

URTEHRAL INSTABILITY AND SACRAL NERVE STIMULATION (SNS): TOWARDS EXPLAINING IT'S EFFICACY

Hypothesis / aims of study

The significance of urethral instability and its relation with urgency is still regarded as a controversial topic in urodynamics. Refractory complaints of an overactive bladder (urge incontinence and urgency/frequency) can be treated very effectively by Sacral Nerve Stimulation (SNS). We present both clinical and urodynamic data which underscore the effect of SNS therapy on urethral and pelvic floor function.

Study design, materials and methods

Patients with refractory micturition symptoms were implanted with a neurostimulator (Medtronic Inc., Minneapolis, USA) after responding with an improvement of more than 50 % in their main symptoms after Percutaneous Nerve Evaluation. Watercystometry, at baseline and six months post implant, was performed with the MMS UD 2000 and a Gaeltec CTU/2E/L-4 12F catheter with 3 urethral sensors and 1 bladder sensor. Urethral instability was defined as type 0 (no urethral pressure variations), type I (pressure variation 0-15 cm H₂O), type II (16-30 cm H₂O) and type III (>31 cm H₂O). All other definitions were according to the guidelines of the ICS. Clinical efficacy was evaluated by voiding diary data and defined as successful if an improvement of > 50% was observed.

Results

Nineteen female patients, 15 suffering from refractory urge incontinence and 4 from urgency/frequency were implanted with a permanent neurostimulator. At baseline, detrusor overactivity was observed in 9 patients. Sixteen patients showed type III urethral instability, in 2 patients type II urethral instability was present, 1 patient did not show urethral instability. At the first sensation of bladder filling (FSF) urethral instability was always present. The SNS therapy was successful in 13 patients (68%), 4 patients showed a less than 50% improvement and 2 patients underwent device explant. The number of pads used per day and the severity of leakages decreased significantly. Urodynamic data, available for 17 patients post implant showed an increase of mean FSF from 98 to 235 ml (p=0.002). All 13 successful treated patients had urethral instability at baseline, detrusor overactivity was present in 4 of the successfully treated patients. A decrease or disappearance of urethral instability was observed in 9 of the 13 (69%) successful treated patients, detrusor overactivity disappeared in 2 of these 13 (15%) patients.

Interpretation of results

SNS therapy is an effective treatment modality for selected patients with refractory urge incontinence and urgency/frequency. Our study results indicate that FSF and urethral instability, which are clinically experienced as sensory parameters, do monitor the outcome of SNS treatment better than detrusor overactivity. This underscores the effect of SNS on urethral and pelvic floor function and sensory factors.

Concluding message

Urethral instability and FSF are sensory parameters which seem to predict the outcome of SNS therapy better than detrusor overactivity.

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HUMAN SUBJECTS: This study was approved by the Leiden University Medical Center and followed the Declaration of Helsinki Informed consent was obtained from the patients.