Oral polysensography (OPSG) of the tongue force

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Introduction

The electrostimulation (EMS) of the mouth floor muscles is an innovative procedure for therapy in obstructive sleep induced apnea syndrome (OSAS). So far there are only few scientific findings about the influence on sleep parameters and morphology of mouth floor muscles.

Material and Methods

In 17 patients with OSAS and 9 healthy probands over a time period of 4 weeks 2 times daily the enoral-cutaneous EMS was applied by using the apparatus BMR PolyStim 262 (Bio-Medical Research Company) over a time period of 4 weeks. The training parameters in all probands were previously determined and the real training time was controllable. In all patients and probands the measurement of the lingual force was done before stimulation and in the fourth week under stimulation by the polysensographical system Sensoral (SensoMedical Company). A calibrated Sensor FlexiForce TM Single Serial Button (= SSB-T; CMV Hoven Company): thickness 0.127 mm, width 15 mm, length 160 mm, was connected to it by a digital, multifunctional interface. The area on the sensor which registers the forces had a diameter of 10 mm. In addition, a plastic disc (thickness 1 mm, width 15 mm) was fastened to the back of the sensor. The sensor was fixed to the palate by histo acrylic glue one centimeter behind the maxilllary front teeth.

Results

EMS was well tolerated by all patients and probands. There were no side effects. At first, putting pressure on the sensors was found to be difficult and required some training and concentration of the patients and probands. In all healthy probands as well as in the OSAS patients after 4-week stimulation therapy an increase of the tongue force could be found. On average the amount of increase of lingual force was minimaly 7% and maximaly 99% (mean 31%). In the group of healthy probands the increase was between 14 % and 39 % (mean 28%).

Conclusions

The polysensography is a new method which enables an exact determination of the tongue force and is a suitable technique to prove the effects of EMS. In addition, it was demonstrated that the EMS is as effective in OSAS patients as in healthy probands.

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