Perioperative Antibiotic Use in Vagus Nerve Stimulator Implantation

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Introduction

Surgical antibiotic prophylaxis contributes up to 1/3 of total antibiotic use in major hospitals. With the growing problem of antimicrobial resistance worldwide, it is important to examine the current practice of antibiotic use in surgical prophylaxis. We examined our institution's experience with vagus nerve stimulator implantation to see how perioperative antibiotic practices impacted postoperative infectious outcomes.

Methods

We conducted a single center retrospective chart review of 41 consecutive patients undergoing vagus nerve stimulator (VNS) implantation over 12 months. Patient demographics, perioperative details, and 6 month follow up of infections and healthcare utilization were recorded.

Results

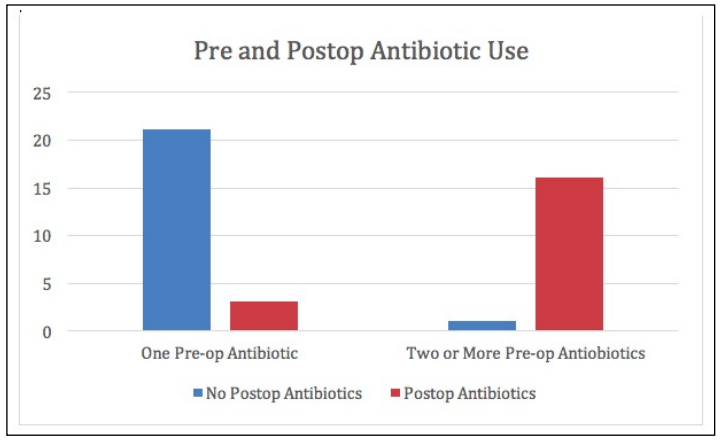
41 patients underwent VNS implantation at our institution between July 2014 and June 2015. One of two surgeons operated on each patient in the same operating room with the same surgical team, differing by practice preference in choice of antibiotic prophylaxis. There were no difference between surgeons' patient populations by age in years and number of comorbidities. Surgical time in minutes also had no significant difference.

Patients either received a single dose of intravenous (IV) cefazolin, or a dose of IV cefazolin and one or both of gentamicin/vancomycin in addition to a 10 day outpatient oral antibiotic course of clindamycin. 24 patients received one dose of peroperative cefazolin as surgical prophylaxis, and 17 patients received =2 perioperative IV antibiotics and PO antibiotics. No patients in either group had VNS implant infection in 6 months following surgery. 8 patients who received only one antibiotic and 6 patients who received =2 antibiotics had other non-implant-related infections in 6 months following VNS placement, ranging from sinusitis to bacteremia and community acquired pneumonia.

The differences between the two groups in infections were not statistically significant. There were also no significant differences between the two groups in terms of both inpatient admissions after surgery (p=0.66) and overall seizure control outcome (p=0.11).

Conclusions

Multiple perioperative prophylactic antibiotics did not significantly impact rate of postoperative infection events compared to a single dose of preoperative cefazolin.



Learning Objectives

-Identify recommended perioperative antibiotic practice for vagus nerve stimulator implantation.
-Discuss impact of perioperative antibiotic use.

References

-Degli Atti, Marta Ciofi, et al. "Surgical antibiotic prophylaxis in children: adherence to indication, choice of agent, timing, and duration." European journal of clinical pharmacology 71.4 (2015): 483-488.
-Harbarth, Stephan, et al. "Prolonged antibiotic prophylaxis after cardiovascular surgery and its effect on surgical site infections and antimicrobial resistance." Circulation 101.25 (2000): 2916-2921.
-Nambudiri, Vinod E. "More than skin deep—the costs of antibiotic overuse: a teachable moment." JAMA internal medicine 174.11 (2014): 1724-1725.
-Pan, I-Wen, et al. "Impact of antibiotic prophylaxis for intrathecal baclofen pump surgery in pediatric patients." Neurosurgical focus 39.6 (2015): E10.