

TREATMENT OF ARTHROSIS OF THE KNEE WITH TRANSCUTANEOUS NERVE STIMULATION (TNS)

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In a previous article Ole Asbjørn has proved the effect of transcutaneous nerve stimulation (TNS) in acute tennis elbow. The theory behind the effect of TNS was introduced by Melzack and Wall in 1965 (2) in the so-called "gate-control"-theory of electrical current affecting the nerve fibers. Such stimulation causes the release of endorphins in the hypothalamus (via the spinal cord).



In 1978 (3) a Danish trial proved the painkilling effect of TNS in patients with rheumatoid arthritis using an equipment placing electrodes on different parts of the body. The trial was a double-blind trial where neither doctor nor the patients knew if they were treated with TNS or not. The result showed that about 70% of the patients were relieved with their pain when treated with TNS.

In recent years TNS is recommended by doctors having an effect similar to medication and without the side effect of different drugs.

Pain@Gone is a new piece of equipment developed in order that the patients themselves can treat different painful disorders. It is designed as a plastic unit - the size of a big pencil - in which the electronics and the crystals are placed. Pressing a button on the top results in activating the built-in high-voltage generator. The voltage is 15,000 volt (0.000006 ampere) and the frequency is 1-2 Hz (low frequency).

METHOD:

22 patients with arthrosis of the knees were given a Pain@Gone and introduced to use it properly. All of the patients were diagnosed by x-ray of the knees and all showed changes due to arthrosis. The amount of clicks were not restricted, but the patients were told to use the Pain@Gone when they had pains. The patients were asked to click over the painful knee closest to the area where they felt the pain. The patients were told not to use any medication at all (neither prescribed drugs nor OTC-medicine). There were no patients in the trial who had been operated. Pain@Gone was given for free between 2 and 4 weeks. Fig. 1 shows the age of the patients.

After the treatment the patients were questioned about the painkilling effect using the Huskinson analogue scale where patients themselves pointed out the effect in a scale from 1-20 as 1 referring to not effect and 20 to total relief of the pain. The scale has in this trial been modified to a scale going from 1-10.

There were 22 patients in the trial. The distribution of age is seen in fig. 1. 2 patients did not want to go on with the treatment after the first week and asked for drugs or other treatment. They are therefore not admitted to the trial. 13 of the patients felt a relief of pain ranging from 6-10, while 7 patients did not feel any relief at all. The result is similar to the Danish trial from 1978 (3). The majority of the relieved patients (5) pointed to 8 in the scale, 4 and 2 pointed to 9 and 10. This means that 65% of the patients in the trial had effect ranging from good to excellent Fig. 2. If the 2 patients, who dropped out of the trial, are admitted as a result of not feeling any pain relief at all, 59 of all patients felt relief. As in a previous trial with Pain@Gone treating tennis elbow, the patients told that the relieving effect started after 5-10 minutes and the pain returned after 3-6 hours. There were no side effects observed during the treatment.

Fig. 1

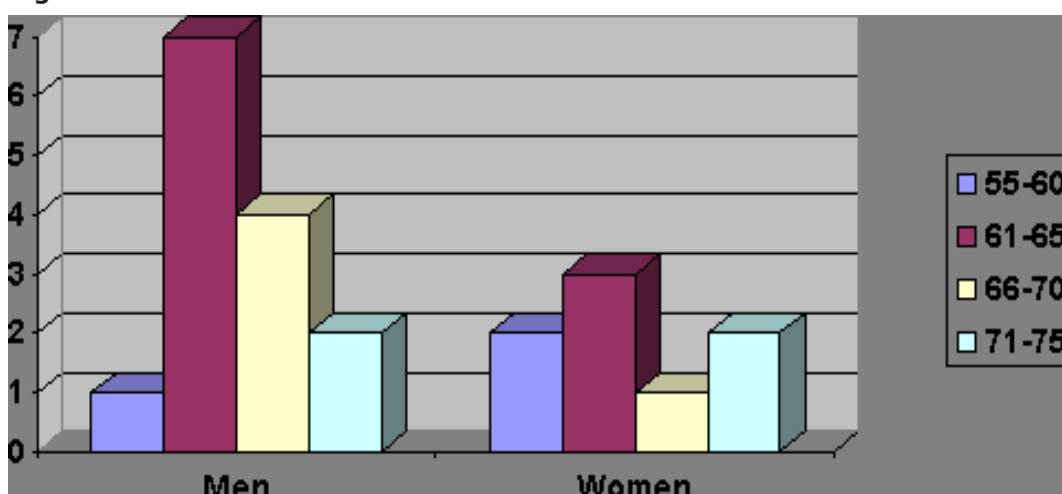
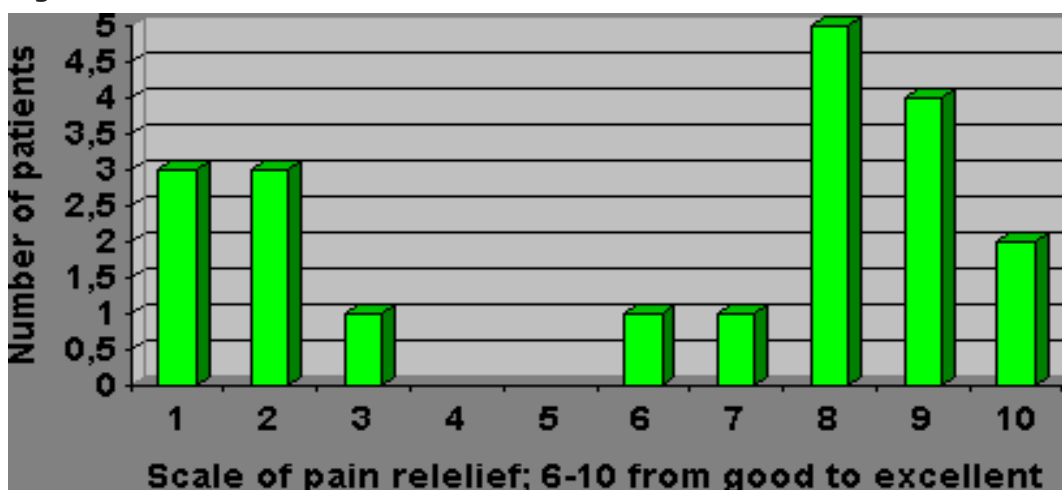


Fig. 2



DISCUSSION:

Arthrosis of the knees is a very painful condition and not uncommon in the population in old age. Many of the patients suffering from arthrosis are using drugs ranging from OTC-medicine such as paracetamol and acetylsalicylic acid (Aspirin) to NSAID-drugs. Both medications are known to have side effects mostly as stomach disorders with pain and not seldom haemorrhage of the stomach. Pain@Gone seems to have an effect which is on the same level as drugs. Pain@Gone can therefore be an alternative painkilling treatment to patients waiting for an operation or patients who does want to be operated.

REFERENCES:

1. Ole Asbjørn: Treatment of acute tennis elbow with transcutaneous nerve stimulation (1999)
2. Metzach & Wall: Pain mechanism, a new theory, Science vol. 150, 1965
3. Vinterberg, Donde, Andersen: TNS som smertelindring hos patienter med rheumatoid artrit, Uges. f. læger, 140, nr. 21, 1978
4. Hansen, Bendix et al: Lændesmerter. Rapport udsendt af Dansk selskab for intern Medicin, 1995
5. Smerter, særttryk Månedsskrift for praktisk lægegerning, 1996