

## FUNCTIONAL MAGNETIC STIMULATION FOR TREATMENT OF URINARY INCONTINENCE – PRESENTATION OF PULSEGEN DEVICE

### Aims of Study

Functional magnetic stimulation represents a new method for conservative treatment of urinary incontinence (UI). The first results on successful treatment were published by Galloway in 1999 (1). The magnetic stimulation is usually performed at the office (NEOCONTROL Treatment Chair) on the outpatient basis. But, recently we managed to create a device (PULSEGEN, Picture 1), which produced a continuous magnetic stimulation of the pelvic floor and could be used for stimulation at home.

The aim of the present study was to determine the succes of magnetic stimulation in treatment of patients with urinary incontinence using the magnetic field generated by the PULSEGEN device.

### Methods

The diagnosis of UI was confirmed on the basis of history, clinical investigation, pad- and Q-tip testing as well as by means of perineometry (PFX device) and urodynamic investigations (WIEST – Audit: cystometry, profilometry, flowmetry). After the diagnosis of UI was set, the patient received PULSEGEN device producing a continuous magnetic field of the intensity  $B=10 \mu\text{T}$ , 20 Hz. The stimulator was glued to a pad and the patient was instructed to wear it through the night for 3 months. The patient received a diary to record the daily number of hours of stimulation as well as the total number of voiding per day at the beginning and at the end of the 3-months treatment. At the second visit at the office all investigations performed at the initial examination were repeated in every patient and the final success of treatment evaluated. For the statistical analysis we used the StatSoft Statistica software (nonparametric descriptive statistics, Wilcoxon Matched Pairs Test), and  $p<0.05$  was considered statistically significant.

### Results

10 women with UI were included in this study, 4 of them with stress-, 3 with urge-, and 3 patients with mixed incontinence. The average age of the patients was 57.8 years (46-72 years), and the UI symptoms were present for 10.3 years on the average (1-20 years). The magnetic stimulation was performed during the night only (6.9 hours on the average) for 73.6 days (52-90 days). The number of voiding per day, frequency and nocturia were significantly decreased after magnetic stimulation ( $z=2.5$ ;  $p=0.011$ ), ( $z=2.3$ ;  $p=0.021$ ), and ( $z=2.2$ ;  $p=0.027$ ), respectively. The strenght of pelvic muscles also improved significantly after magnetic stimulation ( $p=0.012$ ). Among the urodynamic variables, none of them changed significantly after magnetic therapy: pUo (Closure Pressure) ( $z=1.8$ ,  $p=0.07$ ), FS (First Sensation) ( $z=1.3$ ,  $p=0.20$ ), C (Compliance) ( $z=0.5$ ,  $p=0.65$ ), BC (Bladder Capacity) ( $z=1.9$ ,  $p=0.059$ ).

Patients reported improvement in 80% (8 / 10) and every second patient (50%) wanted to continue with the magnetic stimulation.

### Conclusions

The results showed, that magnetic therapy worked well especially for the treatment of urge incontinence, for the mechanism involved not being completely understood. We actually observed the decrease in day-time frequency and nocturia. The urodynamic investigation confirmed the increase in bladder capacity, and further, first sensation also appeared later after magnetic stimulation, however this events remained non-significant due to the small study group. We feel that magnetic therapy with PULSEGEN device represents an effective, non-invasive option for treatment of patients with urinary incontinence. This kind of treatment could be an option for those women, who experienced side effects when taking anticholinergics or pain during electrical stimulation. However we realize, that this beneficial effect of PULSEGEN device should also be confirmed in a placebo-controlled, double blind study on a larger group of patients.

### Reference

1. Galloway NT, El-Galley RE, Sand PK, Apell RA, Russell HW, Carlan SJ. Extracorporeal magnetic innervation therapy for stress urinary incontinence. *Urology* 1999; 53(6):1108-11.

Picture 1: PULSEGEN device

