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Title: URODYNAMIC-BASED ANALYSIS OF FEMALES RECEIVING EXTRACORPOREAL MAGNETIC INNERVATION (EXMI) THERAPY FOR TREATMENT OF URINARY INCONTINENCE

Aims of Study:

Extracorporeal magnetic innervation therapy (ExMI) is a conservative, non-invasive treatment for female urinary incontinence. ExMI generates a pulsed magnetic field that induces electrical depolarization of the nerves within the pelvic floor, causing a contraction of the pelvic floor muscles (1). This study analyzes urodynamic results obtained on two subgroups of females undergoing ExMI therapy to determine effectiveness of treatment.

Methods:

41 female patients with a mean age of 62.5 +/- 10 years and demonstrable urinary incontinence were evaluated in a prospective clinical trial. Eligible patients were ambulatory, neurologically normal, had normal urinalysis and were not receiving treatment for incontinence.

Treatment consisted of 16 sessions, each lasting approximately 25 minutes. Pulsed magnetic stimulation included 10 minutes of intermittent low frequency stimulation at 5Hz, 10 minutes of intermittent high frequency stimulation at 50Hz, and a five-minute rest interval. The outcome measure was a complete urodynamic examination, conducted at baseline and after the final treatment.

Baseline urodynamic tests identified 24 (58.5%) women with stress urinary incontinence (SUI) and 17 (41.5%) with mixed incontinence or overactive bladder. These 17 patients were divided into two groups: Group I included 9 (22%) women with SUI and partial involuntary bladder contractions without leakage; Group II included 8 (19.5%) women with strong involuntary bladder contractions leading to urinary leakage.

Results:

Post-treatment urodynamics on the total sample showed an increase of 36% in the mean volume at first filling sensation ($p=0.024$) and 17.7% in the mean volume at normal voiding sensation ($p=0.005$). Average increase in valsalva leak point pressure value (VLPP) was 24.3% ($p=0.001$) after treatment. Ten patients (24.4%) became dry. All patients who became dry had VLPP higher than 80 cm H₂O prior to treatment. Seven patients (77.7%) in Group I no longer demonstrated bladder overactivity. No patients in Group II demonstrated improvement in bladder behavior.

Conclusions:

After ExMI therapy, 24% of patients with demonstrable leak episodes were dry. There was improvement in VLPP after treatment, which correlated to the clinical parameters. Treatment of low VLPP was less effective, and uncontrolled bladder overactivity did not respond to this approach. Patients with mild and partially controlled involuntary bladder contractions demonstrated the greatest improvement from ExMI therapy. No support was provided for this study.

(1) Galloway N, El-Galley R, Sand P, Appell R, Russell H, Carlan S. (2000). Update on Extracorporeal Magnetic Innervation (ExMI) Therapy for Stress Urinary Incontinence. *Urology*, 56 (6A):82-86.