

Neuromodulation FREMS in the treatment of diabetic peripheral arterial disease

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Background: Peripheral arterial disease (PAD) may be asymptomatic, may be associated with intermittent claudication or may be associated with critical limb ischaemia. Patients with critical limb ischemia should be revascularized to minimize the chance of limb loss. In absence of tissue damage, also with low ankle arterial pressure and low oxymetric values, there are no consistent evidence to support specific treatment. Presence of peripheral neuropathy, with loss of pain sensation, leads diabetic patients with PAD at high risk of limb loss. **FREMS** neuromodulation (frequency rhythmic electrical modulation system), utilized for the treatment of diabetic neuropathy, was demonstrate to produce vasoactive products, in particular VEGF. For these evidences we can suppose that FREMS therapy can be useful in the treatment of PAD when oxymetric values are low. **Aim of the study:** this prospective study was designed to determine if the use of FREMS neuromodulation in diabetic patients with peripheral limb ischaemia, is effective on oxymetric values and pain free walking distance improvement.

Materials and methods: fourteen patients with PAD, were evaluated with transcutaneous oxymetry and with a standardized treadmill testing. 18 limbs with oxymetric values (T_{cp}O₂) below 50mmHg were founded. For each patients oxymetric test was repeated after one month to verify values stability. All patients received ten consecutive session of **FREMS** therapy. After one and three months we performed a transcutaneous oxymetry and patients with claudicatio (n.6) repeated treadmill walking test. **Results:** 18 legs were examined: baseline oxymetric values were 26.9±14.4mmHg (mean ±SD). After one month, from the end of FREMS therapy, oxymetric values increased to 38.8±20.7mmHg, with a p value of 0.01 compared to the baseline values. Moreover at 3 months values further increased at 48±10.1, p<0.01 compared to baseline values. After FREMS therapy patients with claudicatio demonstrated improvement in pain free walking distance at one and three months (p<0,001). **Conclusions:** in diabetic patients with PAD, FREMS therapy seems achieve considerable effects on improvement of oxymetric values and pain free walking distance. In absence of indications for revascularization this therapy can achieve a good amelioration without risk for the patients.