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# THE SHORT-TERM EFFECT OF FUNCTIONAL MAGNETIC STIMULATION ON SYMPTOMS OF REFRACTORY NEUROPATHIC OVERACTIVE BLADDER SYNDROME IN WOMEN

Hypothesis / aims of study

Functional magnetic stimulation (FMS) has been approved as a conservative treatment method for overactive bladder syndrome (OAB) by the United States Food and Drug Administration in 1998 [1]. Since then, several studies have tried to evaluate the effect of this kind of treatment. Results of some of these studies and meta-analyses suggest that FMS improves OAB symptoms in the short- and medium-term, while others could not confirm its efficacy [1-3]. The aim of our study was to evaluate the short-term effect of FMS on bothersome lower urinary tract symptoms in women, who suffer from refractory neuropathic OAB. Neuropathic OAB is usually a consequence of nerve entrapment by disc protrusion, spinal stenosis or neural foramina narrowing. In our experience, these patients are especially difficult to treat, as the first- and second-line conservative therapy often does not result in improvement of their condition.

Study design, materials and methods

Women with OAB and coexisting chronic degenerative lumbar spine disease in whom first- and second-line conservative therapy did not relieve the symptoms were included in this prospective study. Contraindication for participation in the study were pregnancy, active urinary tract infection (UTI) and implanted pacemaker or cardioverter defibrillator. Women who were taking an anticholinergic or beta-agonist were able to continue with the therapy during stimulation.

Before FMS, a thorough urogynaecological history was taken in each patient. Then, an urogynaecological examination with transvaginal ultrasound, the Q-tip test, stress test and urinary flowmetry with post-voiding residual volume measurement were performed. Patients also filled out the following questionnaires: *Incontinence Impact Questionnaire 7* (IIQ-7), *Urogenital Distress Inventory 6* (UDI-6), *Patient Perception of Intensity of Urgency Scale* (PPIUS), and *Urinary Incontinence Quality of Life Scale* (I-QOL) along with a three-day bladder diary.

FMS was performed using “magnetic chair”, which stimulates lumbar and pelvic area simultaneously. Each patient received 16 FMS courses in 2 months, meaning on average 2-3 courses per week. Approximately 1 month after the therapy, a brief urogynaecological history was taken and the patients filled out the questionnaires and the bladder diary once again.

Descriptive statistics were used to describe basic patients’ characteristics. Non-parametric paired samples test was used to compare results before and after FMS. Statistical significance was set at $p<0.05$.

Results

Thirteen women were included in the study; one was excluded because she developed an UTI right after the beginning of the FMS. Overall, 12 patients were included in the analysis. Their average age was 63±15 years (range 23-75 years), ten patients (83.3%) were menopausal, and 10 (83.3%) were taking an anticholinergic or beta-agonist before and during FMS.

When comparing number of daytime and night-time voids, number of pads used per day, PPIUS score, and urgency symptoms bother score, there was a statistical significant decrease in all variables except number of pads used per day (table 1).

Table 1: Comparison of number of daytime and night-time voids, number of pads used per day, PPIUS score, and urgency bother score before and after FMS.

| Variable | Before FMS | After FMS | p-value |
|---|---|---|---|
| Number of daytime voids [No±SD, range] | 8.2±3.4 (3.5-13) | 5.9±3.1 (1.5-11) | 0.007 |
| Number of night-time voids [No±SD, range] | 5.2±5.5 (2-20) | 2.7±2.7 (0-9) | 0.005 |
| Number of pads used per day [No±SD, range] | 2.5±2.8 (0-8) | 2.1±2.2 (0-6) | 0.197 |
| PPIUS [value±SD, range] | 3.2±0.7 (2-4) | 2.5±0.9 (1-3,5) | 0.016 |
| Urgency bother score [values±SD, range] | 68.7±15.6 (44-90) | 52.7±26.4 (5-80) | 0.008 |

When comparing questionnaires’ scores before and after FMS, there was a statistically significant decrease in UDI-6 and IIQ-7 scores. Although all of the I-QOL components and the total score improved after the FMS, the difference was not statistically significant.

Table 2: Comparison of UDI-6, IIQ-7, I-QOL Avoidance, Psychosocial Impact, Embarrassment, and Total scores before and after FMS.

| Variable | Before FMS | After FMS | p-value |
|---|---|---|---|
| UDI-6 [value±SD, range] | 75.4±24.7 (25-100) | 34±19.5 (0-62.5) | 0.004 |
| IIQ-7 [value±SD, range] | 65.5±33.5 (0-95.1) | 15.8±16.9 (0-52.4) | 0.004 |
| I-QOL Avoidance [value±SD, range] | 18.3±9.2 (9-35) | 22.8±8.6 (12-38) | 0.059 |
| I-QOL Psychosocial Impact [value±SD, range] | 20.9±9.7 (9-39) | 26±11.1 (14-44) | 0.075 |
| I-QOL Embarrassment [value±SD, range] | 12.8±5.4 (7-24) | 14.5±5.7 (9-25) | 0.245 |
| I-QOL Total [value±SD, range] | 51.9±23.6 (28-98) | 63.3±24.3 (38-106) | 0.054 |

Eleven (91.7%) patients would recommend FMS to their friends. Only two (16.7%) stated their condition did not improve after the stimulation, one of them was found to develop an UTI immediately after the FMS and was treated appropriately. Five (41.7%) women were extremely satisfied, one (8.3%) very satisfied, and four (33.3%) satisfied with the results of FMS.

Interpretation of results

According to our results, FMS significantly decreases the number of daytime and night-time voids in women with refractory neuropathic OAB. It does not seem to decrease the number of pads used per day, but in our experience, some women keep on using pads because of the feeling of safety rather than the incontinence episodes. Moreover, FMS significantly improves PPIUS, urgency bother, UDI-6, and IIQ-7 scores, but the difference in I-QOL scores was not statistically significant. It seems that FMS has some positive short-term effect on lower urinary symptoms of the group of patients, which we often find most difficult to treat. The therapy was well accepted by the patients. Some of them experienced lower back or back thigh pain during stimulation, but the pain was only transient and subsided after the stimulation. In the future, it would be necessary to determine the duration of these positive effects and evaluate whether these patients would benefit from repetitive FMS courses.

Concluding message

FMS significantly improves bothersome lower urinary tract symptoms in women, who suffer from refractory neuropathic OAB, and decreases the number of daytime and night-time voids in the short term.

References


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Disclosures


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