Posterior Tibial Nerve Stimulation for the Treatment of Neurogenic Detrusor Underactivity in Multiple Sclerosis Patients:

Insights from a Single-Center Experience

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Introduction:

Multiple sclerosis (MS) patients often present with Lower Urinary Tract Dysfunction, mainly storage LUTS, which significantly affects their quality of life. Percutaneous tibial nerve stimulation (PTNS) is widely used in the treatment of non-neurogenic and neurogenic detrusor overactivity (NDO) in multiple sclerosis (MS)[1]; however, few studies have studied the outcome of PTNS on neurogenic detrusor underactivity. The International Continence Society has defined DU as a contraction of reduced strength and/or duration, resulting in a failure to achieve complete bladder emptying within a normal time span. This study aims to report the effect of the PTNS on neurogenic detrusor underactivity in Multiple Sclerosis patients.

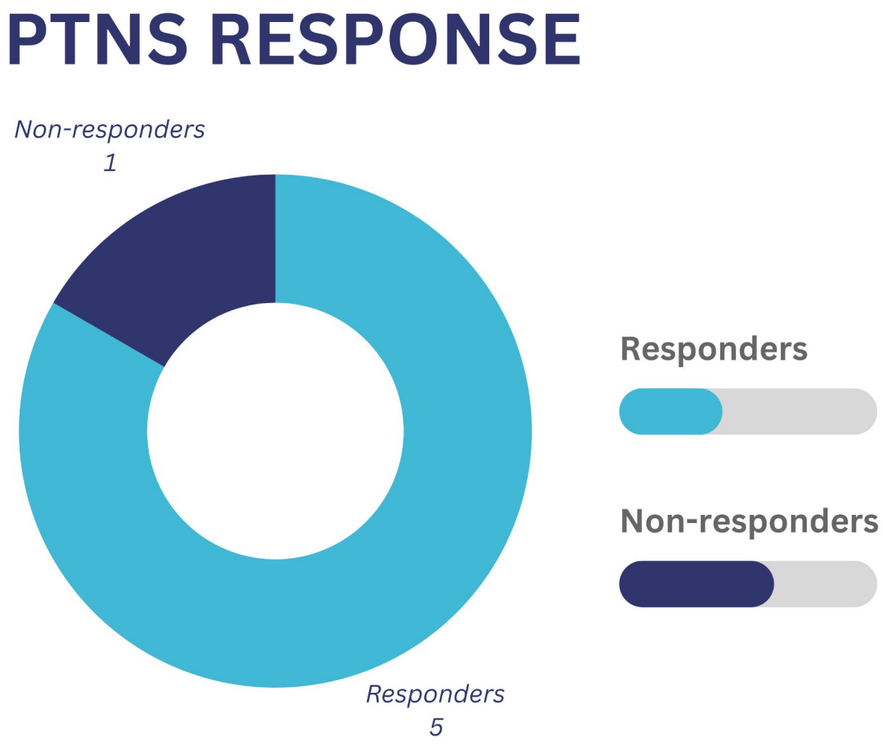
Study design, materials and methods:

A retrospective study was conducted between January 2019 and March 2024. It included all patients who were diagnosed with Multiple Sclerosis, with urodynamic diagnosis of detrusor underactivity and were refractory to conservative therapy, and subsequently underwent PTNS. Patients with bladder outlet obstruction, other neurogenic causes of detrusor underactivity and those who discontinued PTNS sessions were excluded. We assessed the number of responders (bladder diary, improvement >50% in symptoms) and those who continued beyond 12 sessions to maintenance sessions (12 sessions, consisting of one session every two weeks for the first six sessions, followed by one session each month for the remaining six sessions).

Results:

A total of 6 patients with Multiple Sclerosis and neurogenic detrusor underactivity were found based on video urodynamics. 4 patients were diagnosed with Relapsing Remitting Multiple Sclerosis (66.6%) and 2 patients with stable Multiple Sclerosis (33.4 %). Age ranged from 38 to 51 years of age (Mean 40.83 +/- 10.46). 5 were female (83.3%) and 1 male (16.7%). All the patients had voiding LUTS. One patient had frequency and urgency in addition to retention. One patient was dependent on self-catheterization.

All patients received 12 sessions of PTNS. 5 patients (83.3%) patients responded well with improvement >50% and 1 (16.7%) patient did not respond, and who has stable Multiple Sclerosis. The patient who is Self-catheterization dependent abandoned CISC and started to void with PVR< 100 ml. All 5 responders proceeded to 12 maintenance sessions. 4 out of 5 maintained good responses>50% and 1 patient had his symptoms worsened.



Interpretation of results:

This study showed PTNS improved outcomes and quality of life[2] in Multiple Sclerosis patients with detrusor underactivity. All responders went further to 12 maintenance sessions. Interestingly enough, all the Relapsing-Remitting Multiple Sclerosis patients maintained a good response even after the maintenance sessions.

Conclusions:

This study suggests that PTNS may have the potential for substantial good outcomes in Multiple Sclerosis patients with detrusor underactivity. Prospective studies of extended duration and larger sample sizes are needed to determine optimal candidates and assess long-term outcomes and potential complications.

References

1. Sapouna V, Zikopoulos A, Thanopoulou S, Zachariou D, Giannakis I, Kaltsas A, Sopheap B, Sofikitis N, Zachariou A. Posterior Tibial Nerve Stimulation for the Treatment of Detrusor Overactivity in Multiple Sclerosis Patients: A Narrative Review. *Journal of Personalized Medicine*. 2024; 14(4):355.
2. Lane GI, Mao-Draayer Y, Barboglio-Romo P, Clemens JQ, Gupta P, Dunn R, Qin Y, Cameron AP, Stoffel JT. A prospective observational cohort study of posterior tibial nerve stimulation in patients with multiple sclerosis: design and methods. BMC Urol. 2020 May 27;20(1):58. doi: 10.1186/s12894-020-00629-y. PMID: 32460741; PMCID: PMC7251681.