SACRAL NEUROMODULATION DEVICE INFECTION: ANALYSIS OF RISK FACTORS

Hypothesis / aims of study
With the recent increase in the usage of sacral neuromodulation for voiding dysfunction, adverse events associated with the procedure such as infections have also risen. The purpose of this retrospective study is to compare the rate of infection in relation to the type of the procedure performed. We also aim to identify factors that may help lower the risk of infection and better salvage the device.

Study design, materials and methods
All patients who underwent sacral neuromodulation from 08/2001 to 07/2009 at our institution were identified. Their medical records were retrospectively reviewed. Information such as relevant history, indication for the procedure, performance of percutaneous evaluation (PNE), and type of the procedure was collected. Post operative notes including patient’s symptomatic improvement and adverse events and their management were also reviewed.

Results and interpretation of results
A total of 126 patients underwent sacral neuromodulation therapy at our institution, 93 patients (74%) were females and 33 patients (26%) were males. The mean age was 64.1. 61 patients underwent PNE followed by single stage full implant, 61 underwent staged procedure, and 4 revision of their pre-existing interstim.

Five cases of infection (3.96%) were identified; all occurred after staged procedure. Four out of the five were after the first stage (6.6% of all staged procedure) and one after second stage. Only two cases out of 126 patients (1.6%) ended up by explantation of the device. In both patients, culture of the wound site grew Methicillin resistant Staphylococcus Aureus (MRSA).

All cases of infection were detected early resulting in hospitalization for intravenous (IV) antibiotics. Salvage of the device was possible in 60% of the infection cases.

Concluding message
Overall infection rate is low and all cases occurred with staged procedure. No infection developed with full implant so every effort should be made to go for PNE followed by possible full implant. The long waiting time between first and second stage procedure seems to be a major risk factor. Shortening the waiting time may help to decrease the infection rate. Careful preparation for the surgery may also contribute to our low infection rate. Early recognition and immediate administration of proper antibiotics lead to better salvage of the device.

Table 1: Rate of infection with Sacral Neuromodulation therapy as shown by different studies.

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Number of patients underwent 1st stage/2nd stage</th>
<th>Infection during the testing phase</th>
<th>Infection after IPG implant</th>
<th>Infection during any stage</th>
<th>Explantation caused by infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steven Siegel</td>
<td>2000</td>
<td>581/219</td>
<td>6.1%</td>
<td>6.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Everaert</td>
<td>2000</td>
<td>177/53</td>
<td>1 (2%)</td>
<td>1 (2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Kessler</td>
<td>2006</td>
<td>209/91</td>
<td>2 (0.96%)</td>
<td>2 (2.1%)</td>
<td>4 (3.06%)</td>
<td></td>
</tr>
<tr>
<td>Adonis Hijaz</td>
<td>2006</td>
<td>214/161</td>
<td>4 patients</td>
<td>4 (2.5%)</td>
<td>8 (5%)</td>
<td></td>
</tr>
<tr>
<td>Khan Pham</td>
<td>2008</td>
<td>124</td>
<td>5 (4%)</td>
<td>5 (4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wesely White</td>
<td>2009</td>
<td>221/202</td>
<td>7 (3.5%)</td>
<td>7 (3.5%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References:


Disclosures

**Funding:** None  **Clinical Trial:** No  **Subjects:** HUMAN  **Ethics Committee:** IRB Helsinki: Yes  **Informed Consent:** No