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Percutaneous Tibial Nerve Stimulation Improves Female Sexual Function in Women With Overactive Bladder Syndrome

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ABSTRACT

Introduction: Percutaneous tibial nerve stimulation (PTNS) is an established treatment for overactive bladder (OAB), especially in women with other concomitant pelvic disorders, such as sexual impairment.

Aim: To evaluate the impact of PTNS on female sexual dysfunction (FSD) in women undergoing PTNS for OAB and analyze the results.

Methods: An observational prospective study was conducted in two Italian centers. Consecutive women undergoing PTNS for dry OAB were enrolled from May 2013 to June 2014. All patients were asked to complete the Female Sexual Function Index (FSFI), the OAB short-form questionnaire, and a 24-hour bladder diary at baseline and 3 months later, at the end of the PTNS course. Patients with an FSFI total score no higher than 26.55 at inclusion were considered as presenting with FSD. Patients with an FSFI total score higher than 26.55 after treatment (if the increase in FSFI score was $\geq$20%) were considered FSD objective responders.

Main Outcome Measures: Sexuality was assessed using the FSFI. The 24-hour bladder diary and completed OAB short-form questionnaire were assessed before and after PTNS to evaluate OAB symptoms.

Results: Forty-one women were evaluable. Twenty-one of 41 women (51%; mean age = 51 ± 10.67 years) were considered affected by FSD at inclusion. All FSFI domains showed statistically significant improvement in women with FSD ($P < .05$). In particular, 9 of 21 patients with FSD (43%) objectively responded (before treatment: mean FSFI total score = 18.11, range 10.8–26.3; after treatment: mean FSFI total score = 31.04, range 27.6–35). Also, women without FSD at baseline reported statistically significant improvement in their sexual function based on FSFI scores ($P < .05$). No significant correlations were seen between data questionnaires.

Conclusion: PTNS improves sexual function in women with dry OAB. This amelioration is independent of urinary symptoms. Further studies are needed to confirm a possible role of PTNS in treating FSD.

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Key Words: Percutaneous Tibial Nerve Stimulation; Overactive Bladder; Female Sexual Dysfunction; Neuromodulation

INTRODUCTION

Several studies have documented significant correlations between female sexual dysfunction (FSD) and lower urinary tract dysfunction (LUTD).[1]

Positive results in sexual function have been described in women who underwent sacral neuromodulation (SNM) for LUTD and/or other dysfunctional pelvic disorders. However, the correlation between changes in sexual function and improvements in LUTD after neuromodulation therapy is unclear and only limited data regarding these relations have been provided.[2]

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In addition to SNM, percutaneous tibial nerve stimulation (PTNS) is a an established treatment for overactive bladder (OAB), especially in women with other pelvic floor disorders.[3] To the best of our knowledge, only one study has investigated the effect of PTNS on sexuality in a heterogeneous population using a non-validated questionnaire equally constructed for men and women affected by LUTD.[4]

The aim of this study was to evaluate the impact of PTNS on sexual function in women undergoing PTNS for OAB symptoms using validated questionnaires.

METHODS

In this pilot two-center observational study, consecutive women affected by idiopathic dry OAB refractory to standard conservative treatments and underwent PTNS were enrolled from May 2013 to June 2014. The research was conducted according to the Declaration of Helsinki, the European Guidelines on Good Clinical Practice, and relevant national authority requirements and ethics committees. OAB was defined according to the International Continence Society.[5] Only women (≥18 years old) in stable relationships for at least 3 months and sexually active during the month before enrollment and during the study were included. Exclusion criteria were use of anti-muscarinics, psychoactive, and/or estroprogestinic drugs within 3 months before the study; pregnancy; pelvic pain; history of psychiatric disorders or neurologic diseases; pelvic organ prolapse stage higher than 2 according to the Baden-Walker system; diabetes or other endocrinologic diseases; urogynecologic anatomic abnormalities and/or neoplasia including endometriosis; genitourinary infections; or pacemaker. Women with urinary or fecal incontinence also were excluded. Patient characteristics included age, parity, smoking habit, hormonal status, martial and relationship status, medications, previous pelvic surgery, and any other medical comorbidity.

Outcome Measures

Sexuality was assessed using the Female Sexual Function Index (FSFI), a validated 19-item questionnaire that assesses six domains of sexual functioning.[6] A 24-hour bladder diary and an OAB short-form questionnaire (OAB-q SF) were completed before and after PTNS to evaluate OAB symptoms.[7]

Patients with an FSFI total score no higher than 26.55 were considered as presenting with FSD. Items from the FSFI and OAB-q SF were analyzed separately. Patients showing a decrease of at least 50% of urgency episodes were considered OAB objective responders. Patients who required long-term treatment to maintain the benefits for their LUTD were considered OAB subjective responders. Patients with a pre-treatment FSFI total score no higher than 26.55 who had a post-treatment FSFI score higher than 26.55 after PTNS (if the increase in FSFI was ≥20%) were considered FSD objective responders.

PTNS Technique

All patients were treated with 12 weekly 30-minute PTNS sessions. A 34-gauge needle electrode was inserted 3 to 5 cm cephalad to the medial malleolus and then connected to an external low-voltage (9-V) pulse generator (Urgent PC; Uroplasty, Inc, Minnetonka, MN, USA). Patients underwent electrical stimulation with an adjustable-amplitude fixed pulse width of 200 milliseconds and a frequency of 20 Hz.

Statistical Analysis

Data were collected using Excel 2010 (Microsoft, Redmond, WA, USA). Statistical analyses were performed using IBM SPSS Statistics 19.0 (IBM Corp, Armonk, NY, USA). Two-tailed paired Student t-test was applied to compare scores on the FSFI and OAB-q SF at each baseline and at the end of each PTNS session. A non-parametric Wilcoxon signed-rank test was used for the voiding diary. Correlations between differences in FSFI and OAB-q SF scores were evaluated by Pearson coefficient analysis. A P value less than or equal to .05 was considered significant. Descriptive statistical tests were used to compare demographics and clinical information between the two groups.

RESULTS

Forty-one of 47 enrolled patients (89%) were evaluable and included for statistical analysis. Five eligible patients were excluded during follow-up: two dropped out of the study, one did not complete the bladder diary at the end of the PTNS course, and two were excluded because they had not engaged in sexual intercourse during treatment.

Patients Characteristics

Twenty of 41 patients (49%) were menopausal. None of the variables included in the analysis were identified as predictors of poorer FSFI total and domain scores, severity of OAB, or better PTNS response.

Sexual Function

Twenty-one of 41 women (51%) were considered affected by FSD at inclusion (FSD group). Validated quantification of sexual function showed significant improvements in overall sexual function, desire, and satisfaction in the groups with and without FSD. The mean FSFI total scores for women without FSD were 29.87 at baseline and 31.56 at the end of treatment ($P = .013$). In the FSD group, all FSFI domains showed statistically significant improvement. In particular, 9 of 21 patients (43%) with FSD were identified as FSD objective responders, with a mean FSFI total score before PTNS of 18.11 (range 10.8−26.3) vs 31.04 (range 27.6−35) after PTNS. FSFI results are listed in Table 1.

OAB Symptoms

Twenty-five of 41 patients (61%) were considered subjective responders for OAB, whereas 20 patients (49%) were considered