Published in final edited form as:

Otolaryngol Head Neck Surg. 2018 June ; 158(6): 1072–1078. doi:10.1177/0194599818758958.

Practice Patterns of Referring Physicians in Management of the Dysphonic Patient

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Abstract

Objective.—Dysphonia is commonly encountered by primary care physicians and general otolaryngologists. We examine practice patterns of referring physicians to a tertiary voice clinic, including adherence to evidence-based guidelines.

Study Design.—Retrospective case series with chart review.

Setting.—Academic tertiary care hospital.

Subjects and Methods.—In total, 821 charts of patients with voice complaints seen at a tertiary voice clinic between January 2011 and June 2016 were reviewed. Included charts (n = 755) were reviewed for type of referring provider, prior diagnoses, and treatments employed by referring physicians. Additional information regarding findings at the time of laryngoscopy/stroboscopy and diagnoses provided by a laryngologist were also obtained. Statistical analysis was performed to determine significant relationships between variables of interest.

Results.—A total of 244 patients (32.2%) received a diagnosis prior to evaluation in the voice clinic, most commonly laryngopharyngeal reflux disease (n = 134). Prior medical treatment was attempted in 221 (29.3%) patients, typically antireflux medications (n = 141). Of the patients treated with proton pump inhibitors by referring physicians, 65.1% lacked symptoms of gastroesophageal reflux disease. Patients with prior treatment had a median duration of symptoms 6 weeks longer than those without prior treatment ($P = .04$). Among previously diagnosed patients, 199 (81.6%) of diagnoses changed after evaluation in the voice clinic.

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Author Contributions

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Disclosures

Competing interests: None.

Conclusion.—Referring physicians frequently treat dysphonic patients empirically, often with antireflux medications. Subspecialist evaluation results in changes in diagnosis in many patients. Empiric treatment can delay referral and appropriate treatment.

Keywords

dysphonia; laryngopharyngeal reflux; videostroboscopy

With a lifetime prevalence of 30%,^{1,2} dysphonia is a common problem encountered in offices of both primary care physicians and general otolaryngologists. The burden of dysphonia on the population is not insignificant, with roughly 28 million workers in the United States reporting occupations that require the use of their voice. Dysphonia causes missed work days in 7.2% of Americans annually, creating over \$2.5 billion in lost income.³

Several recent surveys have examined how primary care physicians and general otolaryngologists approach the dysphonic patient. Interestingly, primary care physicians expressed relative inexperience with managing dysphonia, with 74% of primary care providers reportedly treating fewer than 2 patients for dysphonia each month.⁴ Despite this, primary care providers express a preference for empiric management of dysphonia over otolaryngology referral, with 64% to 91% of providers stating that they would treat empirically before referral.^{4,5} The most common strategy among both primary care physicians and general otolaryngologists was to treat patients with dysphonia for laryngopharyngeal reflux disease (LPRD), an extra-esophageal manifestation of gastroesophageal reflux disease (GERD).⁶

The aim of this study is to examine the practice patterns of referring physicians to a Midwestern tertiary voice clinic. Secondarily, we aim to (1) determine the impact of empiric treatment on time to referral for laryngology evaluation, (2) evaluate the accuracy of prior diagnoses provided, and (3) ascertain adherence to clinical practice guidelines for dysphonic patients.

Methods

After approval by the Institutional Review Board at the University of Kansas Medical Center, a retrospective chart review was performed for patients with a primary complaint of dysphonia evaluated by either of the 2 senior authors (S.K. and J.D.G.) in the voice clinic between January 2011 and June 2016. Patients with a primary complaint of dysphonia who were at least 18 years old were included in the review. Patients were excluded if they were younger than 18 years, did not have a complaint of dysphonia, or were seen outside of the study period. A total of 821 charts were reviewed; 755 charts met all inclusion criteria.

Demographic data, including age, sex, race, and insurance status, were collected. The referring provider was obtained from the clinic note, as identified by the note author. Referring providers were grouped into 3 categories based on this information: self-referral, referral from an otolaryngologist, or referral by another type of physician. All patients who had previously seen an otolaryngologist for dysphonia were grouped with the otolaryngology referral group, even if they were not directly referred by an otolaryngologist.

Information on the practice patterns of referring physicians was reviewed, including type of referring provider, time to referral, prior diagnoses, and prior treatments. All recorded prior diagnoses and treatments were expressly stated in the clinic note, and no assumptions were made based on the patient's problem or medication list in the electronic medical record. For patients seen by multiple providers, any prior treatment was attributed to the provider of the highest level of care unless stated otherwise.

As part of the evaluation, all patients had laryngeal visualization via laryngoscopy and/or videostroboscopy. Videostroboscopy was used in all patients, except in the circumstance that a patient could not produce adequate voice or maintain consistent pitch for technical feasibility of stroboscopy. In the majority of such patients, videostroboscopy was obtained at subsequent visits and results were recorded. Final diagnoses were rendered after laryngeal visualization and any necessary laboratory tests, imaging, or other ancillary studies, occasionally requiring multiple clinic visits. Additional information regarding treatment recommendations and outcomes was collected.

SPSS software was used for all statistical analyses (version 22; SPSS, Inc, an IBM Company, Chicago, Illinois). Means and associated standard deviations were calculated to determine data distribution and uniformity. Pearson χ^2 , Fisher exact test, analysis of variance, and Student *t* tests were used to determine statistically significant relationships between variables of interest. A *P* value of $<.05$ was established a priori to be statistically significant. All eligible patients were included in analysis, and no formal sample size calculations were performed given the retrospective nature of this study.

Results

Demographics

A total of 755 patient charts were included in the study. The mean (SD) age of patients in this cohort was 55.2 (16.3) years. Most patients were female (63.7%), were white (83.4%), and had private insurance (51.6%).

Patients were placed into 3 groups for analysis that were based on the type of referring provider. Patients were self-referred (27.9%, *n* = 211), referred by an otolaryngologist (35.6%, *n* = 269), or referred by another physician (36.4%, *n* = 275), most commonly their primary care physician. Patients were included in the otolaryngology referral group if they had sought prior consultation with an otolaryngologist for dysphonia, even if they were not directly referred by another otolaryngologist.

Demographic characteristics were compared between referral groups. Patients referred by nonotolaryngologists were older, with a mean age of 59.0 years, and they were more likely to have Medicare (*P* < .001). No other significant demographic differences existed between groups. A complete description of demographic data, including comparisons between referral groups, is included in Table 1.

Prior Diagnoses

A total of 244 (32.2%) patients had been provided diagnoses for the presumptive cause of their symptoms before their initial visit to our voice specialty clinic. The most common prior diagnosis was LPRD ($n = 134$), followed by vocal fold paralysis/paresis and benign vocal fold lesions (Figure 1). Among patients referred by otolaryngologists, 50.2% (135/269) had at least 1 prior diagnosis vs 28.0% (77/275) of patients referred by other physicians ($P < .001$). There were 86 patients with a prior diagnosis of LPRD who had not been previously evaluated by an otolaryngologist or had laryngoscopy.

Prior Treatment

A total of 221 (29.3%) patients were treated for dysphonia prior to referral, and 63.8% of patients with prior treatment ($n = 141$) were treated with antireflux medications, including proton pump inhibitors (PPIs) and histamine-2 (H2) blockers. During the initial clinic visit, patients were asked if they had any history of classic symptoms of GERD such as retrosternal pain/burning, regurgitation, or sour brash. Among patients who were previously treated with PPIs, 65.1% denied these symptoms. There was not a statistically significant difference in empiric prescription of antireflux medication between referring otolaryngologists and other referring physicians ($P = .102$) (Table 2).

Duration of Symptoms

The median duration of symptoms at the time of the initial voice clinic visit was 26 weeks (interquartile range [IQR], 56). Patients referred by ear, nose, and throat (ENT) specialists had longer periods of symptom duration before referral, with a median symptom duration of 32 weeks (IQR, 92) vs 16.5 weeks (IQR, 44) for those who self-referred and 26 weeks (IQR, 42) for those referred by other physicians ($P < .001$). Patients who had treatment for dysphonia prior to evaluation in our clinic had a median duration of symptoms of 32 weeks (IQR, 88) compared to 26 weeks (IQR, 40) in patients who had no prior treatment ($P = .008$).

Diagnoses Rendered

All patients seen in our clinic received diagnoses after laryngoscopy, videostroboscopy unless technically unobtainable, and any indicated ancillary testing, imaging, or laboratory testing. Of the 244 patients provided prior diagnoses by referring physicians, 199 (81.6%) received a change in diagnosis. A diagnosis was considered changed if patients had a different or additional diagnosis rendered at the time of their initial clinic visit. Diagnoses were altered more commonly in patients referred by primary care physicians than by otolaryngologists ($P = .019$). The most common new diagnosis was muscle tension dysphonia (60.4%) (Figure 2).

The most common presumptive diagnosis from referring physicians at the time of evaluation in the voice clinic was LPRD. Of the 134 patients referred to our clinic with a presumptive diagnosis of LPRD, the diagnosis was changed in 81 (60.4%). Of these patients, 32.8% had vocal fold bowing, 15.7% had vocal fold lesions, and 9.7% had vocal cord paralysis (Figure 3). LPRD was misdiagnosed more commonly than any other previous diagnosis.

Vocal cord paralysis and paresis were diagnosed by stroboscopy when clear visual abnormalities in the abduction or adduction of the vocal fold were identified. Laryngeal electromyography was not routinely used at our institution for these diagnoses. Vocal cord paralysis and paresis were diagnosed frequently in our clinic, with 75 new diagnoses during the study period. New diagnoses of vocal cord paresis were almost entirely idiopathic in nature (79.2%). New diagnoses of vocal cord paralysis (n = 51) were attributed to a myriad of etiologies. Approximately half of new vocal cord paralysis cases were iatrogenic/surgical (n = 27; 52.9%). Ten patients (19.6%), however, were found to have a malignancy after laryngeal visualization and/or computed tomography (CT) imaging (Table 3).

Discussion

Dysphonia is a common symptom that will affect 30% of people at some point in their life. The impact on patient quality of life and the financial burden of treatment are not insignificant. Recognizing the importance of both patient and provider education, as well as an evidence-based approach to caring for the dysphonic patient,^{7–9} the American Academy of Otolaryngology—Head and Neck Surgery Foundation released Clinical Practice Guidelines (CPG) for dysphonia in 2009.⁷ In this study, we examine practice patterns in referring physicians during a 5-year interval following the promulgation of these guidelines.

During the period of the study, 755 patient charts were reviewed for patients with a primary complaint of dysphonia. A total of 275 patients were referred by a nonotolaryngology provider. Of these, 29.1% received some form of medical treatment for their symptoms, most commonly antireflux medications (81.3%). As primary practitioners do not perform direct laryngoscopy, one can infer that this was essentially empiric treatment. This is consistent with prior studies that suggest that primary care physicians prefer to treat dysphonia empirically rather than refer for laryngoscopy. A 2014 survey by Ruiz et al⁴ indicated that 64% to 91% of providers would treat empirically before referral, including 20% who would treat empirically for greater than 4 weeks before sending the patient to a physician who can perform laryngoscopy.⁵ That having been said, 67.5% of primary care physicians indicated they lack knowledge about dysphonia management and would like more information about managing patients with dysphonia.⁵

This trend is concerning, as it indicates that a large number of patients are being treated for a symptom without adequate evaluation for the cause. In this cohort, patients who received treatment waited an average of 6 weeks longer than those that did not before referral. Furthermore, patients with prior treatment had much greater variability in their duration of symptoms than those without prior treatment. Statement 3B of the 2009 CPG for dysphonia recommends visualization of the larynx for patients with dysphonia “by a maximum of three months after onset” or immediately if a serious cause is suspected.¹⁰ A 2010 response to these guidelines argued for more stringent criteria, advocating for laryngoscopy within 2 to 4 weeks of symptom onset.¹¹ Empiric treatment delayed subspecialist evaluation in our cohort, sometimes for a prolonged duration.

In our series, 29.3% of patients had received some form of medical treatment for their voice symptoms prior to presentation to our clinic. The most common treatment was antireflux

medication, particularly among patients referred by primary care physicians. The association between dysphonia and LPRD was established by Koufman¹² in 1991, in which she evaluated patients with otolaryngologic disorders and suspected GERD with esophageal pH probes. The most common symptom reported by these patients was dysphonia. While 62% of patients had abnormal esophageal pH, only 43% reported classic reflux symptoms. A subsequent study by Koufman et al¹³ in 2000 demonstrated that 73% of patients with symptoms of reflux and signs of reflux of fiberoptic laryngoscopy had abnormal pH probes. These studies implicated GERD in laryngeal disorders, especially dysphonia, even in patients without heartburn or other classic symptoms of GERD.

Since the publication of the second study by Koufman et al,¹³ the number of publications citing LPRD has steadily risen.¹⁴ The impact of this body of literature beyond the realm of otolaryngology is evidenced by the large number of patients in this study empirically treated for LPRD. These data support sentiments regarding LPRD expressed in recent surveys of primary care physicians. Ninety percent of respondents in the 2014 study by Ruiz et al⁴ associated dysphonia with LPRD, noting that “reflux is causative of hoarseness” some or all of the time. In a 2010 survey of primary care physicians by Turley and Cohen,⁵ 82.7% of respondents reported that they would treat dysphonia empirically with antireflux medication before otolaryngology referral. The association has become so pervasive that 12.8% of patients who were self-referred in our study had self-medicated with antireflux medications before presenting for evaluation.

In our study, 18.2% of referring otolaryngologists prescribed antireflux medications for dysphonia, similar to the prescription patterns of primary care physicians. Although otolaryngologists possess the ability to perform laryngoscopy and identify other pathologies that contribute to voice symptoms, prior studies have demonstrated a willingness to treat dysphonic patients for LPRD in the absence of obvious pathology. In 2012, Cohen et al⁶ surveyed general otolaryngologists about their treatment approach to patients with dysphonia who had normal vocal fold mobility and no vocal fold lesions on laryngoscopy. In their study, 58.6% of respondents noted that they would treat these patients with PPIs, the implication being that LPRD has become the default diagnosis in the absence of other obvious pathology.

There has been robust debate regarding the pitfalls of defaulting to LPRD as the presumptive cause of dysphonia.^{11,15} Improvement of laryngeal symptoms in response to PPIs has been shown to be only about 50%, with significantly lower effectiveness in patients without GERD symptoms.^{16,17} In addition, PPIs have been linked to a number of adverse events, including kidney disease, community-acquired pneumonia, and low bone mineral density.^{18,19} Newer evidence linking PPI use to dementia lends further credence to the judicious use of PPIs.^{20,21} As such, statement 5A in the 2009 CPG recommends against the prescription of antireflux medication for dysphonia without signs or symptoms of GERD.¹⁰ Over 65% of patients in this cohort who were treated with PPIs, however, denied symptoms of GERD, with similar rates among primary care physicians and otolaryngologists. This tendency is reflected in previous studies, in which 79.2% of respondents reported willingness to treat patients with dysphonia for reflux in the absence of classic reflux symptoms.⁴

One in 4 patients seen in our tertiary voice clinic presented with a previously prescribed diagnosis for their dysphonia. Most of these diagnoses were rendered during prior otolaryngology evaluation, especially when a diagnosis other than LPRD was provided. This is understandable since laryngoscopy is paramount to ascertaining the etiology of a patient's dysphonia and is performed almost exclusively by otolaryngologists. However, 81.6% of patients with prior diagnoses had a change in diagnosis after evaluation in the voice clinic, including 75% of patients referred by otolaryngologists. Of the 134 patients presenting with a diagnosis of LPRD, the diagnosis was changed for 60.6% of patients, more often than for any other previous diagnosis. In 2014, Sulica²² looked at a series of 26 patients with a chief complaint of hoarseness and a prior diagnosis of reflux alone. One hundred percent of these patients were found to have diagnoses other than reflux on repeat evaluation. Rafii et al²³ prospectively studied 21 patients with dysphonia and a prior diagnosis of LPRD. Over 80% of patients in their study had prior otolaryngology evaluation, and similarly 100% of patients were found to have pathology distinct from LPRD, including 4 neoplastic lesions.

This study bears the usual limitations of a retrospective study. Missing or ambiguous data may exist due to collection of data from charts of patients seen by multiple providers. To the extent possible, data were extracted directly from the history provided by the patient during the initial clinic visit. Some information was entered into the patient's electronic medical record by medical assistants, to include the names of referring physicians. This creates the possibility for errors in data entry that might skew results regarding practice patterns of specific referral groups.

Similarly, attribution of PPI prescription was based on the medical history provided by the patient. We decided to resolve the small number of ambiguous cases by attributing the prescription to the highest level of care based on the assumption that the otolaryngologist, at the very least, visualized the larynx and did not controvert the assertion that LPRD contributed to the patient's dysphonia. As such, our data may overestimate the prescription of PPIs by otolaryngologists and underestimate prescription of PPIs by primary care physicians.

Records from referring physicians were not available for review; therefore, assumptions about prior evaluation and management based on patient history cannot be fully verified. We relied on patient recall for multiple data elements, to include previous diagnoses and treatments. Many patients stated having no prior diagnosis or cause for their dysphonia, even after having seen an otolaryngologist, further highlighting the difficulties of relying on patient recall to disambiguate data.

There is an inherent selection bias built into the study design, as we see only patients who failed empiric therapy and cannot determine how frequently empiric therapy is successful in a primary care practice. A prospective study that further investigates past evaluation and management, perhaps combined with use of records from referring physicians, could add clarity to our understanding of the behavior of referring physicians.

Our patient population is racially homogeneous and represents a single Midwestern academic practice. Beyond this, the referral patterns of our private health care system may

not parallel those of another health care model, which further limits external validity. A multicenter study, even retrospective in nature, could help validate our results about practice patterns of referring physicians in different practice settings.

This study is intended, in part, to explore the response by community physicians to the 2009 CPG, and its enrollment period from 2011 to 2016 is a conscious effort to capture this response. However, there is a possibility for a lag period for widespread adoption of the CPG, which may not fully be reflected in our study.

Conclusion

Referring physicians to our voice specialty clinic commonly manage dysphonia empirically, often with the use of antireflux medications. Adherence to the CPG, especially regarding use of the use of antireflux medication in dysphonia, was low in this cohort. Prior diagnoses were inaccurate in over 80% of cases, and prior treatment created possible delays in referral. With the upcoming revision of the CPG for dysphonia on the horizon, it will be imperative to include distribution to and education for both primary care physicians and otolaryngologists to ensure the best evidence-based care for dysphonic patients.

Acknowledgments

Sponsorships: None.

Funding source: This work was supported by a CTSA grant from the National Center for Advancing Translational Sciences (NCATS) awarded to the University of Kansas Medical Center for Frontiers: The Heartland Institute for Clinical and Translational Research UL1TR000001 (formerly #UL1RR033179). The contents are solely the responsibility of the authors and do not necessarily represent the official views of the National Institutes of Health or NCATS.

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Figure 1.

Diagnoses rendered by referring physicians. ENT, ear, nose, and throat; LPRD, laryngopharyngeal reflux disease; MTD, muscle tension dysphonia; VCP, vocal cord paralysis/paresis.

Figure 2.
Diagnoses rendered in our voice specialty clinic. LPRD, laryngopharyngeal reflux disease;
MTD, muscle tension dysphonia; VCP, vocal cord paralysis/paresis.

Figure 3.

Diagnoses rendered in our clinic to patients with a prior diagnosis of LPRD. LPRD, laryngopharyngeal reflux disease; MTD, muscle tension dysphonia; VCP, vocal cord paralysis/paresis.

Table 1.

Demographic Data.

Referral Group	Self (n = 211)	Other Physicians (n = 275)	ENT (n = 269)	Total (N = 755)	P Value
Age, mean (SD), y	52.4 (18)	59 (14.7)	55.3 (15.7)	55.9 (16.3)	<.001
Sex, No. (%)					
Female	130 (61.6)	173 (62.9)	178 (66.2)	481 (63.7)	.554
Male	81 (38.4)	102 (37.1)	91 (33.8)	274 (36.3)	
Insurance, No. (%)					
Commercial	105 (49.8)	145 (53.1)	138 (51.5)	388 (51.6)	<.001
Medicare	37 (17.5)	95 (34.8)	57 (21.3)	189 (25.1)	
Medicaid	0 (0)	5 (1.8)	3 (1.1)	8 (1.1)	
Other	69 (32.7)	28 (10.3)	70 (26.1)	167 (22.2)	
Race/ethnicity, No. (%)					
White	174 (82.5)	225 (82.1)	230 (85.5)	629 (83.4)	.172
Black	20 (22.4)	39 (14.2)	21 (7.8)	80 (10.6)	
Hispanic/Latino	5 (2.4)	4 (1.5)	8 (3.0)	17 (2.3)	
Asian/Pacific Islander	3 (1.4)	2 (0.7)	2 (0.8)	7 (0.9)	
Other	9 (4.3)	4 (1.5)	7 (2.6)	20 (2.7)	

Abbreviation: ENT, ear, nose, and throat.

Table 2.

Use of Antireflux Medication by Type of Referring Provider.

Referral Group	Self, No. (%)	Other Physicians, No. (%)	ENT, No. (%)	Total No.	P Value
Histamine-2 blockers	5 (2.4)	13 (4.7)	10 (3.7)	28	.395
PPI	22 (10.4)	51 (18.5)	39 (14.5)	112	.044
Any reflux treatment	24 (11.4)	59 (21.5)	43 (16.0)	126	.012

Abbreviations: ENT, ear, nose, and throat; PPI, proton pump inhibitor.

Table 3.

Etiologies of Vocal Cord Paralysis.

Etiology	Paralysis, No. (%)	Paresis, No. (%)
Idiopathic	9 (17.6)	19 (79.2)
Neck surgery	22 (43.1)	3 (12.5)
Known malignancy	6 (11.8)	0
Intubation/NGT	4 (7.8)	1 (4.2)
New malignancy	4 (7.8)	0
Thoracic surgery	3 (5.9)	0
Neurologic disease	0	1 (4.2)
Skull base surgery	1 (2.0)	0
XRT	1 (2.0)	0
Trauma	1 (2.0)	0

Abbreviations: NGT, nasogastric tube; XRT, external beam radiation therapy.