



New Possibilities for The Treatment of Type 2 Diabetes Mellitus by Means of External Electrical Muscle Stimulation

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Background and Objectives

Lately it was shown in a study, that by external electrical muscle stimulation (EMS) the sensitivity to insulin is being improved. By means of a functional EMS obviously the distribution of glucose-transport-protein GLUT-1 and GLUT-4 is being increased. Aim of the study was to examine whether a 6 week „treatment“ with EMS of patients with type 2 diabetes (T2DM) will lead to the reduction of body weight, BMI and HbA_{1c}.

figure 1

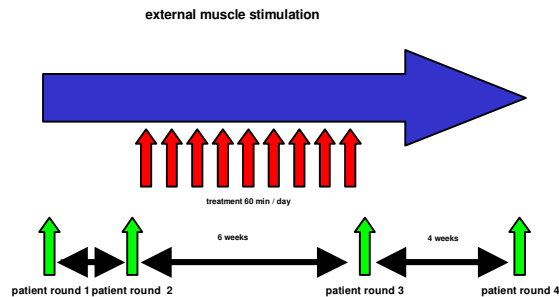
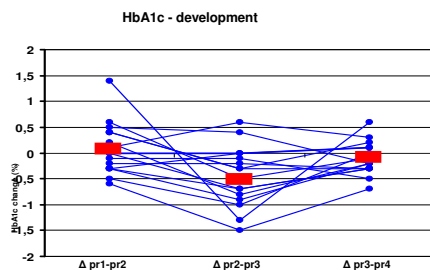


figure 3



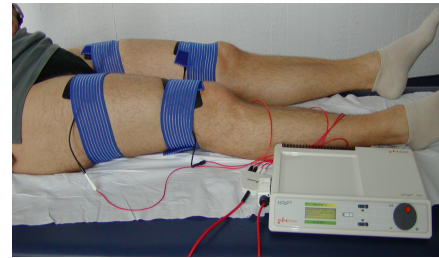
Results

A total of 16 patients with T2DM (ages 58 ± 11 ; 69% male; BMI 34 ± 5 kg/m²; HbA_{1c} $7.5 \pm 1\%$; period of diabetes 8 ± 6 years) were examined. After a 6 week treatment a significant reduction in body weight (107.2 vs. 105.5 kg; $p < 0.05$) as well as a reduction in the HbA_{1c} (7.5 vs. 7.1% ; $p = 0.08$) was observed. The average weight reduction was at 1.4 kg, the BMI was reduced by 0.6 kg/m² and the HbA_{1c} by 0.6% .

Conclusions

In the framework of this study, for the first time a positive effect on EMS on clinically relevant end points of patients with T2DM could be demonstrated. Further controlled studies will show, whether the use of EMS will represent a new possibility for the (additive) treatment of T2DM.

figure 2



Methods

T2DM patients, who were only treated with a diet and/or oral anti diabetics were included in this 12 week study. After an introductory phase of 2 weeks with the use of an EMS unit, the HiToP® 191 unit (gbo Medizintechnik AG, Rimbach/Germany) was given at the patients' disposal. On average, the test persons used the unit daily during the following 6 weeks. Alternately, the electrodes were placed in the area of the musculature of thighs and the shank. Each period of application and intensity was recorded by the units. After this 6 week period of treatment the units were given back. The course of the above mentioned parameters was documented further for the following 4 weeks without EMS.

figure 4

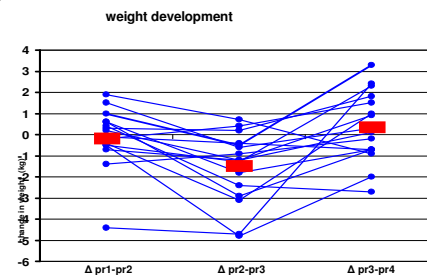


figure 5

