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PATIENT AGE PREDICTS SUCCESS IN PATIENTS UNDERGOING SACRAL NEUROMODULATION FOR VOIDING DYSFUNCTION

Hypothesis / aims of study

Some observers have noted that sacral neuromodulation therapy for older patients is less effective than for those treated at a younger age [1]. More older patients are seeking treatment for voiding dysfunction and the effects of neuromodulation in this population has not yet been characterized. Our goals were to determine if any difference existed by decade of life, and if so, to determine at what age that difference was most pronounced. Finally, we sought to describe how the indication for neuromodulation affected the result.

Study design, materials and methods

A retrospective analysis of 244 patients evaluated from March 2000 to February 2008 was carried out for the 3 following indications: urge incontinence, urgency and frequency refractory to oral medications, and urinary retention. Some patients were evaluated and implanted for more than 1 of these indications. Success was defined as >50% improvement in the chief complaint. Patients were evaluated with a 2-3 week test stimulation period, and those with a successful response were implanted with a permanent generator. To determine the effect of age on outcomes, subjects were grouped by decade and each decade was analyzed independently using chi-squared analysis. This was further divided based on indication for neuromodulation.

Results

Thirty-five of 65 patients (53.8%) age 70 and older were implanted with a permanent sacral neuromodulation generator for the indications described, and compared with 130 of 179 patients (72.6%) aged 18-69. When analyzed by indication, 32 patients aged 70 and older were evaluated for refractory urgency and frequency, and 43.8% were noted to have a durable response at last follow-up (27.4 months). This was compared with 102 patients under age 70 treated during the same period for the same indication, of which 72.3% were noted to have a durable successful response at a follow-up time of 28.6 months. The difference was statistically significant (p= 0.0005). This difference did not reach statistical significance for other indications. Those age 70 and older treated for urge incontinence experienced 58.7% success vs. 72.6% for the patients age 69 and under (p=0.0960). Patients treated for urinary retention experienced 75.0% success vs. 64.6% (p=0.4421). Upon further investigation, the majority of failures in the age 70 and older group suffering urgency and frequency occurred during the 2-3 week test period. Fifteen of 32 (46.9%) successfully went from test stimulation to permanent generator implantation, compared with 80 of 102 patients (78.4%) younger than 70 (p=0.0006). Ten of 35 implanted patients (28.6%) age 70 and older required explantation of the device compared with 36 of 130 patients (27.7%) aged 18-69. This was not significant (p=0.9180).

Interpretation of results

The age of the patient affects success rates when urgency/frequency is treated with sacral neuromodulation. Patients aged 70 and older respond less favorably than younger patients when sacral neuromodulation is used to treat urgency and frequency. The prevalence of electrolyte dysregulation and the resulting nocturia in this age group may play a significant role in the pathogenesis of these symptoms.

Concluding message

Patients age 70 and older with urgency and frequency can be counselled that sacral neuromodulation may not be as effective as it would be for a younger patient, but excellent long-term results are still possible. This area deserves more investigation as patients in this age group are living longer, enjoying more active lifestyles, and more are seeking care for voiding dysfunction.

Table 1. Success by indication at last follow-up (28.6 months) separated by decade of life. For urgency/frequency, ages 50-59 carry a significantly better success rate while ages 70+ carry much poorer success rates.

Age group	Urge incontinence	Urgency/frequency	Urinary retention
18-29	60.0%, p=0.6929	77.8%, p=0.5414	75.0%, p=0.7311
30-39	78.6%, p=0.3751	78.6%, p=0.3981	75.0%, p=0.5225
40-49	76.9%, p=0.2844	76.2%, p=0.4177	64.3%, p=0.7936
50-59	72.0%, p=0.6434	84.4%, p=0.0280	58.3%, p=0.4686
60-69	68.0%, p=0.9920	65.4%, p=0.6887	50.0%, p=0.3462
70+	58.7%, p=0.0960	43.8%, p=0.0005	75.0%, p=0.4422

Table 2. A larger proportion of patients were explanted for loss of efficacy over time in the 70+ age group. This reached statistical significance (p=0.0288).

	Infection	Dead battery	Pain	Dislodged lead	Lost efficacy	Need for MRI	Totals
Number of explants	0	3	1	1	5	0	10/35
Aged 70+	0.0%	8.6%	2.9%	2.9%	14.3%	0.0%	28.6%
Number of explants	10	8	7	1	6	4	6/130
Aged <70	7.7%	6.2%	5.4%	0.8%	4.6%	3.1%	27.7%
p-value	0.0596	0.6100	0.4858	0.3218	0.0288	0.2700	0.9180

References

1. Amundsen CL, et al. Sacral neuromodulation for intractable urge incontinence: are there factors associated with cure? Urology 2005;66:746-50

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Was this study approved by an ethics committee?	**Yes**
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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**No**