Current Trends in Perioperative Antibiotic Use: A Survey of Otolaryngologists

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Abstract
This study describes the patterns of perioperative antimicrobial use by otolaryngologists during common otolaryngologic surgical procedures. Through the American Academy of Otolaryngology—Head and Neck Surgery Infectious Diseases Committee, a survey was developed to assess the current practice patterns regarding the use of perioperative antibiotics in otolaryngology. A total of 6903 surveys were sent out; 458 were fully or partially completed, and a total of 442 responses were included in the final analysis. Most physicians reported routinely prescribing antibiotics either preoperatively or postoperatively for 12 of the 17 procedures included in the questionnaire despite providers agreeing that there is not enough evidence to support their use. The most common procedure for which antibiotics were prescribed was laryngectomy (91.1%). Antibiotic use is a common practice during the perioperative period for otolaryngologic procedures; however, there is a discrepancy between utilization and evidence of benefit.

Keywords
antibiotics, perioperative antibiotics, survey, practice patterns

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The goal of perioperative antibiotic use is to prevent postoperative infections, and generally speaking, they are effective.1 However, for certain types of surgery, there is a lack of evidence supporting the routine use of perioperative antibiotics and even some evidence showing no benefit of antibiotic use.2 The practice of prescribing possibly unnecessary antibiotics should be reviewed given trends in increasing antimicrobial-resistant organisms and the emergence of multidrug-resistant organisms.3

With a growing literature of evidence and guidelines about antimicrobial prophylaxis in head and neck surgery, it is important to determine the existing patterns of practice. To our knowledge, there are no studies describing the current trends in perioperative antibiotic use looking throughout the field of otolaryngology. The goal of this study was to obtain information regarding current practices of antibiotic use in the perioperative period among otolaryngologists.

Methods
The study was approved by the Institutional Review Board at Connecticut Children’s Medical Center and the American Academy of Otolaryngology—Head and Neck Surgery (AAO-HNS) Infectious Diseases Committee. A survey was developed to assess the current use of perioperative antibiotics in otolaryngology. The survey had a total of 12 questions, including demographic information, antibiotic prescribing practice for 17 common otolaryngologic procedures, antibiotic preference, and opinion about the evidence for antibiotic usage (see Supplemental Appendix at www.otojournal.org).

The survey was built using Survey Monkey and sent to all current members in the United States, excluding residents and fellows, through the AAO-HNS email distribution list, and it was followed by 2 email reminders. The survey was sent to a total of 6903 providers in late 2013. Analysis

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Results

Of the 6903 surveys that were sent out, 2425 were opened. Of the surveys, 442 were fully and 16 partially completed, for a total of 458. Sixteen surveys were eliminated from analysis because the respondent was located outside of the United States, leaving a total of 442 responses to be included in the final analysis.

Of the 17 procedures included in the questionnaire, most physicians reported routinely prescribing antibiotics either preoperatively or postoperatively for 12 of them (Figure 1), with laryngectomy (91.1%), neck dissection (74.9%), endoscopic sinus surgery (73.1%) having the highest prescription rate. Only for laryngectomy did most respondents (73.6%) think there was enough evidence to support the use of antibiotics (Figure 2). There was little consensus about the quality of evidence supporting antibiotic use among those who did report using antibiotics for a given procedure (Table 1).

A \( \chi^2 \) analysis of antibiotic use by demographic characteristics revealed a significant association between length of time in practice and pattern of antibiotic use. Those in practice for less than 20 years were more likely to prescribe antibiotics \( (P < .01) \).

Discussion

While there is evidence supporting the use of perioperative antibiotics in clean-contaminated head and neck surgery, there is growing literature about perioperative antibiotic usage, with several studies finding no benefit of perioperative antibiotics in preventing infection. Because of the exceedingly low infection rate of clean head and neck surgery, there is no evidence that perioperative antibiotics provide benefit for patients undergoing these procedures. As an example, clinical trials of antibiotic prophylaxis have demonstrated no difference in the rate of postoperative infection after thyroidectomy in clean-contaminated procedures. In our study, more than half of respondents report routinely prescribing antibiotics for thyroidectomy and parathyroidectomy.

In our study, almost 42% of respondents use antibiotics for tonsillectomy, despite a recent Cochrane review of antibiotic usage in tonsillectomy advocating against their routine use and the AAO-HNS Clinical Practice Guideline for Tonsillectomy in Children strongly recommending against their routine administration.

The overall trend in our data was one of widespread antibiotic use despite physicians’ not thinking that there is enough evidence to support their practice.

The most significant limitation of this study is the low response rate (6.4%); however, the demographic characteristics of our sample were similar to those of the overall AAO-HNS membership. Another limitation of the study is the self-reporting nature of the survey. Because of the format of the survey, we were unable to distinguish specific instances in which antibiotics were used, such as endoscopic sinus surgery done in the setting of an acute complication, in which case perioperative antibiotics are warranted. There also may be overlap between laryngectomy and neck dissection, as these procedures may be done concurrently in some patients.

Based on the majority of providers agreeing that there is not enough evidence to support the use of perioperative antibiotics for all of the otolaryngologic surgeries included...
in our study, there needs to be more conclusive clinical trials on the benefits, or lack thereof, of perioperative antibiotics in head and neck surgery.

Author Contributions

Tulio A. Valdez, conception of study and survey, data interpretation, critical appraisal, revision of manuscript; Kastley Marvin, design of study, data interpretation, drafting and revisions of manuscript; Nicholas J. Bennett, review and interpretation of data, critical review and revision of manuscript; Trudy Lerer, statistical analysis and interpretation, revision of manuscript; Abby R. Nolder, conception of study and survey, critical review of manuscript; Farrel J. Buchinsky, conception of study and survey, data interpretation, critical review of manuscript.

Disclosures

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Supplemental Material
Additional supporting information may be found at http://otojournal.org/supplemental.

References