



# 143- PILOT STUDY EVALUATING THE EFFECTS OF TRANSCUTANEOUS TIBIAL NERVE STIMULATION ON URINARY SYMPTOMS IN FEMALE PATIENTS WITH MULTIPLE SCLEROSIS REPORTING OVERACTIVE BLADDER

POLAT C<sup>1</sup>, TULEK Z<sup>1</sup>, KURTUNCU M<sup>2</sup>, GUNDUZ T<sup>2</sup>, PANICKER JN<sup>3</sup>, ERAKSOY M<sup>2</sup>

1. Istanbul University-Cerrahpasa Florence Nightingale Faculty of Nursing, Istanbul, Turkey
2. Istanbul University Istanbul Faculty of Medicine Department of Neurology, Istanbul, Turkey
3. University College London Hospitals National Hospital for Neurology and Neurosurgery Department of Uro-Neurology, London, UK

## Introduction

It has been estimated that 80%-90% of patients with MS suffer from LUTS over the course of the disease (1). The most common problem in patients with MS is an overactive bladder, characterized by urgency and/or urge incontinence, day/night time frequency, and may have a huge impact on quality of life.

Percutaneous tibial nerve stimulation (PTNS) has been shown to be an effective treatment for MS-related OAB symptoms. Transcutaneous tibial nerve stimulation (TTNS) is an alternative technique that involves using a TENS machine to stimulate the tibial nerve through surface electrodes (2,3). The technique opens up the possibility of home-based neuromodulation, however, the evidence base is rather limited.

The aim of this study is to investigate the effect of TTNS on OAB symptoms in MS patients.

## Methods

This was a pretest-posttest study conducted at the outpatient MS clinic of a university hospital in Istanbul between September 2017 and March 2018.

The sample consisted of 15 female patients older than 18 years old, with a diagnosis of definite MS, with no history of attack within last 1 month, with an EDSS <7 and OAB score >8, not taking antimuscarinics or taking with a stable dose.

TTNS was taught to the patients by a nurse in the clinic and patients were asked to perform this at home for 30 minutes every day for 6 weeks.



Electrical stimulation was applied unilaterally by using charge-compensated 200  $\mu$ s pulses with a pulse rate of 20 Hz, as used in previous studies. The intensity level was then chosen as the intensity immediately under the threshold determining motor contraction (plantar flexion).

Patients underwent different assessments before and after treatment, including a 3-day bladder diary, evaluation of post-void residue and validated questionnaires including Overactive Bladder Questionnaire (OAB-V8) and Qualiveen instrument. The patients were re-assessed after 6 weeks of TTNS.

OAB-V8: 8 items (0 to 5 score), total score 0-40, OAB score >8 indicates OAB syndrome.

Qualiveen-SIUP: 30 items (0 to 4 score), higher scores indicate a very negative impact.

Qualiveen-GQOL: 9 items (-2 to 2 score), Higher score indicates more good QoL

## Results

The mean age of the 15 women participating in the study was 42.4 (range: 28-59), 60% (n= 9) had an education below or equal to high school level and 53.3% (n=8) were married.

The majority (n=12/15) had RRMS and mean duration of the disease was 11y (range: 2-35). Mean EDSS score was 3 (range:2-6) and according to the Bladder functional symptom score of the EDSS, 46.7% (n=7) experienced incontinence frequently. Duration of bladder problems was 7 (range:1-35) years and 60% (n=9) were on antimuscarinics.

After TTNS, total OAB-V8 scores dropped significantly from 32 (range:22-39) to 22 (range:3-35) (p=0.06), Qualiveen-sui scores dropped from 2.5 (1.1-2.5) to 1.6 (0.7-3.7) (p= 0.010) and post-void residue decreased from 43 (11-82) to 15 (10-46) (p=0.001). Similarly, improvement was noted in different parameters recorded in the 3-day-bladder diary (Table 1).

Table 1. Lower Urinary Tract Symptoms Over Time Based on OAB-V8, Qualiveen, Postvoiding Residua, and 3-Day Bladder Diary

	Baseline	6 wk	z	p
OAB-v8	32 (22-39)	22 (3-35)	-2.766	0.006
Qualiveen- SIUP	2.5 (1.1-2.5)	1.6 (0.7-3.7)	-2.585	0.010
Qualiveen-GQoL	0.1 (-1.4- 0.7)	0.3 (-1.8- 1.3)	-1.927	0.054
Postvoiding residua (mL)	43 (11-82)	15 (10-46)	-3.295	0.001
<b>3-Day Bladder Diary</b>				
Frequency	9 (4.6-17.6)	6.6 (4.6-13.0)	-2.104	0.035
Nocturia	1.6 (0-4.3)	1.3 (0-2.6)	-1.526	0.127
Urgency	3.6 (0-14.3)	2.0 (0-11)	-1.689	0.091
Urge Urinary incontinence	4 (0-12)	1.3 (0-11)	-2.043	0.041
Bladder volume (mL)	1825 (733-3739)	1000 (633-3083)	-2.543	0.011

Note. OAB-V8: Overactive Bladder Questionnaire, Qualiveen-SIUP: Specific Impact of Urinary Problems on Quality of Life, Qualiveen-GQoL: General Quality of Life. All values are median and range (in parenthesis). P values based on analysis via the Wilcoxon test.

## Conclusions

After a six-weeks protocol of daily 30-minute TTNS, overactive bladder symptoms decreased and quality of life increased in MS patients.

TTNS treatment was shown to improve urinary symptoms and quality of life in MS patients reporting overactive bladder. This pilot study has shown that good outcomes can be achieved with TTNS treatment.

## References

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