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IDIOPATHIC OVERACTIVE BLADDER: DOES A FAILURE OF TREATMENT WITH TRANSCUTANEOUS POSTERIOR TIBIAL NERVE STIMULATION PREDICT THE SACRAL NEUROMODULATION OUTCOME?

HYPERACTIVITE VESICALE IDIOPATHIQUE : L'ECHEC DE LA NEUROSTIMULATION TIBIALE PREDIT-IL LE RESULTAT DE LA NEUROMODULATION SACREE ?

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LISTE DES ABREVIATIONS

OAB	Overactive Bladder
PTNS	Posterior Tibial Nerve Stimulation
PPTNS	Percutaneous Posterior Tibial Nerve Stimulation
TPTNS	Transcutaneous Posterior Tibial Nerve Stimulation
BoNT	Botulinum toxin A intradetrusor injection
SNM	Sacral Neuromodulation

IDIOPATHIC OVERACTIVE BLADDER: DOES A FAILURE OF TREATMENT WITH TRANSCUTANEOUS POSTERIOR TIBIAL NERVE STIMULATION PREDICT THE SACRAL NEUROMODULATION OUTCOME?

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ABSTRACT

Objectives

To evaluate if a failure of treatment with transcutaneous posterior tibial nerve stimulation (TPTNS) can predict the outcome of sacral neuromodulation (SNM) in idiopathic overactive bladder (OAB).

Methods

A retrospective study was conducted in three university hospitals and included all patients who were suffering from idiopathic OAB and were treated with SNM after a TPTNS treatment between October 2008 and May 2018. The primary objective was to assess if a failure of treatment with TPTNS was predictive of SNM outcome. TPTNS failure was defined as no improvement of the USP score (Urinary Symptom Profile) after 3 months of treatment. SNM efficacy was defined as a definitive device implantation in patients achieving a 50% objective or subjective improvement after a test period (stage 1).

Results

Overall, 28 of the 43 patients included achieved at least 50% objective and/or subjective improvement during stage 1 and underwent an Interstim II implantation (65.1%).
There were 36 patients with a USP score evaluation during TPTNS. Among the 23 patients who had a definitive SNM implantation, 9 patients (39.1%) had not had an improvement of their USP score after 3 months of TPTNS and for the 13 patients who did not have a definitive device, 5 patients (38.5%) had not shown any improvement under TPTNS of their USP score under TPTNS at 3 months. There was no statistically significant difference between the two groups (p=0.97) or when we used USP-OAB sub-score at 3 months (p=0.3). There was no predictive parameter significantly associated with a response to SNM.

Conclusion

In the present series, the outcome of TPTNS treatment do not predict outcome of SNM in idiopathic OAB.

KEYWORDS: Overactive bladder; failure; transcutaneous tibial nerve stimulation; sacral neuromodulation; outcome

INTRODUCTION

The global prevalence of overactive bladder (OAB) in France has been estimated to be 14.4% in 2016 [1] and some predicted it could reach 20% in the worldwide population in 2018 [2]. This is a public health concern because it affects patients' quality of life and is a significant economical burden [3].

Various algorithms of management have been proposed in the past years; current French and international guidelines recommend: behavioral therapy and lifestyle changes as a first-line treatment, then pharmacological treatments (i.e. anticholinergics or beta-3 adrenergic receptor agonists) as second lines therapeutic options. Botulinum toxin A intradetrusor injections (BoNT), sacral neuromodulation (SNM) or posterior tibial nerve stimulation (PTNS) are the third-line therapeutic options before invasive surgery [4–6]

Percutaneous posterior tibial nerve stimulation (PPTNS) has been proven effective in patients with OAB in several randomized controlled trials versus sham, anticholinergics and lifestyle modification[7]. A percutaneous needle is used by the care provider to stimulate the tibial nerve once weekly. Because of its relative invasiveness, it has been considered as a third-line therapy.

Fifteen years ago, a less invasive and cheaper method was proposed to stimulate the posterior tibial nerve using two surface electrodes. Transcutaneous posterior tibial nerve stimulation (TPTNS) has recently been shown to be non-inferior compared to PPTNS [8].

Any prospective studies has demonstrated TPTNS efficacy and excellent safety profile [9–11].

In many Europeans centers TPTNS is offered earlier than PPTNS in the OAB therapeutic algorithm. When TPTNS fails, BoNT or SNM are considered as a third-line therapy. Both

are supported by high-level of evidence studies and the ROSETTA trial has shown that they have similar efficacy at 2 years [12].

The mechanisms of action of PTNS and SNM are not fully elucidated but both are assumed to modulate bladder afferent signaling and central neural control of the micturition reflex [13,14]. In daily practice, some urogynaecologists are reluctant to offer SNM when PTNS has failed, assuming that it could have low chance of success by relying on similar mechanisms of action.

However, no study has yet aimed to assess the outcomes of SNM in patients who did not respond to PTNS [15].

The objective of this study was to evaluate the outcomes of SNM in patients previously treated with TPTNS.

METHODS

STUDY DESIGN

After institutional review board approval, we conducted a retrospective study in three French University Hospitals. The patients included were above 18 years of age and had OAB symptoms treated between October 2008 and May 2018 initially with TPTNS and subsequently with SNM. We excluded patients with previous surgery for OAB (i.e. SNM or BoNT) and other indications of SNM (bladder pain syndrome, non-obstructive urinary retention and fecal incontinence). TPTNS was used as first-line therapy or second-line therapy after failure of pharmacological treatments. SNM was offered after TPTNS at the physicians' discretion because of either lack of TPTNS efficacy, difficulty of TPTNS utilization or patients' preference.

PRE-TREATMENT EVALUATION

All patients had a complete urological investigation before treatment with TPTNS. The following data were recorded: past medical history and physical examination, number of pads, bladder diary data. The severity of symptoms was evaluated with the: Urinary Symptom Profile questionnaire (USP) score and the USP-OAB subscore. All patients underwent urodynamics before TPTNS initiation.

TRANSCUTANEOUS POSTERIOR TIBIAL NERVE STIMULATION

Technique

TPTNS was performed with a UROstim Schwa medico 2 in all departments. The patients were taught how to use the device by a urology nurse specialist in a one-hour session. After this session, they carried out TPTNS at home by themselves.

The device is composed of a stimulator connected to two surface-electrodes (diameter 50mm) positioned 5cm above the medial malleolus and 2cm over the path of the tibial nerve. An electric bipolar stimulation was set to a frequency of 10 Hz and an impulsion of 150 micros for 20 minutes once or twice daily.

Follow-Up

Patients were seen at 3 and 6 months to assess treatment efficacy based on bladder diary, physical examination and USP score. There was no repeat urodynamic investigation. Depending upon treatment's efficacy and patient's compliance, TPTNS was either stopped or continued after these two visits

SACRAL NEUROMODULATION

Technique

Staged implant was used for all SNM. During stage 1, under general anesthesia, the S3 nerve root was stimulated with a tinned lead placed under fluoroscopic guidance. When a satisfactory motor response was obtained, the tinned lead was connected with a temporary external stimulator device for a test period of seven to fourteen days.

Patients who achieved at least 50% objective (USP score, bladder diary) and/or subjective improvement were implanted with the SNM definitive device (InterStim II®, Medtronic in all patients).

Follow-up

Postoperative complications after stage 1 and stage 2 were recorded. Patients were evaluated clinically on a regular basis with no standardized follow-up protocol.

OUTCOMES

The following patients' characteristics were collected: gender, age, bladder diary and urodynamic parameters.

The primary endpoint was the correlation between TTNS outcome (a good response or a failure) and SNM efficacy. TTNS failure was defined as no improvement of the USP score (Urinary Symptom Profile) after 3 months of treatment. SNM efficacy was defined as a definitive device implantation: patients who achieve 50% objective improvement or subjective improvement after a test period.

Then, for each of the two groups (SNM device definitive implantation or no implantation because of insufficient response over the test period) we evaluated the USP-OAB score after 3 and 6 months of TTNS treatment and change of the number of diurnal voids and nocturia episodes per 24 hours between the end of TPTNS and stage 1.

STATISTICAL ANALYSIS

Means and standard deviations were reported for continuous variables, and proportions for nominal variables. Comparisons between groups were performed using the $\chi 2$ test or Fisher's exact test for discrete variables, and Mann-Whitney test for continuous variables as appropriate. Change of continuous variables over time was assessed using the paired student t test and change of categorical variables over time was assessed using the McNemar test. Statistical analyses were performed using JMP v.12.0 software (SAS Institute Inc., Cary, NC, USA). All tests were two-sided with a level of $p < 0.05$ considered statistically significant.

RESULTS

PATIENT'S CHARACTERISTICS

Over the study period, fifty patients were treated with TPTNS before SNM; 6 were excluded from the final analysis because they had a neurologic condition and one patient because the indication for TPTNS was not OAB but non-obstructive urinary retention. The patients' characteristics are summarized in table 1. There were 35 women (81.4%) and the mean age of 71.4 +/- 9.2 years. Eighteen patients had detrusor overactivity on pretherapeutic urodynamic testing (43.9%) and the mean maximum cystometric capacity was 229.3 +/- 116.2 mL. On baseline bladder diary, the mean numbers of diurnal voids/24h and nocturia episodes/24h were 10.8 +/- 4.3 and 2.8 +/-1.8 respectively. The mean USP score (/39) and USP OAB subscore (/21) at baseline were 18.5 +/- 6.3 and 12.3 +/-3.6 respectively. TPTNS was used as the first-line OAB treatment in four patients (9.3%). All other patients had failed at least one antimuscarinic.

TPTNS AND SNM OUTCOMES

We included 43 patients and 7 were excluded for analyses because they lacked a USP score evaluation. After a median 169.5 days of TPTNS daily use, 14 patients (38,9%) had not had an improvement of their USP score after 3 months of TPTNS and none of the patients had achieved a 50% improvement of OAB symptoms according to the USP-OAB subscore.

Overall, 28 of the 43 patients included achieved at least 50% objective and/or subjective improvement during stage 1 and underwent an Interstim II implantation (65.1%). Eighteen of the implanted patients (41.8%) experienced OAB symptoms recurrence after

a median period of 582 days. Two patients had their neuromodulator explanted due to loss of efficacy after 24 and 40 months respectively. After a median follow-up period of 22.5 months, 12 of the 28 implanted patients (42.9%) had recurrence of their OAB symptoms.

No patients stopped TPTNS treatment because of side effects and only 2 because of difficulty in handling the device. The sacral neuromodulator was explanted in 2 patients because of infection.

Table 1 Patients' characteristics

	Population (n=43)
Mean age (years)	71.4 (62.3-80.6)
Female, n (%)	35 (81.4)
Mean daytime frequency	10.8 (8.6-13)
Mean number of nocturia episodes	2.78 (1.9-3.7)
Coexistant voiding symptoms, n (%)	4 (9.3)
Mean maximum cystometric capacity (ml)	229.7 (171.6-287.8)
Detrusor overactivity, n (%)	25 (58.1)
Mean maximum flow rate (ml/s)	17.3 (12.8-21.8)
Mean Post-void residual (ml)	21.6 (2.8-40.5)
Mean USP score (/39)	18.5 (15.3-21.6)
Mean USP-OAB subscore (/21)	12.3 (10.5-14.1)

RELATION BETWEEN TPTNS RESPONSE AND SNM EFFICACY

For these results, we excluded 7 patients who did not have a USP score evaluation. Among the remaining 36 patients, 23 patients (63.9%) underwent a definitive implantation: 9 patients (39.1 %) had not shown any improvement of the USP score after 3 months of TPTNS while 14 (60.9 %) had had an improvement of the USP score under TPTNS. Of the 13 patients who were not implanted with a definitive device, 5 (38.5 %) had not shown any improvement under TPTNS while 8 patients (61.5 %) had had an improvement of their USP score after 3 months of TPTNS. There was no statistically significant difference between the two groups (p=0.97) or when we used USP-OAB sub-score at 3 months (p=0.3). All results are presented in Table 2.

Table 2 Assessment of TPTNS efficacy at 3 and 6 months according to SNM implantation

			SNM outcomes		
			No SNM Implantation n (%)	**Definitive SNM implantation n (%)**	**p-value**
TPTNS outcomes before SNM treatment	**At 3 months**		**13 (36.1)**	**23 (63.9)**	
	USP score	improvement	8 (61.5)	14 (60.9)	0.97
		no improvement	5 (38.5)	9 (39.1)	
	USP-OAB score	improvement	8 (61.5)	10 (43.5)	0.3
		no improvement	5 (38.5)	13 (56.5)	
	At 6 months		**11 (45.8)**	**13 (54.2)**	
	USP score	improvement	7 (63.6)	7 (53.9)	0.7
		no improvement	4 (36.4)	6 (46.1)	
	USP-OAB score	improvement	4 (36.4)	7 (53.9)	0.44
		no improvement	7 (63.6)	6 (46.1)	

PREDICTIVE FACTORS OF SNM EFFICACY

Patients who underwent an Interstim II implantation tended to have smaller improvement with TPTNS as assessed by the USP-OAB subscore (+2.5% vs. -15.1%; p=0.13; table 3) and a shorter duration of TPTNS utilization (142.4 vs. 207.4 days; p=0.11). Patients who underwent Interstim II implantation tended to have more severe daytime frequency at baseline (11.6 vs. 9.5; p=0.06). There was no other parameter significantly associated with response to SNM (table 3).

Table 3 Univariate comparison of patients with sacral neuromodulator implanted vs. not

	Patients with no Interstim II Implanted (n=15)	**Patients with Interstim II implanted (n=28)**	**p-value**
Mean age (years)	72.2 (65.3-79.1)	72.5 (62.9-82.2)	0.84
Female, n (%)	12 (80)	23 (82.1)	0.99
Mean daytime frequency	9.5 (7.7-11.2)	11.6 (9.2-13.9)	0.06
Mean of nocturia	2.4 (1.6-3.1)	3 (2.1-4)	0.28
Mean cystometric capacity (ml)	267.33 (200.2-334.4)	211 (160.3-262)	0.22
Detrusor overactivity, n (%)	7 (46.7)	18 (64.3)	0.33
Mean baseline post-void residual (ml)	18 (2.3-33.7)	24.56 (3.7-45.4)	0.86
Mean baseline USP score	17.3 (14.1-20.4)	19.4 (16.2-22.6)	0.47
Mean baseline USP-OAB subscore	11.4 (9.5-13.3)	13 (11.2-14.7)	0.23
Duration of TPTNS utilization (days)	207.4 (+/- 142.9)	142.4 (+/-68.5)	0.11
Change of USP OAB subscore at last TPTNS visit (%)	-15.1 (+/- 0.2)	+ 2.5 (+/-0.3)	0.13

TPTNS: transcutaneous posterior tibial nerve stimulation

DISCUSSION

Our study is the first to assess the outcomes of SNM in OAB patients previously treated with PTNS. We found that SNM can provide significant improvement in patients who failed TPTNS and did not evidence statistically significant association between the response to TPTNS and the efficacy of SNM.

Posterior tibial nerve stimulation (PTNS) has become over the past decade a well-accepted third-line therapeutic option in patients with overactive bladder (OAB) [4,6,16]. The stimulation could be delivered to the posterior tibial nerve through two distinct routes: using a fine needle (percutaneous-PTNS) or using a surface electrode (transcutaneous-PTNS). While sham-controlled randomized trial (RCT) supporting the use of each of these two approaches for OAB do exist, the worldwide spread of transcutaneous-PTNS remains more limited despite significant possible advantages such as lower invasiveness and costs. Our cohort confirmed the excellent safety profile of TPTNS with no adverse events noted, no withdrawal for tolerance issues and only two discontinuations because of difficulty in handling the TPTNS device. Over the past decade, a growing number of randomized controlled trials have demonstrated the efficacy of TPTNS in patients with OAB [7]. Recently Ramírez-García and al. showed that TTNS is not inferior than PTNS [8]. As a result of these compelling evidence and of its non-invasiveness transcutaneous posterior tibial nerve stimulation is likely to move earlier in the OAB therapeutic algorithm as others studies already suggest [7,8,17]. Hence it is possible that clinicians face an increasing number of OAB patients who failed TPTNS and that the clinical issue addressed here, i.e. is SNM a relevant third-line therapy in this patients' population, becomes relatively common in daily practice.

In our study, 28 patients (65.1%) had a definitive implantation of SNM after stage 1. While this implantation rate is slightly lower than the one from the Insite trial [18], similar rates of implantation have been found in other "real life" series [14]. The other outcomes we observed with significant decrease in daytime frequency and nocturia and a maintained improvement in about 60% of patients after a median follow-up period of 22.5 months is in line with other SNM series and suggest that SNM might be as effective in non-responders to TPTNS as in other patients' populations.

Currently, the mechanisms of action of TTNS and SNM are not well known [19]. Both treatments act on afferent pathways from the bladder [20] and might act through a similar mechanism of neuronal modulation, however the absence of a correlation between TTNS and SNM efficacy in our series seems to contradict this theory. Weissbart et al. recently demonstrated a change of brain activity after sacral neuromodulation [21] and ten years ago, Finazzi et al. demonstrated a modification of cerebral plasticity after tibial nerve stimulation [22]. Both had an impact on the central nervous system. One could hypothesize that SNM effect could add up to posterior tibial nerve stimulation, further modulating central nervous system plasticity. In such a theory, TPTNS could be regarded as a "neoadjuvant" non-invasive therapy maximizing the chance of success of SNM. However, our findings would suggest the opposite. The tendency towards lower response to TPTNS of patients who were later implanted with Interstim II would indicate that TPTNS and SNM might rely on similar mechanisms of action and that effective TPTNS may diminish the amplitude of effect of SNM. Hence, hypothetically, some patients might not reach the 50% improvement threshold and be denied SNM implantation while they could have experienced greater improvement during stage 1 if naive of any nerve stimulation.

Further data are needed to elucidate the possible overlap in SNM and TPTNS effect and mechanisms of action.

Our study has several limitations that should be acknowledged. Current guidelines recommend that Interstim II should be implanted in patients with a 50% objective and/or subjective improvement after stage 1 [14]. We used this outcome as a surrogate of SNM efficacy which might be regarded as a drawback. Unfortunately, as in most retrospective series some data were missing which prevent to assess the impact of sacral neuromodulation using validated questionnaires. The lack of other parameters assessing objective and subjective improvement or quality of life scores over post SNM implantation follow-up was a limitation of the present study. To determine the efficacy of TPTNS, we used the USP score. This score was developed in France [23] and was later validated in English but has not been widely adopted in the literature and this might be seen as a limitation of our study. Another shortcoming of our series was the limited sample size and inherent lack of statistical power which limit the conclusions that could be drawn from the present study. Finally, one of the possible issues with TPTNS, which is done by the patient himself at home, is lack of patients' compliance. Data on patients' compliance with TPTNS can be extracted from the Urostim 2 device but were not available in the present cohort which could be seen as a study's limitation as some of non-responders to TPTNS may well have been poorly compliant patients.

CONCLUSION

Sacral neuromodulation is effective in OAB patients who discontinued TPTNS. TPTNS outcomes did not predict response to. Further studies are needed to confirm that TPTNS failure does not preclude the use of SNM in OAB patients.

REFERENCES

1. Cornu J-N, Amarenco G, Bruyere F, et al. Prévalence et prise en charge initiale de l'hyperactivité vésicale en France : une étude transversale. *Progrès en Urologie*. 2016;26(7):415-424. doi:10.1016/j.purol.2016.04.002

2. Irwin DE, Kopp ZS, Agatep B, Milsom I, Abrams P. Worldwide prevalence estimates of lower urinary tract symptoms, overactive bladder, urinary incontinence and bladder outlet obstruction: WORLDWIDE PREVALENCE OF LUTS. *BJU International*. 2011;108(7):1132-1138. doi:10.1111/j.1464-410X.2010.09993.x

3. Irwin DE, Mungapen L, Milsom I, Kopp Z, Reeves P, Kelleher C. The economic impact of overactive bladder syndrome in six Western countries. *BJU International*. 2009;103(2):202-209. doi:10.1111/j.1464-410X.2008.08036.x

4. Gormley EA, Lightner DJ, Faraday M, Vasavada SP, American Urological Association, Society of Urodynamics, Female Pelvic Medicine. Diagnosis and treatment of overactive bladder (non-neurogenic) in adults: AUA/SUFU guideline amendment. *J Urol*. 2015;193(5):1572-1580. doi:10.1016/j.juro.2015.01.087

5. Corcos J, Przydacz M, Campeau L, et al. CUA guideline on adult overactive bladder. *Canadian Urological Association Journal*. 2017;11(5):142. doi:10.5489/cuaj.4586

6. Nambiar AK, Bosch R, Cruz F, et al. EAU Guidelines on Assessment and Nonsurgical Management of Urinary Incontinence. *European Urology*. 2018;73(4):596-609. doi:10.1016/j.eururo.2017.12.031

7. Booth J, Connelly L, Dickson S, Duncan F, Lawrence M. The effectiveness of transcutaneous tibial nerve stimulation (TTNS) for adults with overactive bladder syndrome: A systematic review. *Neurourology and Urodynamics*. 2018;37(2):528-541. doi:10.1002/nau.23351

8. Ramírez-García I, Blanco-Ratto L, Kauffmann S, Carralero-Martínez A, Sánchez E. Efficacy of transcutaneous stimulation of the posterior tibial nerve compared to percutaneous stimulation in idiopathic overactive bladder syndrome: Randomized control trial. *Neurourology and Urodynamics*. 2019;38(1):261-268. doi:10.1002/nau.23843

9. Ammi M, Chautard D, Brassart E, Culty T, Azzouzi AR, Bigot P. Transcutaneous posterior tibial nerve stimulation: evaluation of a therapeutic option in the management of anticholinergic refractory overactive bladder. *International Urogynecology Journal*. 2014;25(8):1065-1069. doi:10.1007/s00192-014-2359-0

10. Sèze M de, Raibaut P, Gallien P, et al. Transcutaneous posterior tibial nerve stimulation for treatment of the overactive bladder syndrome in multiple sclerosis: Results of a multicenter prospective study. *Neurourology and Urodynamics*. 2011;30(3):306-311. doi:10.1002/nau.20958

11. Leroux P-A, Brassart E, Lebdai S, Azzouzi A-R, Bigot P, Carrouget J. Transcutaneous tibial nerve stimulation: 2 years follow-up outcomes in the management of anticholinergic refractory

overactive bladder. *World Journal of Urology*. 2018;36(9):1455-1460. doi:10.1007/s00345-018-2296-5

12. Amundsen CL, Komesu YM, Chermansky C, et al. Two-Year Outcomes of Sacral Neuromodulation Versus OnabotulinumtoxinA for Refractory Urgency Urinary Incontinence: A Randomized Trial. *European Urology*. 2018;74(1):66-73. doi:10.1016/j.eururo.2018.02.011

13. Choudhary M, van Mastrigt R, van Asselt E. Effect of tibial nerve stimulation on bladder afferent nerve activity in a rat detrusor overactivity model. *International Journal of Urology*. 2016;23(3):253-258. doi:10.1111/iju.13033

14. Goldman HB, Lloyd JC, Noblett KL, et al. International Continence Society best practice statement for use of sacral neuromodulation. *Neurourology and Urodynamics*. 2018;37(5):1823-1848. doi:10.1002/nau.23515

15. Liberman D, Ehlert MJ, Siegel SW. Sacral Neuromodulation in Urological Practice. *Urology*. 2017;99:14-22. doi:10.1016/j.urology.2016.06.004

16. Apostolidis A, Averbeck MA, Sahai A, et al. Can we create a valid treatment algorithm for patients with drug resistant overactive bladder (OAB) syndrome or detrusor overactivity (DO)? Results from a think tank (ICI-RS 2015). *Neurourology and Urodynamics*. 2017;36(4):882-893. doi:10.1002/nau.23170

17. Schreiner L, dos Santos TG, Knorst MR, da Silva Filho IG. Randomized trial of transcutaneous tibial nerve stimulation to treat urge urinary incontinence in older women. *International Urogynecology Journal*. 2010;21(9):1065-1070. doi:10.1007/s00192-010-1165-6

18. Siegel S, Noblett K, Mangel J, et al. Results of a prospective, randomized, multicenter study evaluating sacral neuromodulation with InterStim therapy compared to standard medical therapy at 6-months in subjects with mild symptoms of overactive bladder: Sacral Neuromodulation vs. Medication for OAB. *Neurourology and Urodynamics*. 2015;34(3):224-230. doi:10.1002/nau.22544

19. Gajewski JB, Kanai AJ, Cardozo L, Ikeda Y, Zabbarova IV. Does our limited knowledge of the mechanisms of neural stimulation limit its benefits for patients with overactive bladder? ICI-RS 2013: Mechanisms of Neural Stimulation. *Neurourology and Urodynamics*. 2014;33(5):618-621. doi:10.1002/nau.22610

20. Leng WW, Chancellor MB. How sacral nerve stimulation neuromodulation works. *Urologic Clinics of North America*. 2005;32(1):11-18. doi:10.1016/j.ucl.2004.09.004

21. Weissbart SJ, Bhavsar R, Rao H, et al. Specific Changes in Brain Activity during Urgency in Women with Overactive Bladder after Successful Sacral Neuromodulation: A Functional Magnetic Resonance Imaging Study. *The Journal of Urology*. 2018;200(2):382-388. doi:10.1016/j.juro.2018.03.129

22. Finazzi-Agrò E, Rocchi C, Pachatz C, et al. Percutaneous tibial nerve stimulation produces effects on brain activity: Study on the modifications of the long latency somatosensory evoked potentials. *Neurourology and Urodynamics*. 2009;28(4):320-324. doi:10.1002/nau.20651

23. Haab F, Richard F, Amarenco G, et al. Comprehensive Evaluation of Bladder and Urethral Dysfunction Symptoms: Development and Psychometric Validation of the Urinary Symptom Profile (USP) Questionnaire. *Urology*. 2008;71(4):646-656. doi:10.1016/j.urology.2007.11.100

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APPENDIX 1 : URINARY SYMPTOM PROFILE (USP) SCORE

Questionnaire de symptômes urinaires
Urinary Symptom Profile – USP®

Avant de commencer à remplir le questionnaire, merci d'inscrire la date d'aujourd'hui :

/__/ /__/ /____/
Jour Mois Année

Les questions suivantes portent sur l'intensité et la fréquence des symptômes urinaires que vous avez eu au cours des **4 dernières semaines**

Pour répondre aux questions suivantes, il vous suffit de cocher la case qui correspond le mieux à votre situation. Il n'y a pas de « bonnes » ou de « mauvaises » réponses. Si vous ne savez pas très bien comment répondre, choisissez la réponse **la plus proche de votre situation**

Nous vous remercions de remplir ce questionnaire dans un endroit calme et si possible seul(e). Prenez tout le temps qui vous sera nécessaire.

Une fois ce questionnaire rempli, remettez le à votre médecin.

Il peut vous arriver d'avoir des fuites d'urine lors de certains efforts physiques, soit importants (tels qu'une pratique sportive ou une quinte de toux violente), soit modérés (tels que monter ou descendre les escaliers) ou encore légers (tels que la marche ou un changement de position).

1. **Durant les 4 dernières semaines**, pouvez-vous préciser le nombre de fois par semaine où vous avez eu des fuites au cours d'efforts physiques :
   Merci de cocher une case pour chacune des lignes 1a, 1b et 1c.

	Jamais de fuite d'urine	Moins d'une fuite d'urine par semaine	Plusieurs fuites d'urine par semaine	Plusieurs fuites d'urine par jour
1a. Lors des efforts physiques importants	☐ 0	☐ 1	☐ 2	☐ 3
1b. Lors des efforts physiques modérés	☐ 0	☐ 1	☐ 2	☐ 3
1c. Lors des efforts physiques légers	☐ 0	☐ 1	☐ 2	☐ 3

Partie réservée au médecin :

Reporter sur l'échelle ci-dessous la somme des items 1a + 1b + 1c

SCORE « INCONTINENCE URINAIRE A L'EFFORT »

☺ 0 1 2 3 4 5 6 7 8 9 ☹

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Durant ces 4 dernières semaines et dans les conditions habituelles de vos activités sociales, professionnelles ou familiales :

2. Combien de fois avez-vous dû vous précipiter aux toilettes pour uriner en raison d'un besoin urgent ?

☐ 0	☐ 1	☐ 2	☐ 3
Jamais	Moins d'une fois par semaine	Plusieurs fois par semaine	Plusieurs fois par jour

3. Quand vous êtes pris par un besoin urgent d'uriner, combien de minutes en moyenne pouvez-vous vous retenir ?

☐ 0	☐ 1	☐ 2	☐ 3
Plus de 15 minutes	De 6 à 15 minutes	De 1 à 5 minutes	Moins de 1 minute

4. Combien de fois avez-vous eu une fuite d'urine précédée d'un besoin urgent d'uriner que vous n'avez pas pu contrôler ?

☐ 0	☐ 1	☐ 2	☐ 3
Jamais	Moins d'une fois par semaine	Plusieurs fois par semaine	Plusieurs fois par jour

4 bis. Dans ces circonstances, quel type de fuites avez-vous ?

☐ 0	☐ 1	☐ 2	☐ 3
Pas de fuites dans cette circonstance	Quelques gouttes	Fuites en petites quantités	Fuites inondantes

Durant ces 4 dernières semaines et dans les conditions habituelles de vos activités sociales, professionnelles ou familiales :

5. Pendant la journée, quel est le temps habituel espaçant deux mictions (action d'uriner) ?

☐ 0	☐ 1	☐ 2	☐ 3
Deux heures ou plus	Entre 1 heure et 2 heures	Entre 30 minutes et 1 heure	Moins de 30 minutes

6. Combien de fois en moyenne avez-vous été **réveillé(e)** la nuit par **un besoin** d'uriner ?

☐ 0	☐ 1	☐ 2	☐ 3
0 ou 1 fois	2 fois	3 ou 4 fois	Plus de 4 fois

7. Combien de fois avez-vous eu une fuite d'urine en dormant ou vous êtes-vous réveillé(e) mouillé(e) ?

☐ 0	☐ 1	☐ 2	☐ 3
Jamais	Moins d'une fois par semaine	Plusieurs fois par semaine	Plusieurs fois par jour

Partie réservée au médecin :

Reporter sur l'échelle ci-dessous la somme des items 2 + 3 + 4 + 4bis + 5 + 6 + 7

SCORE « HYPERACTIVITE VESICALE »

Durant ces 4 dernières semaines et dans les conditions habituelles de vos activités sociales, professionnelles ou familiales :

8. Comment décririez-vous votre miction (action d'uriner) habituelle durant ces 4 dernières semaines ?

☐ 0	☐ 1	☐ 2	☐ 3
Normale	Nécessité de pousser avec les muscles abdominaux (du ventre) ou miction penchée en avant (ou nécessitant un changement de position)	Nécessité d'appuyer sur le bas ventre avec les mains	Vidange par sonde urinaire

9. En général, comment décririez-vous votre jet d'urine ?

☐ 0	☐ 1	☐ 2	☐ 3
Normal	Jet faible	Goutte à goutte	Vidange par sonde urinaire

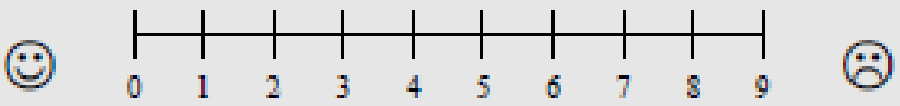
10. En général, comment s'effectue votre miction (action d'uriner) ?

☐ 0	☐ 1	☐ 1	☐ 2	☐ 3
Miction normale et rapide	Miction difficile à débuter puis s'effectuant normalement	Miction débutant facilement mais longue à terminer	Miction très lente du début jusqu'à la fin	Vidange par sonde urinaire

Partie réservée au médecin :

Reporter sur l'échelle ci-dessous la somme des items 8 + 9 + 10

SCORE « DYSURIE »



BERTHELOT LOUIS-PAUL

IDIOPATHIC OVERACTIVE BLADDER: DOES A FAILURE OF TREATMENT WITH TRANSCUTANEOUS POSTERIOR TIBIAL NERVE STIMULATION PREDICT THE SACRAL NEUROMODULATION OUTCOMES?

ABSTRACT

Objectives
To evaluate if a failure of treatment with transcutaneous posterior tibial nerve stimulation (TPTNS) can predict the outcome of sacral neuromodulation (SNM) in idiopathic overactive bladder (OAB).

Methods
A retrospective study was conducted in three university hospitals and included all patients who were suffering from idiopathic OAB and were treated with SNM after a TPTNS treatment between October 2008 and May 2018. The primary objective was to assess if a failure of treatment with TPTNS was predictive of SNM outcome. TPTNS failure was defined as no improvement of the USP score (Urinary Symptom Profile) after 3 months of treatment. SNM efficacy was defined as a definitive device implantation in patients achieving a 50% objective or subjective improvement after a test period (stage 1).

Results
Overall, 28 of the 43 patients included achieved at least 50% objective and/or subjective improvement during stage 1 and underwent an Interstim II implantation (65.1%).
There were 36 patients with a USP score evaluation during TPTNS. Among the 23 patients who had a definitive SNM implantation, 9 patients (39.1%) had not had an improvement of their USP score after 3 months of TPTNS and for the 13 patients who did not have a definitive device, 5 patients (38.5%) had not shown any improvement under TPTNS of their USP score under TPTNS at 3 months. There was no statistically significant difference between the two groups (p=0.97) or when we used USP-OAB sub-score at 3 months (p=0.3). There was no predictive parameter significantly associated with a response to SNM.

Conclusion
In the present series, the outcome of TPTNS treatment do not predict outcome of SNM in idiopathic OAB.

Keywords :
Overactive bladder; failure; transcutaneous posterior tibial nerve stimulation; sacral neuromodulation; outcome

HYPERACTIVITE VESICALE IDIOPATHIQUE : L'ECHEC DE LA NEUROSTIMULATION TIBIALE PREDIT-IL DES RESULTATS DE LA NEUROMODULATION SACREE ?

RÉSUMÉ

Objectif
Évaluer si l'échec d'un traitement préalable par neurostimulation tibiale transcutanée (NSTT) peut prédire le résultat d'un traitement par neuromodulation sacrée (NMS) chez le patient atteint d'hyperactivité vésicale idiopathique (HAV).

Méthodes
Une étude rétrospective a été conduite dans trois centres hospitalo-universitaires incluant tous les patients présentant une HAV idiopathique et ayant été traité par NMS après un traitement par NSTT entre octobre 2008 et mai 2018. L'objectif principal était d'évaluer si l'échec d'un traitement précoce préalable par NSTT était prédictif des résultats de la NMS. Un échec de NSTT était défini par l'absence d'amélioration du score USP (Urinary Symptom Profile) après 3 mois de traitement. L'efficacité de la NMS était définie par une implantation définitive chez les patients ayant une amélioration objective et/ou subjective des symptômes de plus de 50% après une période test.

Résultats
Sur les 43 patients ayant eu de la NST préalable, 28 patients (65.1%) avaient eu une implantation définitive de NMS après un succès de la phase test. Nous avons inclus 43 patients, parmi lesquels 7 ont été exclus en raison de l'absence d'évaluation du score USP. Parmi les 23 patients ayant eu une implantation définitive de la NMS, 9 patients (39,1%) n'avaient pas eu d'amélioration de leur score USP après 3 mois de NSTT et pour les 13 patients qui n'avaient pas de dispositif définitif, 5 patients (38,5%) n'avaient montré aucune amélioration sous NSTT de leur score USP à 3 mois. Il n'y avait pas de différence statistiquement significative entre les deux groupes d'implantation (p=0,97) ni avec le sous-score USP-HAV à 3 mois (p=0.3). Il n'existait aucun facteur prédictif d'efficacité entre les deux groupes d'implantation.

Conclusion
Dans la présente série, les résultats du traitement par NSTT ne permettent pas de prédire les résultats de la NMS dans le traitement de l'HAV idiopathique.

Mots-clés :
Hyperactivité vésicale ; échec; neurostimulation tibiale; neuromodulation sacrée; résultats

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