

655

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EXTRACORPOREAL MAGNETIC STIMULATION FOR THE TREATMENT OF OVERACTIVE BLADDER SYMPTOMS

Hypothesis / aims of study

Magnetic stimulation continues to evolve as a non-invasive technique for stimulating the sacral nerves and pelvic floor and maybe activates the inhibitory reflex pathway to the detrusor via a mechanism similar to that of electrical stimulation. We investigated the efficacy and effects of extracorporeal magnetic stimulation (EMS) for patient with overactive bladder (OAB) symptoms on frequency/volume chart and urodynamic parameters.

Study design, materials and methods

A total of 26 patients (2 men and 24 women; mean age 45 years) with the OAB symptoms were studied. We applied 10Hz. repetitive magnetic stimulation for 20 minutes, twice or thrice a week, totally 15 times. The magnetic stimulator unit was set on an armchair type seat and applied to patients fully clothed. Patients with severe vaginal atrophy, pelvic prolapse, cardiac disorder including on demand heart pacemakers, metallic implant, neurogenic bladder dysfunction, pregnancy, and previous pelvic radiation, were excluded from study. We asked patients to complete 3-day frequency/volume chart and answer a quality of life questionnaire before, 1, 3, and 6 months after the last stimulation. The response to treatment was defined as a 30% or more decrease in the mean number of voids. Also, filling cystometry (CMG) was performed in 11 cases to evaluate urodynamic parameters before and 1 month after last stimulation.

Results

At 1, 3, and 6 months there was a decrease in mean number of voids daily by 41.5% (from 14.7 ± 4.7 to 8.6 ± 2.0), 38.1% (9.1 ± 1.8), and 36.1% (9.4 ± 1.9) respectively ($p < 0.001$). Before treatment 1 or more episodes of urge incontinence were presented in 8 patients (31%) and resolved in 4 cases after stimulation. In contrast, no significant change was observed in the mean of functional bladder capacity before and after stimulation (310 ± 132.6 mL. vs. 330.1 ± 133.2 mL, $p = 0.176$). 17 of the 26 patients (65%) responded favorably to EMS. The therapeutic effect persisted in 16 patients (94%) at 6-month follow-up. In these patients, the mean number of voids daily at 1-, 3-, and 6- month follow-up were 8.5 ± 2.1 , 9.0 ± 2.1 , and 9.2 ± 2.4 ($p = 0.562$). Contrary to the symptom relief, urodynamic investigations showed no significant changes on bladder capacity at first desire to void and maximum bladder capacity ($n = 11$). Filling CMG before stimulation revealed a detrusor overactivity in 7 patients. After stimulation detrusor overactivity was resolved in 2 patients. The mean bladder capacity and detrusor pressure at first uninhibited contraction in patients with detrusor overactivity showed no significant changes. Quality of life after treatment was rated as 'most satisfied' by 3 patient (12%), 'satisfied' by 10 (38%), 'fair' by 9 (35%), and 'dissatisfied' by 4 (15%) at 6-month follow-up. No adverse effects were noted by stimulation.

Interpretation of results

EMS significantly improved OAB symptoms (65%) and most patients satisfied to the results. Furthermore, improvements appear to maintain at least 6 months after treatment. These results suggest that EMS may have a long-term efficacy.

Concluding message

The novel use of EMS may be a promising alternative treatment modality for OAB symptoms.