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USING OF ELECTRICAL NERVE STIMULATION IN PATIENT WITH
DIABETIC NEUROPATHY

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Introduction: Neuropathy in most cases occurs as a manifestation of other pathological conditions. Currently, there are about 400 diseases, one of the signs of which is the defeat of nerve fibers. Most of them are quite rare and for many clinicians basic pathology which is accompanied by the development of neuropathy is a diabetes mellitus. In developed countries, it takes one of the first places on the incidence of neuropathy (30%). According to various studies, diabetic neuropathy is detected in 10-100% of patients with diabetes. One of the main clinical manifestations of neuropathy is a chronic pain syndrome that negatively affects the quality life of the patient.

Aim: To evaluate the use of percutaneous electrical nerve stimulation (PENS) in the management of patients with painful diabetic peripheral neuropathy.

Material and methods: A total of 50 adult patients with type 2 diabetes and peripheral neuropathic pain of more than 6 months duration involving the lower extremities were randomly assigned to receive active PENS (needles with electrical stimulation at an alternating frequency of 15 and 30 Hz) and sham (needles only) treatments for 3 weeks. Each series of treatments was administered for 30 min three times a week according to a standardized protocol. After a 1-week washout period, all patients were subsequently switched to the other modality. A 10-cm visual analog scale (VAS) was used to assess pain, physical activity, and quality of sleep before each session. The changes in VAS scores and daily requirements for oral analgesic medication were determined during each 3-week treatment period. Patients completed the MOS 36-Item Short-Form Health Survey (SF-36), the Beck Depression Inventory (BDI), and the Profile of Mood States (POMS) before and after completion of each treatment modality. At the end of the crossover study, a patient preference questionnaire was used to compare the effectiveness of the two modalities.

Results and discussion: Compared with the pain VAS scores before active (6.2 +/- 1.0) and sham (6.4 +/- 0.9) treatments, pain scores after treatment were reduced to 2.5 +/- 0.8 and 6.3 +/- 1.1, respectively. With active PENS treatment, the VAS activity and sleep scores were significantly improved from 5.2 +/- 1.0 and 5.8 +/- 1.3 to 7.9 +/- 1.0 and 8.3 +/- 0.7, respectively. The VAS scores for pain, activity, and sleep were unchanged from baseline values after the sham treatments. Patients' daily oral nonopioid analgesic requirements decreased by 49 and 14% after active and sham PENS treatments, respectively. The post-treatment physical and mental components of the SF-36, the BDI, and the POMS all showed a significantly greater improvement with active versus sham treatments. Active PENS treatment improved the neuropathic pain symptoms in all patients.

Conclusions: Percutaneous electrical nerve stimulation is a useful nonpharmacological therapeutic modality for treating diabetic neuropathic pain. In addition to decreasing extremity pain, PENS therapy improved physical activity, sense of well-being, and quality of sleep while reducing the need for oral nonopioid analgesic medication.