10 Hz), visible muscle contractions should occur.

This can sometimes be difficult to attain without painful stimulation (for example in the facial area), which is why it is important to clearly see muscular fasciculation around the needle.

High-frequency stimulation gives a segmental, fast, brief effect and is used primarily with local, segmental needles. Usually acute and sub-acute pain conditions are treated with high-frequency stimulation for rapid analgesic effect.

Low-frequency stimulation has a general, long-lasting, slower effect and is used with distal extrasegmental needles. Low-frequency stimulation is used primarily to amplify the general effect of acupuncture. Mixed-frequency stimulation (such as 2 Hz for 3 seconds and 80 Hz for 3 seconds) gives a combined effect of low and high-frequency stimulation. Mixed-frequency stimulation is used with local, segmental needles to treat primarily long-term pain conditions.
EXAMPLES OF TREATMENTS WITH ELECTROACUPUNCTURE

The indication ranges for electroacupuncture treatment are usually divided into three levels: acute, subacute and long-term pain.

**Acute pain**
If the patient is experiencing intense pain, you can choose to stimulate only strong, distal, extrasegmental points, such as LI4 and TE5, ST36 and SP6, with low-frequency stimulation.

High-frequency stimulation is used in the painful area for rapid segmental effect. Frequency: Select either high-frequency, 80 Hz, continuous stimulation; or high-frequency, 80 Hz, modulated pulse duration stimulation. Combine with stimulation on strong distal, extrasegmental points.

**Subacute pain**
Stimulate local, segmental points in the painful area. Frequency: Select either high-frequency, 80 Hz, continuous stimulation; high-frequency, 80 Hz, modulated pulse duration stimulation; or mixed-frequency, 2 Hz/15 Hz or 2 Hz/80 Hz, stimulation. Combine with stimulation on distal, extrasegmental points with low-frequency stimulation.

**Long-term pain**
Stimulate local, segmental points in the painful area. Frequency: Use low-frequency stimulation, 2 Hz, or mixed-frequency, 2 Hz/15 Hz or 2 Hz/80 Hz. Combine with stimulation on distal, extrasegmental points with low-frequency stimulation, 2 Hz.

---

**Example: Cervical pain that radiates out over the trapezius**

---

**Example: Elbow pain**
EA points: Local points LI10 and LI12. Distal points LI4 and TE5 on the same side.
Example: Lumbago and lumbago-sciatica

Distal, extrasegmental points
Stimulate strong points on the upper and lower extremity to enhance the general effects of acupuncture. Common EA points: LI4 and LI11, LI4 and TE5, SP6 and ST36. Low-frequency stimulation, 2 Hz.
PRECAUTIONARY MEASURES FOR ELECTROACUPUNCTURE

1. Warning! Patients with pacemakers must not be treated with electroacupuncture.

2. Do not apply electroacupuncture while the patient is connected to high-frequency surgical equipment. This can burn the skin at the site of the needles and damage the stimulator.

3. Switch off stimulation before removing the clamps. But if you do get a shock from the stimulator, it isn’t harmful.

4. Do not stimulate close to the glomus caroticus, on the throat near the carotid artery, as this can cause a drop in blood pressure.

5. Do not treat pregnant women in the uterine innervations segment during the first trimester.

6. Exercise caution if the patient has a damaged lymphatic system.

7. Exercise caution with unwilling, frightened patients, and ones with reduced awareness or dementia.

8. Patients with cardiac arrhythmia must be monitored to ensure that the arrhythmia is not aggravated.

9. Do not place needles from the same pair directly over the heart.

10. Do not place needles on or near the head of patients with epilepsy. This might trigger a seizure.

11. Note that overstimulation may worsen the patient’s pain and general condition.

12. Be careful when stimulating patients with a nickel allergy.

For complete precautionary measures, see the product manual.
REFERENCES


CHEN XIAO-HONG, HAN J.S. All three types of opiod receptors in the spinal cord are important for 2/15 Hz electroacupuncture analgesia. EUR J PHARMACOL 1992, Feb 11, 211(2) :203-210.


