

RADIATION EXPOSURE TO THE PATIENT AND PHYSICIAN DURING SACRAL NEUROMODULATION

Hypothesis / aims of study

In 2010, the FDA launched an initiative to reduce radiation exposure during medical diagnostics and medical procedures. Radiation exposure to the patient and physician during SNM has not been reported in the literature. This study aims to calculate the radiation exposure to both the patient and physician during sacral neuromodulation (SNM) with the InterStim® device.

Study design, materials and methods

We conducted a prospective IRB approved study to determine the radiation exposure to both the patient and physician during SNM. The study population included patients undergoing initial lead placement, peripheral nerve evaluation (PNE) or lead revision for urinary frequency, urge incontinence or non-obstructive urinary retention. Each procedure was performed by one of four fellowship trained urologists. The physician's radiation exposure was measured using an electronic radiation dosimeter placed on the outside of their lead apron and the patient's radiation exposure was measured using a radiation sensitive film placed on the patient's lateral hip facing the x-ray source.

Results

A total of 61 patients have been included in the study. The patients were predominantly female (85.2%) with a mean age of 57.9 years old (SD 16.0) and a mean BMI of 30.5 kg/m² (SD 7.6). Indication for SNM included urinary frequency in 15 patients (24.6%), urge incontinence in 29 patients (47.5%) and non-obstructive urinary retention in 17 patients (27.9%). Details of the procedures and radiation exposure for the patient and physician are characterized in table one.

Interpretation of results

Radiation exposure to both the patient and physician is lowest during a PNE procedure and greatest during the initial lead placement.

Concluding message

Although our results indicate that radiation exposure is minimal during SNM, the cumulative dose for physicians should not be ignored. With a mean exposure of 1.8 mrem during an initial lead placement, a physician is exposed to the equivalent of one PA/lateral chest x-ray with every 5 procedures.

Table 1: Procedure Details and Radiation Exposure During SNM

Procedure	Patients	No. Leads	Procedure Time*	Fluoro Time*	Physician Dose*	Patient Dose*
PNE	16	1 n=1 2 n=15	23 min (20-32)	10 sec (6-16)	1.0 mrem (0.6-3.6)	8.0 mGy (0.7-12.0)
Stage I	30	1 n=19 2 n=11	46 min (22-79)	25 sec (6-60)	1.8 mrem (0.6-8.1)	32.7 mGy (8.5-64.1)
Lead Revision	15	1 n=14 2 n = 1	53 min (42-75)	16 sec (6-36)	1.3 mrem (0.6-4.2)	16.0 mGy (2.9-44.6)

* values listed are means

Disclosures

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