260

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CAN WE PREDICT IPG IMPLANT DURING FIRST STAGE INTERSTIM SACRAL TINED-QUADRIPOLAR NEUROMODULATION ? SHOULD WE VALUE MOTOR OR SENSORY RESPONSES?

Hypothesis / aims of study:

InterStim System (*Medtronic Inc., Minneapolis, Minn., USA*) consists of a transforamenally placed quadripolar lead, an implantable pulse generator (IPG), and an extension that connects these two devices for neuromodulation of the sacral S3 nerve. Typically the IPG is placed one week following the subacute lead implantation in the S3 foramen with demonstrable improvement in the patient symptoms of frequency, urgency and/or urge incontinence. Implantation of the subacute lead facilitates informed long-term therapy decision in patients with refractory symptoms. In this study, we tried to find out whether or not we can predict IPG implant rate during the subacute quadripolar lead implantation by assessing motor and sensory responses.

Study design, materials and methods

28 patients (female, 17; male, 11) aged 28 to 87 (mean, 55.92) years with refractory frequency, urgency and urge incontinence treated at a single institution from January 2002 to February 2004 constitute the study material. We documented the acquisition of motor response (bellows and/or plantar flexion of great toe); number of leads that resulted in positive motor response; acquisition of sensory response (tingling and/or pulsations of vagina, vaginal vibratory sensation, labial vibration and/or tapping sensation, rectal vibrations, perirectal vibrations and/or tugging, vibrations around bladder and/or vagina, and urethral vibrations); and the number of leads that resulted in positive sensory response. The motor and sensory responses obtained during first stage Interstim were correlated with the final outcome, i.e., IPG implantation.

Results

Out of 28 patients, 21 patients (75%) received the neurostimulator. 16/21 (76.19%) patients with positive motor response (bellows and/or plantar flexion of the great toe) had IPG implantation; 14/21 (66.66%) in this group had both positive motor response and sensory response. Only 1/21 (4.76%) that had only positive sensory response (no motor response) was implanted with IPG. Overall, 20/21 (95.23%) patients had positive motor response, whereas 15/21 had (71.42%) positive sensory response. 5/14 (35.71%) with positive motor and sensory response were not implanted with IPG, whereas 1/16 (6.25%) with positive motor response only did not receive IPG. All patients except one (20/21, 95.23%) implanted with IPG had at least one positive motor response.

Table 1. Characteristics of Patients Implanted (IPG) for >50% Improvement in Symptoms (n = 21)

Motor	Sensory	Number of Patients (%)
+	+	14 (66)
+	-	6 (28)
-	+	1 (4.7)
+/-*	+/-*	0 (0)
20 (95%)	15 (71.4%)	21 (10)

*+/- indicates weak responses *IPG, implantable pulse generator

Table 2. Characteristics of Patients Not Implanted for <50% Improvement in Symptoms (n = 14)

Motor	Sensory	Number of Patients (%)
+	+	1 (7.1)
+	-	2 (14.2)
-	+	5 (35.7)
+/-*	+/-*	6 (42.8)
3 (21.4%)	6 (42.8%)	14 (100)

*+/- indicates weak responses

Only 21.3% of patients with motor response constituted the non-IPG Implant group

Interpretation of results

Motor responses obtained during first stage Interstim appear to be more predictive of subsequent IPG implant.

Conclusions:

We conclude that motor response is strongly predictive of a successful outcome during InterStim sacral neuromodulation. Sensory response does not appear to be a significant factor in predicting the final outcome. Experience in a larger number of patients will further corroborate our findings.