THE FRENCH EXPERIENCE ON EXTRACORPOREAL MAGNETIC STIMULATION

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PELVIC FLOOR REHABILITATION

Conservative treatment is any therapy that does not involve medical or surgical intervention. It includes principally, lifestyle interventions, physical therapies, bladder retraining and anti-incontinence devices.
Graded muscle training alone, or in combination with other physical adjuncts such as biofeedback, electrical stimulation and vaginal cones, is used to rehabilitate dysfunction and strengthen the pelvic floor muscles.
(1). In Western Europe, for over one decade, pelvic floor rehabilitation including pelvic floor muscle training is commonly used in combination with other adjuncts such as biofeedback and electrical stimulation.
Most of the equipment available on the market provides different modalities : transvaginal electrical stimulation, surface EMG, intercavity EMG and pressure biofeedback.
Data on pelvic floor exercises as a conservative treatment show an average improvement of 65- 75%. (2,3).
Physical therapy should aim to increase pelvic floor muscle strength with emphasis on improving urinary and fecal continence. The use of electrical energy to stimulate the nervous system is as old as electricity itself. Electrical currents are applied therapeutically to stimulate muscle contraction usually through activation of the nerve(s) supplying the muscle (s). Electrical stimulation is used to stimulate the pelvic floor muscle contraction to increase awareness of the pelvic floor muscles, teach an effective vaginal pelvic floor muscle contraction, increase periurethral pressure and to inhibit detrusor contraction (4, 5).

MAGNETIC ELECTRICAL STIMULATION THERAPY

In addition to surgery, which has been used for a number of years, in the treatment of pelvic floor disorders new therapies that have been highly praised have been developed. Among these new techniques, Extracoporeal Magnetic Innervation (ExMI) was introduced in 1998 for the treatment of urinary incontinence (6,7).
Recently, extracorporeal magnetic therapy has been investigated as an alternative to electrical stimulation. Based on a highly focused magnetic field, this deep inner therapy innervates the muscles of the perineum by activating the nerve structures. A magnetic field penetrates all body tissues without alteration, falling off in magnitude only as the inverse square of the distance(8). ExMi works by creating a therapeutic pulsed magnetic field simultaneously reaching nerves and muscles in order to control urinary and fecal continence. Instead of the conventional therapy using probes in lying position, ExmI allows the patient to be seated on a armchair. A special magnetic field generator has been designed and built into the seat of an armchair. When the patient is seated on the armchair there is only a short distance between the magnet and the buttocks of the patient and the pelvic muscles and the levator ani and centered close to the magnetic field. The parameters such as frequency, intensity, time of rest and work can be adjusted depending on the clinical situation.

THE FRENCH EXPERIENCE

Objective

We asked Neotonus to provide us with this new therapy because of a number of unsatisfactory results after conservative treatment in different cases. Installed in September 1998 in our Private Clinic in Paris, prior to being set up in French Universities in other cities. In Europe the term « stimulation » was substituted to « innervation ». In France, we call this therapy « Stimulation Magnétique Extracorporelle ». We tried to determine in two selected groups with high risk factors, how EMS could help patients suffering from severe incontinence.

Materials and methods

We started by treating two groups of patients. Group I consisted of 75 women, mean age was 72 years, Group II composed of 45 men ,mean age was 63 years.
75 women recruited urodynamically diagnosed with severe urinary incontinence and wearing an average of 5 pads per day. 5O% had USI, 25% urge incontinence and 25% mixed incontinence. 90% of these patients had undergone surgery for pelvic prolapse or USI. History of leakage was more than 5 years. Pelvic floor reeducation was advocated to these patients with an average of 20 sessions. None of them were cured but some showed improvement after « conventional » physical therapy. The Oxford Testing demonstrated grade of Levator ani below 3.
45 men were enrolled in this study. All were suffering from post-prostatectomy incontinence and wearing an average of 6 pads a day.
90% had intrinsic sphincter deficiency and 45 % had some component of bladder dysfunction but only 28% actually had incontinence as a result of detrusor instability. History of leakage was more than 2 years. Pelvic floor reeducation was recommended to these patients with an average of 40 sessions. None of them were cured or improved by this therapy.
In both groups, the Quality of Life Questionnaire was completed including an evaluation of urinary symptoms and subjective, severity measures.
These patients were enrolled in this study for a month prospective outcomes trial of twice weekly therapy for 16 sessions. Each session consisted of 10 minutes at 10 Hz and 10 minutes at 5O Hz.
Patients were evaluated at baseline with a one day diary, pad weigh test, perineometry and Q&L questionnaire. Measures were repeated at the end of the treatment.
In Group I, the average number of pads used per day was reduced from 5 to 3 pads per day. No female patients were dry but 51% were really improved using only one pad a day . The frequency of leak episodes per day was reduced from 6 to 3 before and after treatment.
In Group II, the average number of pads used per day was reduced from 6 to 3 pads per day. 65 % had significant improvement in daytime leakage and 5O% drop in pad usage. Most of the male patients were satisfied with this treatment. After treatment subjective and objective improvement was observed ; at the same time a significant reduction in aggressiveness and anxiety was observed. A general improvement in the patient's well-being was also noted.
Because of a great number of young females presenting pelvic floor relaxation after childbirth, we decided to propose such therapy for those still suffering from either sexual dysfunction or USI. These women had undertaken a complete program of

pelvic floor exercices for 3 to 6 months without success. The protocol was modified and we added another frequency of 35 Hz for 5 minutes. 35 Hz is known to elicit a comfortable tetanic contraction with minimal fatigue. The initial selection of the « on » time may be determined by PFM assessment with the stimulus hold time set at 1 or 2 sec. greater than the active contraction. This « on » time is gradually incresased to 10 sec as the treatment progresses.
25 young females, with a mean age of 32 years enrolled in this study. All had vaginal deliveries with obstetrical risk factors and at least 20 sessions of pelvic floor rehabilitation. 65 % had a gaping vagina with sexual disturbances and 35 % had USI. 45% of the patients had pudendal nerve damage. After 16 sessions in 3 months : twice a week for 4 weeks and once a week for 8 weeks, the results were satisfactory. More than 50% were cured in this group with risk factors. This is an excellent result in this type of pelvic floor disorders with damage to the pudendal innervation.

Conclusion

In our 2 years experience with Electrical Magnetic Stimulation, with 145 patients treated, we confirm that this therapy is excellent in most cases and very effective in others. Our European patients who are accustomed to pelvic floor rehabilitation for many years, particularly appreciate the advantages of: no probes, no skin contact, no gel, no need to undress for treatment. EMS is an effective treatment method for USI and mixed incontinence, is successful for females and males, is very well tolerated by patients and preferred over conventional electrical stimulation if used. In the future, we are sure that this new therapy should be advised to patients with chronic pelvic pain, double incontinence, and could be the first line therapy in the geriatric population, with the exception of those with pace-makers and metallic implants.

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