

INTRAVAGINAL ELECTRICAL STIMULATION AS A TREATMENT OPTION FOR WOMEN WITH OVERACTIVE BLADDER

Hypothesis / aims of study

The aim of the study was to evaluate the effectiveness of intravaginal electrical stimulation as a treatment option in women with Overactive Bladder syndrome

Study design, materials and methods

Between June 2005 and April 2006, we performed a prospective study involving 16 women who had clinical symptoms of urgency and increased daytime frequency, with or without urgency incontinence and nocturia, suggesting Overactive Bladder (OAB) syndrome. The patients received and signed a consent form allowing their inclusion in the study. The treatment protocol was applied after approval by the Ethics in Research. The patients included underwent intravaginal neuromuscular electrical stimulation twice a week for three months, a total of 24 sessions. To this end, we used device Dualpex 961 (Transcutaneous Electrical Stimulator), version 2000 with software version v1.5a, Quark Medical Products, which has electrical current bipolar, alternating and balanced stimulation. The device was calibrated before the implementation of the protocols. The probe used for application of electric current is intravaginal probe with circular electrodes. The electrical parameters used in all sessions were: frequency of 10Hz, pulse time of 500 μ s, a continuous stimulation and the intensity varied according to the maximum tolerable for each patient. A detailed medical history was aimed to collect data to characterize the Overactive Bladder. We also considered information regarding menstrual history, past surgical, obstetric and drug's abuse that could impair the function of lower urinary tract. The evaluation was focused on the neurological function of the nerves supplying the lumbosacral dermatomes that innervate the bladder and urethra. We evaluated: the motor power, deep tendon reflexes, sensitivity and integrity of the perineal sacral reflexes. Women included in the study were analyzed in relation to the symptoms of Overactive Bladder evaluated by bladder diary, urodynamic study, the values assigned to the evaluation of pelvic floor muscle function by digital palpation, and the items of the questionnaire of quality of life - King's Health Questionnaire prior to treatment and reassessed by the same methods and examiner after the end of the protocol. Special purpose for this study, the diary recorded the use of perineal pads, the voiding volume, daytime urinary frequency, nocturia, fluid intake, incontinence and urgency episodes, every hour, within 24 hours, for three consecutive days. The urodynamic study was carried out by the usual technique, using the equipment Urosystem DS5600 plus, consisted of cystometric evaluation, which is consistent with the specifications recommended by the International Continence Society. The following parameters were analyzed: post void residual, maximum cystometric capacity, first desire to void and detrusor overactivity. The evaluation of the pelvic floor muscle function was done by digital palpation, and the woman was asked to contract the pelvic floor muscles in a similar way to hold the fingers of the examiner and to prevent their removal. The ability to contract or not was recorded with the calculation of resistance and the maximum time that the contraction could be sustained by assigning the note according to the classification proposed by Ortiz et al in 1997. The patients were submitted to the Questionnaire Quality of Life (King's Health Questionnaire - KHQ), which consists of twenty-one questions divided into eight areas: perception of general health, impact of urinary incontinence, limitations on daily activities, physical limitations, social limitations, personal relationships, emotions and sleep / disposal. To analyze the results we applied the Wilcoxon test to compare the variables before and after treatment in each item evaluated. Was fixed at 0.05 or 5% ($\alpha < 0.05$) the level of rejection of the null hypothesis.

Results

The results are based on clinical improvement and quality of life of women undergoing treatment. Analysis of the three days bladder diary showed significant improvement in symptoms of urinary frequency ($p=0.0015$) and nocturia ($p=0.0017$), the use of perineal pads decreased significantly after treatment ($p=0.0087$). We observed after the treatment significant improvement following urodynamic data: cystometric capacity ($p=0.0139$) and the first desire to void ($p=0.0021$). The detrusor overactivity was found in 10 women before the application of electrical stimulation protocol and at the end of the treatment only two maintained it. A significant increase in the strength of the pelvic floor muscles ($p = 0.0059$) after stimulation was also found. The questionnaire of quality of life demonstrated statistically significant improvement in the following items: physical limitations ($p = 0.0170$), emotions ($p = 0.0146$) and limitations of daily activities ($p = 0.0207$). There was improvement in quality of life in other items (social limitations, sleep and disposition, general health perception, incontinence impact and severity measures), but the results were not statistically significant.

Interpretation of results

The symptoms of overactive bladder were analyzed using data collected from the bladder diary. Although all patients were previously instructed about the correct completion of the diary, there was great difficulty in the same fill it properly, it was necessary sometimes to accomplish corrections reported by the patient herself. In some cases, there was the need to repeat the achievement of the same, because the failure to complete could lead to misleading statistical results. With regard specifically to nocturia and urinary frequency showed statistical significance. The use of pads was significantly lower after treatment, indicating that women felt drier at the end of the protocol. The neuromuscular electrical stimulation can inhibit the parasympathetic neurons, by contracting the pelvic floor muscles in order to produce the reflex inhibition of detrusor. The more powerful muscular contraction is generated by electrical stimulation, the more effective the inhibitory nerve activity will be.

Hypertrophy of muscle fibers can increase the urethral closure pressure and improve the muscular support of the pelvic floor. Our study showed the hypertrophic effect of pelvic floor muscles by neuromuscular electrical stimulation by assessing the strength of the pelvic floor muscles.

We emphasize the importance of the negative impact of the overactive bladder on quality of life. It is known that only depression has greater impact when compared to patients with diabetes, hypertension or overactive bladder. This reinforces the needs of research for methods to treat overactive bladder.

Physical therapy, as a conservative treatment for overactive bladder, is an effective method, also safe and inexpensive, which helps to expand the therapeutic possibilities of the treatment for this disease. However, since there are several ways to relieve the symptoms of patients with overactive bladder, a multiprofessional team is required and the training of health professionals in identifying, routing and / or treating patients with this condition is also needed.

Concluding message

At the end of this study, we concluded that intravaginal neuromuscular electrical stimulation proved to be a effective therapeutic method in women with Overactive Bladder in relation to assessments of bladder diary, the urodynamic study, pelvic floor muscle function and quality of life of patients included in this research.

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| <i>What were the subjects in the study?</i> | HUMAN |
| <i>Was this study approved by an ethics committee?</i> | Yes |
| <i>Specify Name of Ethics Committee</i> | Ethics Committee in Research of the University of Santo Amaro, Sao Paulo / Brazil |
| <i>Was the Declaration of Helsinki followed?</i> | Yes |
| <i>Was informed consent obtained from the patients?</i> | Yes |