Premiere Publications from The Triological Society

Read all three of our prestigious publications, each offering high-quality content to keep you informed with the latest developments in the field.

**The Laryngoscope**
FOUNDED IN 1896
Editor-in-Chief: Michael G. Stewart, MD, MPH
The leading source for information in head and neck disorders.
Laryngoscope.com

**Laryngoscope Investigative Otolaryngology**
Open Access
Editor-in-Chief: D. Bradley Welling, MD, PhD, FACS
Rapid dissemination of the science and practice of otolaryngology-head and neck surgery.
InvestigativeOto.com

**ENTtoday**
A publication of the Triological Society
Editor-in-Chief: Alexander Chiu, MD
Must-have timely information that Otolaryngologist-head and neck surgeons can use in daily practice.
Enttoday.org

WILEY
Referral Patterns From Emergency Department to Otolaryngology Clinic

Jonathan C. Garneau, MD; Isaac Wasserman, MPH; Neeraja Konuthula, BS; Benjamin D. Malkin, MD, FACS

Objectives/Hypothesis: Patients who present to the emergency department (ED) with various otolaryngologic disorders are frequently referred to an otolaryngologist for follow-up care. Our aim was to further characterize this group as it has not been well described in the literature.

Study Design: Cross-sectional retrospective study.

Methods: We reviewed the charts of patients seen during an 18-month period in an urban public hospital trauma center adult ED and referred to an otolaryngology clinic for follow-up care.

Results: Seven hundred thirty-eight patients were seen and referred; the most common diagnoses made by ED providers were peripheral vertigo (12%), otitis externa (8%), and nasal fractures (8%). Nine percent of patients were evaluated during their ED visit by an otolaryngology provider. Three hundred seventy-two (50%) patients returned for their otolaryngology clinic visit; facial trauma patients were least likely to return. The most common diagnoses made by otolaryngology providers were otitis externa (12%), peripheral vertigo (12%), and nasal fractures (7%). There was 50% concordance between patients' diagnoses made by ED and otolaryngology providers. The most common differences were otitis media versus otitis externa (10%) and acute pharyngitis versus laryngopharyngeal reflux (8%). During 37% of follow-up visits, an in-office procedure was performed, most commonly flexible fiberoptic laryngoscopy, cerumen removal, and nasal endoscopy.

Conclusions: Our analysis reports comprehensive characteristics of this referral group, identifying potential areas for improvement in patient management, resident education and efficiency. Otolaryngologists covering EDs should be familiar with this population in terms of types of cases that may affect their practices.

Key Words: Referrals, emergency department.

Level of Evidence: 4.

INTRODUCTION

Emergency departments (ED) across the United States are routinely overcrowded and will likely continue to remain so due to the rapidly changing health insurance landscape and patients' unwillingness to wait for outpatient visits.1–3 Understanding the patient behaviors and global factors that cause patients with nonurgent complaints to go to EDs for care has been a critical focus of healthcare cost containment analystsa,2,4,5 For example, Weinick et al. estimated that 13.7% to 27.1% of all ED patients could be treated at alternative, non–urgent care sites; factoring in utilization of time, lab tests, imaging, and specialist consultations, this would represent a potential cost savings of over $4.4 billion annually.6

This problem has significant relevance to otolaryngology–head and neck surgery, as common ear, nose, and throat (ENT) complaints such as chronic dizziness, ear problems, nasal obstruction, and sore throat are the reason for substantial numbers of ED visits. In 2011, it has been estimated that diagnoses such as dizziness and vertigo and otitis media and eustachian tube disorders accounted for almost 4 million and 2 million ED visits, respectively.7–9 The overwhelming number of ENT-related ED visits has spawned the creation of otolaryngology-specific EDs to address this high demand for services.10–13 Although these appear to be a cost-beneficial method for addressing acute ENT complaints, can offload a sizeable number of general ED visits, and even augment residency education, staffing is a potential challenge and they have not yet become commonplace.14,15 Consequently, most EDs continue to see a high volume of patients with ENT conditions, a large proportion of which do not need to be evaluated in the ED by an otolaryngologist–head and neck surgeon but may require outpatient follow-up.

At our institution, patients seen in the adult ED with such complaints are given appointments in our otolaryngology clinic. We set out to examine patients from this referral pathway to 1) define the most common ENT conditions presenting to a general adult ED, 2) examine the difference between patients' diagnoses made by ED and otolaryngology clinic providers, and 3) provide a comprehensive analysis of patient demographics,
procedures performed, and follow-up rates. We intend to highlight areas for improvement of care, potential cost savings, and education.

MATERIALS AND METHODS

Electronic medical records of patients seen between July 2014 and March 2016 in our adult ED and referred to the hospital-based outpatient otolaryngology clinic were reviewed. NYC Health + Hospitals/Elmhurst is an urban public hospital, level I trauma center, and teaching institution; therefore, all patients were seen by a team of providers including residents, physician assistants, and attending physicians. All otolaryngology clinic patients were initially evaluated by a resident or physician assistant, then evaluated by an attending otolaryngologist–head and neck surgeon as appropriate. Institutional review board approval from the Icahn School of Medicine at Mount Sinai, our academic affiliate, and NYC Health Hospitals was obtained. Data collected from each visit included patient demographics, imaging studies, diagnosis, whether an otolaryngology consultation was performed prior to discharge from the ED, and any procedures performed. Diagnoses and procedures were recorded using International Classification of diseases Ninth Revision and Tenth Revision and Current Procedural Terminology (CPT) codes, respectively. All provider documentation was reviewed to confirm the codes. Descriptive statistical analysis was performed using Microsoft Excel (Microsoft Corp., Redmond, WA).

RESULTS

During the study period, 738 patients were seen in the ED and given a referral to the otolaryngology clinic; there were 404 (55%) men and 334 (45%) women, with an average age of 41 years (range, 18–94 years). The most common diagnoses made by ED providers were peripheral vertigo (12%), otitis externa (8%), and nasal fractures (8%) (Fig. 1). Sixty-seven patients (9%) were evaluated by the otolaryngology team while in the ED. The most common reasons for otolaryngology consultation were facial trauma (lacerations/fractures) (52%), peritonsillar abscess (12%), and otitis externa (6%). Of these patients, 73% required a procedure, most commonly laceration repair (41%), flexible laryngoscopy (22%), and incision and drainage or aspiration of peritonsillar abscess (12%). All patients with a diagnosis of peritonsillar abscess were seen and evaluated by the otolaryngology team in the ED. Computed tomography (CT) imaging of the head was obtained in 30% of patients with a primary diagnosis of dizziness or vertigo; 40% of the imaged patients attended their follow-up appointment. All patients with a diagnosis of a nasal fracture did not have any documented findings of a septal hematoma; all patient records documented normal septum and nasal mucosa at time of initial assessment in the ED.

Three hundred sixty-six (50%) patients did not follow up in the otolaryngology clinic after their ED visit; the most common diagnoses in this group were facial trauma (20%), peripheral vertigo (11%), and otitis externa (7%). For the 372 patients who came to their follow-up visit, the most common diagnoses made by otolaryngology providers were otitis externa (12%),...
Peripheral vertigo (12%), and nasal fractures (7%) (Fig. 2). There was 50% (186/372) agreement on diagnoses between ED and otolaryngology providers. The most common difference was patients diagnosed with acute otitis media in the ED having their diagnosis changed to acute otitis externa by an otolaryngology provider (10% of discrepant cases); this occurred in 18 of 32 (56%) acute otitis media patients. Differing diagnoses of acute pharyngitis or throat pain (ED) versus laryngopharyngeal reflux (otolaryngology) accounted for 8% of discrepant cases; of patients seen in the clinic with an ED diagnosis of acute pharyngitis, only one of 11 (9%) had reported fever. More generally, 17% of all discrepancies came from differences in subclassifications within the dizziness/vertigo category (for example benign paroxysmal positional vertigo in the ED later diagnosed as Ménière’s disease in the otolaryngology clinic). When grouped by general categories, 66% of the patients for whom there was a discrepancy in diagnosis had otologic complaints followed by 16% laryngologic, 12% rhinologic, and 6% head and neck cancer conditions (Fig. 3). For an additional perspective, the discrepancy rate was calculated for diagnoses in each subspecialty category for patients seen in both the ED and otolaryngology clinic. Patients with laryngologic conditions were most likely to have discrepant diagnoses (Table I).

The mean time between ED and first otolaryngology clinic visit was 9 days (median, 7 days; range, 1–93

![Fig. 2. Comparison of diagnoses of patients presenting to the outpatient otolaryngology clinic (N = 372) by ED (red) and otolaryngology (blue) provider. All diagnoses with less than four patients were omitted (N = 51). CRSwNP = chronic rhinosinusitis with nasal polyposis; ED = emergency department; ENT = ear, nose, and throat; H&N = head and neck; LPR = laryngopharyngeal reflux; NOS = not otherwise specified; TM = tympanic membrane.](image)

**TABLE I. Discrepancies in Diagnoses Between Emergency Department and Otolaryngology Providers by Subspecialty Category.**

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Patients With Discrepant Diagnoses</th>
<th>Total No. of Patients</th>
<th>Discrepancy Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otologic</td>
<td>122</td>
<td>215</td>
<td>57%</td>
</tr>
<tr>
<td>Rhinologic</td>
<td>23</td>
<td>72</td>
<td>32%</td>
</tr>
<tr>
<td>Laryngologic</td>
<td>29</td>
<td>36</td>
<td>81%</td>
</tr>
<tr>
<td>Head and neck</td>
<td>12</td>
<td>51</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>186</td>
<td>372</td>
<td>50%</td>
</tr>
</tbody>
</table>
DISCUSSION

Our study provides a comprehensive analysis of over 700 patients who were referred to an otolaryngology clinic after being seen in an adult ED. We found that the three most common diagnoses made in both the ED and otolaryngology clinic were vertigo/dizziness, otitis externa, and nasal fractures. These findings are quite similar to those of published hospital audits and epidemiological studies. As evidenced by the record response to the recent American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS) board of governors emergency room call survey, otolaryngologists believe the intersection of our specialty and emergency medicine warrants further attention; our study gives some information about the patients and diagnostic challenges otolaryngologists may encounter while consulting with EDs and how this might impact their practices.

Patients with otologic conditions predominated our cohort. These have been previously investigated in the literature due to their high economic burden. An analysis of large US healthcare databases estimated that in 2011, ED visits for dizziness and vertigo cost $4 billion, with 40% of patients having imaging studies performed compared to only 9% in 1995. Another recent study demonstrated that almost half of patients seen at a large health system’s ED for vertigo received CT imaging, but only 0.74% of studies identified clinically significant pathology. Our results align with these studies, as 30% of all dizziness/vertigo patients in our cohort received CT imaging. In addition, only 40% of these imaged patients attended their follow-up appointment. Although dizziness/vertigo can have a nonotologic etiology, the high lost to follow-up rate, especially for those who received imaging, suggests either overuse of a costly imaging modality or a lost opportunity to rule out an otologic source in the outpatient setting. Proper reliance on clinical examination, including otoscopy, neurologic assessment, and Dix-Hallpike maneuver, could eliminate the need to perform imaging studies on many of these patients and thus result in significant healthcare cost savings.

A substantial number of our patients were seen after nasal trauma. As with otologic conditions, the management and referral pathways of nasal fractures in the ED have been examined in prior studies. Karagama et al. found that 80% of nasal trauma patients referred to an otolaryngology clinic either did not attend or did not need intervention. Baring et al. implemented a change in the standard referral pathway, and found that patients educated on the clinical signs of nasal fractures were able to appropriately self-refer to an otolaryngology clinic. These studies highlight the prevalence of nasal trauma in the ED along with potential process improvements to identify those who require follow-up appointments. Our analysis demonstrated that two-thirds of nasal trauma patients who attended their follow-up appointment had findings consistent with fixed nasal obstruction or asymmetry, in other words, being a candidate for a surgical procedure. A small number of patients in our cohort actually underwent a closed nasal bone reduction, whereas some elected for septorhinoplasty or declined intervention. A large number of patients were simply observed, taking into consideration that a certain subset of patients lost to follow-up may have received treatment elsewhere. Along with results from other studies, this suggests there is room for improvement in identifying patients who will benefit from outpatient otolaryngology follow-up, thus decreasing the number of unnecessary visits. Improving awareness among ED staff and patients about concerning clinical signs (such as septal hematomas), optimal management, and indications for surgery for nasal fractures/trauma could streamline this process.

We found a 50% concordance between diagnoses given by ED and otolaryngology providers for patients who attended their follow-up visit. The most frequent discrepancy was patients diagnosed with acute otitis media in the ED later being diagnosed as acute otitis externa in the otolaryngology clinic, accounting for 10% of all patients who received different diagnoses. As otitis externa is one of the most common diagnoses in our analysis and other studies, we believe this represents a significant opportunity for improvement in patient care. As stated in the AAO-HNS clinical practice guidelines for acute otitis externa, clinicians should make every effort to distinguish otitis externa from other causes of otalgia, otorrhea, and inflammation. Perhaps better education on the hallmark physical exam findings on routine otoscopy could help nonotolaryngology providers distinguish otitis externa from otitis media more effectively.

We classified the patients with discrepant diagnoses into general categories to get a broader sense of deficiencies (Fig. 3). Patients with otologic conditions seen in the ED and on a subsequent otolaryngology clinic visit had a 57% disagreement between diagnoses, which
accounted for 66% of all discrepancies across all subspecialty categories. This included the otitis media/externa patients, along with less-frequent differences such as otitis media/cerumen impaction or cerumen impaction/otitis externa. These results further underscore that otologic conditions are often challenging to diagnose by nonspecialty providers, thereby making them susceptible to inefficient management practices and added healthcare costs. Pharyngitis or throat pain diagnosed in the ED later being reclassified as laryngopharyngeal reflux (LPR) was also a common occurrence, and we attribute this finding to the often nonspecific nature of symptoms and the inability of ED providers to perform flexible laryngoscopy. This likely accounts for an 81% discrepancy rate between ED and otolaryngology provider diagnoses for all laryngologic-related cases. Additionally, these patients may have had pharyngitis that resolved by the time of the referral visit and incidentally were diagnosed with LPR after laryngoscopy.

Half of the patients never came back for their follow-up appointment or may have sought treatment at a different institution, which impacted our analysis. Facial trauma, such as fractures and lacerations, was the most common diagnosis of patients lost to follow-up, accounting for 40% of the group (Fig. 1). Trauma patients have been shown to possess a high likelihood of re-presenting to the ED instead of attending outpatient follow-up appointments. Our data suggest that aside from trauma cases, there is an array of patients with conditions such as otitis externa, otitis media, pharyngitis, peritonsillar abscess, and cerumen impaction whose symptoms may have resolved in the short time before their referral visits or were appropriately definitively managed and treated in the ED, without the need for further follow-up.

This breakdown of conditions within the lost to follow-up cohort raises the question, “Are patients in the ED being inappropriately referred for otolaryngology clinic follow-up?” Previous studies have commented on the issue of referral appropriateness of specific ENT conditions. For example, Vasilieou et al. found the majority of ENT conditions treated in the ED were infectious in etiology, and that based on the nonurgent nature of conditions such as pharyngitis, otitis externa, and laryngitis, general providers were capable of acting as first contact of care. Another study argued that with the proper training and physician supervision, midlevel providers, such as nurse practitioners, could represent a safe and cost-efficient alternative in the midst of rising healthcare costs. The retrospective nature of our analysis did not allow us to comment on the appropriateness of the referrals; however, our results suggest that many patients may be over-referred in situations in which their symptoms are self-limiting, that definitive management was executed by the ED, or the patients determined for themselves that further outpatient appointments were not warranted. In addition, we should consider the possibility that patients’ illnesses did not resolve and they presented to another facility for treatment.

Lastly, we found that 37% of otolaryngology clinic visits included a procedure, most commonly flexible laryngoscopy, nasal endoscopy, cerumen removal, and suctioning of ear debris. This demonstrates that a sizable number of patients given nonurgent referral visits require procedures, often not performed in the ED, and highlights the limits of ED care. This appears to be one of the drivers of the large demand for otolaryngologic outpatient visits and why the ED potentially represents a large source of patient referrals to an otolaryngology practice.

Our study has a number of limitations. First, our analysis is based on a retrospective chart review and only covers one institution’s experience, so certain patterns may not be generalizable to other institutions with different patient demographics and behaviors. Our cohort excludes patients with urgent problems such as airway compromise, upper aerodigestive tract foreign body, and other diagnoses that required operating room procedures or admission. Consequently, many common ENT conditions are not represented in our results. Additionally, the comparison between ED and otolaryngology providers’ diagnoses must be interpreted in the context that only 50% of the entire patient cohort was analyzed. Also, we acknowledge that lag time between ED and otolaryngology visit is a confounding variable, as many conditions may have resolved in the interim. Finally, the retrospective nature of the study limits our ability to assess the appropriateness of patient referrals; thus, our statements regarding this issue are inferred from the data and not definitive conclusions. Further research efforts to address this issue directly, examine the pediatric population, as well as compare urgent and nonurgent scenarios can create a more comprehensive picture of this challenging issue.

CONCLUSION

As the structure and practices of EDs become more closely scrutinized, with more efforts directed toward addressing overcrowding, reducing nonurgent visits, and improving value through increased quality and decreased cost, our analysis of the referral pattern of patients from adult ED to otolaryngology clinic highlights patient demographics, areas of diagnostic complexities and management practices. We found that patients with otologic conditions and nasal trauma represent a substantial subgroup of this population. These and other areas are potential targets for provider education and standardization of management that could possibly lead to cost containment. In addition, otolaryngologists covering adult EDs can understand how patients in this referral pathway will fit into their practices.

BIBLIOGRAPHY


