

INTRODUCTION

- The US Census Bureau estimated that the elderly population (age over 65) numbered 47.7 million in 2017.¹
- The number of Americans over 65 is projected to expand to over 70 million by 2030 (~20% of the US population).
- One in three Americans will experience a voice problem in their lifetime.²
 - The prevalence of voice related disorders appears to be higher amongst the elderly (10-47%)³⁻⁶,
 - The rate for referrals for this cohort is accelerating in-line with the demographic shift.⁷
- Voice disorders in the elderly contribute to social isolation, depression, and overall decreased quality of life.⁸
- AIMS:
 - Describe symptoms and etiologies of dysphonia among elderly patients.
 - Examine treatment outcomes for surgical, medical, and voice therapy using the Voice Handicap Index (VHI).

RESULTS

Demographics (Table 1)

- A total of 242 patients over age 65 were included in this retrospective review.
- The mean (SD) age of this patient cohort was 73.6 (±6.24) years.

Age Group	65-69 yo (N=75; 32.6%)	70-74 yo (N=67; 27.7%)	75-79 yo (N=42; 19.8%)	>80 yo (N=48; 19.9%)	Total (N=242)	P-value
Gender, No. (%)						
Male	28 (35.4%)	23 (34.3%)	19 (39.6%)	17 (35.4%)	87 (36.0%)	0.947
Female	51 (65.6%)	44 (65.7%)	29 (60.4%)	31 (64.6%)	155 (64.0%)	
Race, No. (%)						
Caucasian	67 (84.8%)	55 (82.1%)	46 (95.8%)	42 (87.9%)	210 (86.8%)	0.284
African American	7 (8.9%)	10 (14.9%)	1 (2.1%)	4 (8.3%)	22 (9.1%)	
Other	5 (6.3%)	2 (3.0%)	1 (2.1%)	2 (4.2%)	10 (4.1%)	
Insurance, No. (%)						
Medicare	47 (59.8%)	36 (53.7%)	28 (59.6%)	26 (54.2%)	137 (56.8%)	0.987
Commercial	16 (21.8%)	17 (25.4%)	10 (21.3%)	13 (27.1%)	56 (24.1%)	
Other	14 (17.7%)	14 (20.9%)	9 (19.1%)	9 (18.8%)	46 (19.1%)	
Referral Source, No. (%)						
Self	23 (29.1%)	20 (29.9%)	13 (27.1%)	15 (31.3%)	71 (29.3%)	0.994
PCP	26 (32.9%)	25 (37.3%)	16 (33.3%)	15 (31.3%)	82 (33.9%)	
Otolaryngology	16 (22.8%)	14 (20.9%)	13 (27.1%)	13 (27.1%)	56 (24.0%)	
Other	12 (15.2%)	8 (11.9%)	6 (12.5%)	5 (10.4%)	31 (12.8%)	

Table 1: Demographic Data. PCP=Primary Care Provider

Prior diagnosis and management

- Laryngopharyngeal reflux disease (LPRD) was the most common diagnosis prior to referral (32.8%) (N=21)
 - 17.4% (N=42) of patients were prescribed proton pump inhibitors (PPI) prior to referral.
- Patients were more likely to have been previously treated for reflux if they were younger (p=0.023), self-referred (p=0.027), had classic reflux/GERD symptoms (p<0.000) or referred by PCP (p=0.037). This significance was lost when patients were referred by an otolaryngologist (p=.353).

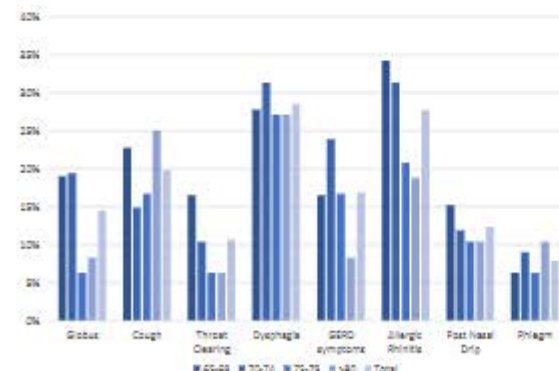


Figure 1: Distribution of presenting symptoms by age.

Presenting symptoms (Figure 1)

- The most common co-existing symptom was dysphagia (28.5%).
- The frequency of globus, throat clearing, GERD and allergic rhinitis decreased with increasing age.
- There was no difference in co-existing symptoms between age or diagnosis.

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Etiology/Diagnoses (Figure 2)

- Following evaluation by a laryngologist, the most common diagnosis was vocal cord atrophy.
- The diagnosis of LPRD decreased with increasing age. The diagnosis of VCP was more common with older age.
- There was no difference in etiology of dysphonia between elderly sub-groups (Figure 3).
- Patients diagnosed with VCP or RRP were more likely to have seen an otolaryngologist prior to referral (p=0.003).

Pre- and Post Treatment Voice Handicap Index (VHI)

- Patients were divided into three groups for analysis based on intervention (surgery = 22.3%, medical therapy = 44.0%, voice therapy = 33.7%)
- Pre treatment
 - Average VHI for the entire elderly cohort at presentation was 50.9 (SD±29.21).
 - Patients that required surgery had significantly higher pre-treatment VHI scores compared to medical or therapy groups. (p=0.010).
- Post treatment
 - Average VHI for the whole group improved to 36.6 (SD±28.03) following treatment.
 - Patients who had surgery had higher post-intervention VHI compared to other groups (p=0.026).
 - Patients who had surgery had the largest improvement in the average VHI [-19.05 (SD±21.97)], followed by voice therapy [-16.06 (SD±14.95)], and medical management [-9.6 (SD±26.10)].
- No statistical significance was seen in the mean distribution of the VHI delta scores across groups.

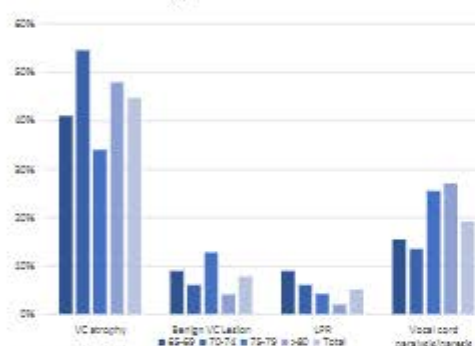


Figure 3: Distribution of dysphonia etiologies by age group. VC=Vocal cord, LMP=Laryngopharyngeal reflux.

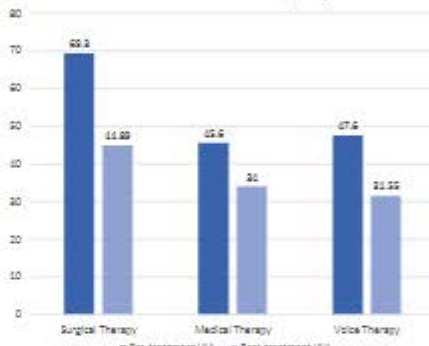


Figure 4: Pre and post-intervention voice handicap index scores by management group.

DISCUSSION

- In order to address the voice needs of aging patients, it is imperative that providers understand the problem.¹
- Elderly patients continue to be treated for LPRD in the absence of classic GERD complaints.
 - Updated AAO-HNS dysphonia guidelines recommend against prescription of anti-reflux medications for isolated dysphonia.⁹
 - > 17% of our cohort were placed on PPI prior to referral. Of these, 61.2% denied symptoms consistent with GERD.
 - Patients were twice as likely to be treated with PPI if referred from PCP (presumably before the larynx was visualized) than if referred from otolaryngologist.
 - 32.8% of referred patients were previously diagnosed with LPRD. Following evaluation by a laryngologist, LPRD only accounted for 5.9% of cases.
 - This is not without its risks considering evidence linking long PPI use to dementia¹⁰⁻¹¹ and chronic kidney disease¹²⁻¹³.
- The etiology of dysphonia differs amongst populations.
 - In adults 18-60, the most common causes of dysphonia are primary hyperfunction, LPRD and polyps¹⁴
 - Our elderly cohort, vocal fold atrophy and vocal cord paralysis were the most common causes.
- While patient responses to the VHI showed improvement in all treatment groups, only the surgical group had a clinically significant improvement in VHI.¹⁵
 - This likely reflects the impact of physiologic changes to the vocal folds and respiratory system with aging, as well as the impact of medical comorbidities.⁴
 - Additionally, rates of voice therapy drop out¹⁶ and medication non-adherence are higher in the elderly,¹⁷ which could limit the benefits of these therapies for elderly patients with dysphonia.

CONCLUSION

- Elderly patients with dysphonia are an expanding population group that differ from the general adult population
- Empiric treatment with PPI for presumptive diagnosis of LPR continues to be high in elderly patients, despite recommendations in clinical practice guidelines.
- In our patient cohort, atrophy and paralysis/paresis groups were the most common etiologies of dysphonia.
- The surgical intervention group showed a clinically significant improvement in VHI scores. Voice therapy and medical management did not result in a clinically significant improvement in voice.

FOR MORE INFORMATION:

Amy Jacks, MD
Department of Otolaryngology-Head and Neck Surgery
University of Kansas Medical Center
3901 Rainbow Boulevard, MailStop 2010
Kansas City, KS 64160
Email: ajacks2@ku-med.edu

