

CORRELATION BETWEEN QUALITY OF LIFE AND VOIDING PARAMETERS IN PERCUTANEOUS TIBIAL NERVE STIMULATION TREATED PATIENTS

Hypothesis / aims of study

Percutaneous Tibial Nerve Stimulation (PTNS) has been introduced as an alternative treatment for refractory non-neurogenic patients with lower urinary tract dysfunction who are not ready for surgical treatment. Significant improvements documented on bladder diary, quality of life questionnaires and urodynamic evaluations have been reported by various authors. It is assumed that improved voiding parameters will lead to improved quality of life. So far the correlation between these parameters has not been investigated, nor quantified. The present study was performed to investigate the relationship between voiding parameters and quality of life in PTNS treated patients with refractory urge urinary incontinence.

Study design, materials and methods

30 patients (4 males, 26 females, mean age 51 years, range 20-72) with refractory urge urinary incontinence (≥ 3 incontinence episodes per day) were treated with 30-minute PTNS treatment sessions, 3 times a week during a period of 4 weeks in an outpatient setting. For stimulation a low-voltage (9V) electrical stimulator with fixed stimulation parameters (20 Hz, 200 microseconds, 0-10 mA) was used. Curling of the big toe or fanning of all toes after increasing the amplitude confirmed correct placement of the needle. All patients felt a radiating sensation spreading at the sole of the foot and toes during stimulation. Patients filled out bladder diaries and quality of life questionnaires (SF-36 and I-QoL) at baseline and after PTNS. Changes in voiding and quality of life parameters were tested on statistical significance using the Wilcoxon Signed Ranks Test. Correlation between change in voiding and quality of life parameters were statistically tested on significance using the Spearman's Correlation Test. The statistical analysis was performed using commercial software (SPSS version 10, Chicago, Illinois, USA).

Results

Of the 30 treated patients 29 could be evaluated, one patient was lost during follow up. Patients were treated with a mean pulse intensity of 3.2 mA (range 1.0-6.5). The clinical results are presented in table 1 and correlation between voiding and quality of life parameters in table 2.

Table 1. Voiding and quality of life parameters at baseline and after PTNS in 29 patients

Parameters per 24 hours	Baseline Mean (SD)	Mean change (95% CI)*	p
Number of voids	13.0 (6.5)	-1,3 (-2.7, +0.1)	0.062
Nocturia	2.2 (1.5)	-0.8 (-1.3, -0.2)	0.002
Mean voided volume (cc)	128.6 (55.4)	+51.8 (+17.0, +86.5)	0.007
Number of incontinence episodes	8.0 (7.7)	-4.1 (-6.2, -2.0)	0.000
Number of used pads	3.9 (3.6)	-1.3 (-2.3, -0.4)	0.009
SF-36 domains			
Physical	66.0 (24.9)	+10.0 (+0.6, +19.4)	0.008
Role physical	49.1 (47.4)	+19.8 (+2.9, +36.8)	0.031
Role emotional	62.1 (46.9)	+21.8 (+4.5, +39.2)	0.024
Social function	57.8 (28.6)	+12.0 (+1.0, +23.0)	0.042
Pain	62.5 (25.5)	+10.5 (+4.5, +16.5)	0.001
Mental health	66.3 (14.9)	-3.2 (-10.6, +4.1)	0.375
Vitality	53.4 (21.5)	+2.8 (-3.7, +9,2)	0.386
General health	56.9 (25.4)	+4.6 (-1.4, +10.7)	0.128
I-QoL	61.0 (17.4)	+11.8 (+4.5, +19.1)	0.010

* 95% Confidence Interval

Table 2. Correlation between change in voiding and quality of life parameters in 29 patients

	Void ¹	Mvv ²	Noct ³	Inco ⁴	Pad ⁵
SF-36 domains					
Physical	-0.21	0.19	-0.24	-0.39*	-0.46*
Role physical	0.06	0.37*	-0.08	-0.54*	-0.08
Role emotional	0.10	0.21	-0.26	-0.28	-0.26
Social function	0.06	0.14	-0.28	-0.32	-0.34
Pain	-0.21	0.11	-0.21	-0.11	-0.11
Mental health	-0.27	0.20	-0.43*	-0.08	0.07
Vitality	-0.16	0.34	-0.34	-0.35	-0.44*
General health	-0.02	-0.02	-0.39*	-0.15	0.02
I-QoL	-0.25	0.38*	-0.30	-0.26	-0.32

*p<0.05, ¹ number of voids, ²mean voided volume, ³nocturia, ⁴number of incontinence episodes, ⁵number of used pads

Interpretation of results

At baseline, the quality of life of the patient population was very poor compared to the national Dutch values of healthy persons (i.e. a difference of at least 10 points in all SF-36 domains) [1]. Various authors have confirmed this poor quality of life in patients with overactive bladder syndrome [2,3], indicating the necessity of treatment. The present study has demonstrated that PTNS has an effect on the patients' quality of life: improved voiding parameters did lead to improved quality of life, since significant correlations were demonstrated between various voiding and quality of life parameters (table 2).

Concluding message

This is the first time that a quantifiable correlation between voiding and quality of life parameters in PTNS treated patients with refractory urge urinary incontinence has been demonstrated.

References

1. Translation, validation, and norming of the Dutch language version of the SF-36 Health Survey in community and chronic disease populations. *J Clin Epidemiol.* 1998; 51: 1055-1068
2. The impact on health-related quality of life of stress, urge and mixed urinary incontinence. *BJU Int.* 2003; 92: 731-735
3. Urge incontinence. Quality of life and patients' valuation of symptom reduction. *Pharmacoeconomics.* 1998; 14: 531-539

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