AGE-RELATED ETIOLOGICAL SPECTRUM OF HOARSENESS OF VOICEAMONG PATIENTS VISITING TO TERTIARY CARE HOSPITAL

Uneeba Rehman[1], Zubair Anwar[2], Rehana[3],
Maria Mahmood[3] , Muhammad Razzaq Dogar[2], Ahsan Ali Siddiqui[6]

[1]ENT and Head and Neck Surgery Department, PNS Shifa Hospital
[2]ENT and Head and Neck Surgery Department, Jinnah Post Graduate Medical Centre Karachi
[3]ENT and Head and Neck Surgery Department BMU
[4]Family Medicine, Ministry of Health

Abstract

Objectives: To determine the frequency of age-related etiological spectrum of hoarseness of voice among patients visiting to tertiary care hospital

Methodology: This cross sectional observational study using non-probability consecutive sampling technique was done for six months at department of ENT, Jinnah Postgraduate Medical Center, Karachi. Patients of either gender visiting ENT department between 18 - 60 years and diagnosed with hoarseness were included while patients with history of thyroid surgery, prior vocal cord paralysis (diagnosed on indirect laryngoscope done pre-operatively), or with severe systemic disease were excluded. At presentation, all patients had their vocal cords checked. For data analysis, SPSS version 20.0 was used. Chi-square test was applied to test for significance. keeping $p < 0.05$ as significant.

Results: From 177 patients, mean age was 42.56 ± 12.53 years. The age ranged from minimum of 20 years to maximum of 60 years. 111 (62.71 %) patients were male, 66 (37.2 %) females.According to diagnosis, 39 (22 %) patients reported hoarseness of voice after thyroid surgery, 37 (20.90 %) had left vocal cord paralysis, 14 (7.90 %) had right vocal cord paralysis, 13 (7.34 %) had carcinoma, 19 (10.7 %) had vocal cord nodules, 16 (9.03 %) vocal polyps, 20 (11.2 %) chronic laryngitis and 19 (10.16 %) had acute laryngitis.Most common cause of hoarseness in patients 20-42 years was left vocal cord paralysis (7.3 %) and in >42 years of age was thyroid surgery (16.9%).

Conclusion: Majority of patients with hoarseness of voice were older than 40 years of age with the most common etiology being thyroid surgery and vocal cord paralysis.

Keywords: Hoarse Voice; Etiological spectrum; Organic Voice Disorders; Non-organic Voice Disorders

Introduction

Hoarseness of voice, also termed as altered quality of voice, loudness, pitch or voice effort leading to impairment of communication or reducing voice-associated quality of life (1). Hoarseness is one of the most common symptom that is presented to ENT clinicians. It is invariably an early indication of various conditions that are either directly or indirectly effect vocal apparatus (2).

Described as a symptom and not a disease of diagnosis in itself, the etiological factors associated with hoarseness widely range from being completely benign to being very malignant (3). It affects around a third of population at some or the other point in life. The causes behind hoarseness are diverse, being divided into acute or chronic (4). However, the onset of hoarseness is more commonly seen in acute cases, which in most patients is caused by inflammation such as acute laryngitis while other reasons for hoarseness include viral infection, laryngeal trauma, smoking, thyroid surgery or vocal abuse (5).

The causes of chronic hoarseness are vocal polyp, nodule of vocal cord, functional dysphonia, vocal cord tumor, laryngopharyngeal reflux disease (LPR), smoking, vocal abuse, post nasal drip, neoplasms of esophagus, thyroid, lung and chronic granulomatous diseases such as tuberculosis or other systemic diseases like diabetes (6, 7).

Hoarseness that lasts for months tends to demand proper diagnosis as well as an early management (8). Sometimes underlying cause of hoarseness can be overlooked due to lack of a proper history, especially in chronic cases (9). This can lead to delay in diagnosing and so treating the conditions, causing persistent hoarseness in addition to discomfort and even fatal outcomes like in tuberculosis, malignancy and/ or its complications (10).Patients with hoarseness lasting for over two weeks are recommended to undergo evaluation through vocal cords visualization (11).

Hoarseness is commonly observed among adults, having lifetime prevalence of approximately 30 % and point prevalence for adults below 65 years of age at 7 % (12). It has been reported that around 67 % of incidences of hoarseness among older population is around 6 % and associated

with dysphonia, being majorly lined with increasing age (13). The changes in quality of voice are caused by normal gaining process. Jitters in voice are found to rise with age and are more frequently reported in older population than the younger ones (14). Over 40 million of the population that is above 65 years of age is reported to have hoarseness in some point of their adult life (15). Age-related hoarseness is important to be investigated in terms of the symptoms they present with in order to reach the underlying diagnosis as soon as possible so that treatment can be ensued. That is one of the main reasons by age-related illnesses leading to hoarseness of voice have shown to become significant ad ought to be researched upon (16).

The objective of this study was to determine the age-related etiological spectrum of hoarseness of voice among patients visiting to tertiary care hospital.

Methodology

This was a cross sectional observational study carried out through non-probability consecutive sampling technique for a period of six months at the department of ENT, Jinnah Postgraduate Medical Center, Karachi, Pakistan. Patients of either gender visiting the ENT department between the ages of 18 and 60 years and diagnosed with hoarseness for over 3 months were included in the study whilst patients having previous history of thyroid surgery, prior vocal cord paralysis (diagnosed on indirect laryngoscope done pre-operatively), or which severe LV dysfunction (on echocardiography), renal failure or lung disease were all excluded from the study.

The sample size was calculated using Epi Info 7, keeping hoarseness of voice as a cause of Ca larynx at 8 % with 95 % confidence level, margin of error (d) =4%, the sample size came out to be n=177 (17).

After ethical approval from Ethical Review Committee of JPMC Karachi, patients were included in the study according to inclusion and exclusion criteria after taking informed consent. At presentation, all patients had their vocal cords checked.

Data Analysis

For data analysis, SPSS version 20.0 was used. For quantitative variables such as age, mean and standard deviation was reported. For qualitative variables like outcomes variables frequency and percentages were reported. Stratification was done according to age to determine its effect on outcome variables by applying chi-square test. The level of significance was kept at $p < 0.05$.

Results

From the total of 177 patients included in the study, the mean age of patients was 42.56 ± 12.53 years. The age ranged from minimum of 20 years to maximum of 60 years. The median age was 42 years and with 95% confidence interval was 40.70 – 44.41 years [Table I].

111 (62.71 %) of patients were male while 66 (37.2 %) of patients were females [Figure I].

According to diagnosis, 39 (22 %) of patients reported hoarseness of voice after thyroid surgery, 37 (20.90 %) patients had left vocal cord paralysis, 14 (7.90 %) had right vocal cord paralysis, 13 (7.34 %) had carcinoma, 19 (10.7 %) had vocal cord nodules, 16 (9.03 %) vocal polyps, 20 (11.2 %) chronic laryngitis and 19 (10.16 %) had acute laryngitis [Figure II].

With regards to stratification of age groups according to the etiological spectrum, in patients between 20-42 years, 8 (4.5 %) patients had acute laryngitis while in >42 years, 11 (6.2%) had acute laryngitis with an insignificant p-value of 0.924. In between 20-42 years, 9 (5.1 %) had thyroid surgery while in >42 years age group, 30 (16.9 %) had thyroid surgery with a significant difference of p-0.031 between the groups. The etiology of chronic laryngitis was reported in 4 (2.3 %) patients between 20-42 years of age, while in 16 (9.0 %) patients >42 years of age (p-0.08). Etiology of vocal polyps was observed in6 (3.4 %) of patients between 20-42 years while in 10 (5.6 %) of patients >42 years of age (p-0.976).Vocal cord nodules were reported in 5 (2.8 %) between 20-42 years while in 14 (7.9 %) patients >42 years of age (p-0.272). Carcinoma was found in 2 (1.1 %) patients between 20-42 years while in 11 (6.2 %) patients >42 years (p<0.08). Right vocal cord paralysis was found in 5 (2.8 %) patients between 20-42 years and in 09 (5.1 %) patients >42 years (p-0.86). Left vocal cord paralysis was found in 13 (7.3 %) patients between 20-42 years and in 24 (13.6 %) patients >42 years (p-0.70) [Table II].

Table I: Statistics of patients according to age (n=177)

Mean age (years)	42.56
± SD	12.53
Median	42.0
Minimum	20
Maximum	60
95 % Confidence Interval	40.70 – 44.41

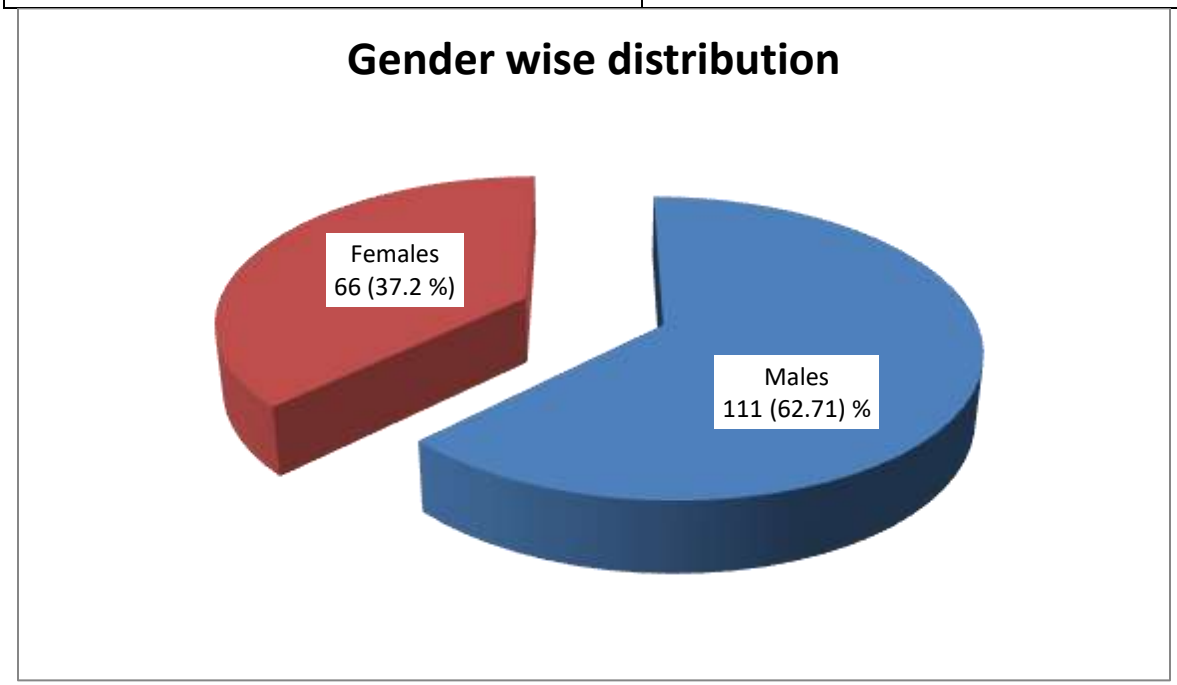

Figure I:Graphical representation of gender wise distribution of patients (n=177)

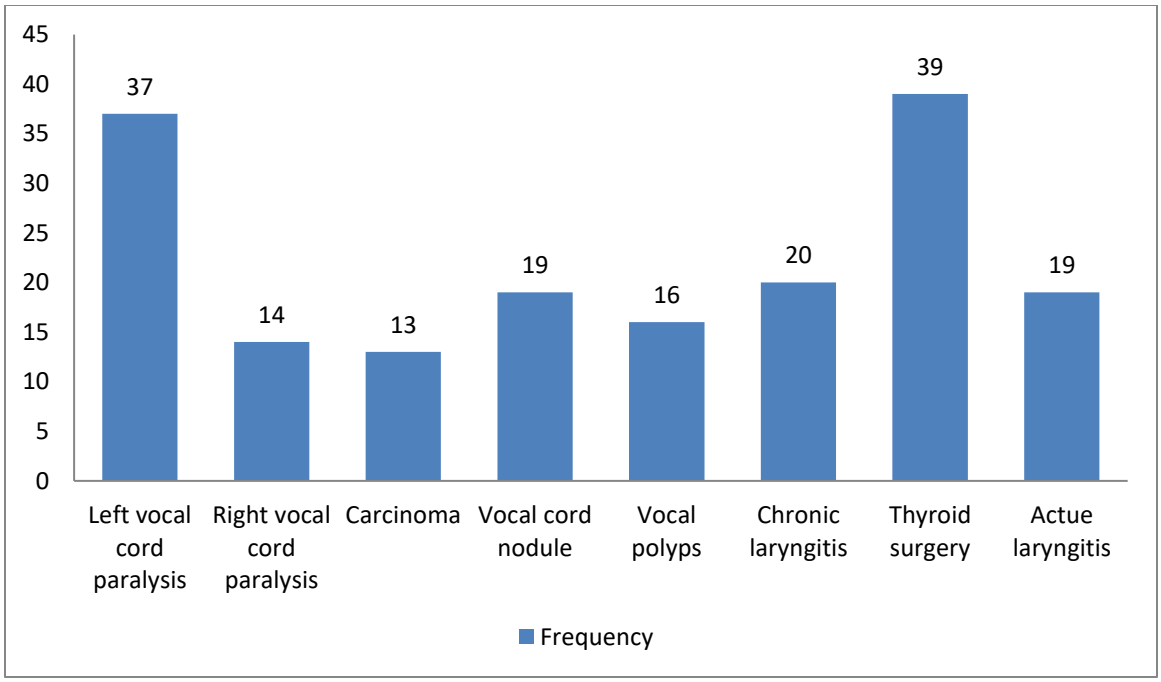

Figure II: Tabulated presentation of etiological spectrum of hoarseness of voice (n=177)

Table II: Cross tabulation of etiological spectrum hoarseness of voice according to age (n=177)

Etiological Spectrum		Age Group (in years)		p-value
		20-42 years	>42 years	
Acute Laryngitis	Yes	8 (4.5%)	11 (6.2%)	0.924
	No	60 (33.9%)	98 (55.4%)	
Thyroid Surgery	Yes	9 (5.1%)	30 (16.9%)	0.031 *
	No	59 (33.3%)	79 (44.6%)	
Chronic Laryngitis	Yes	4 (2.3%)	16 (.0%)	0.080
	No	64 (36.2%)	93 (52.5%)	
Vocal Polyps	Yes	6 (3.4%)	10 (5.6%)	0.976
	No	62 (35%)	99 (55.9%)	
Vocal Cord Nodule	Yes	5 (2.8%)	14 (7.9%)	0.272
	No	62 (35.6%)	95 (53.7%)	
Carcinoma	Yes	2 (1.1%)	11 (6.2%)	0.083
	No	66 (37.3%)	98 (55.4%)	

Right Vocal Cord Paralysis	Yes	5 (2.8%)	9 (5.1%)	0.863
	No	63 (35.6%)	100 (56.5%)	
Left Vocal Cord Paralysis	Yes	13 (7.3%)	24 (13.6%)	0.702
	No	55 (31.1%)	85 (48%)	

Discussion

In accordance with the findings of this study, majority of patients were reported to be > 42 years of age (63 %) as opposed to between 20-42 years of age (37 %) followed by patients in the 3rd decade of life (18 %). Similarly in a study byBabu VS et al done to find out the clinical features, pre-disposing factors and etiology of hoarseness of voice, it was reported that from the total of 251 patients included in the study, the age range was between 11 to 78 years with majority of the patients being in their 4th decade and 6th decade (22.31% each) of life. Likewise the most common etiology of hoarseness of voice reported was functional voice disorders in 16.33 % patients followed by vocal nodule in 11.95 % of patients. In study, however, the most common etiology of hoarseness of voice was due to thyroid surgery followed by vocal cord paralysis (18). One important significant finding in our study was that a significant difference was reported within the age groups in terms of thyroid surgery (p-0.031).

Another study by Ridha SA reported that the peak incidence of hoarseness observed in their study was in-between 31-40 years of age with chronic laryngitis (in 15.5 %) being the most common etiology of hoarseness.The most common cause was chronic laryngitis and laryngeal cancer among patients >60 years of age (19). In line with the findings of our study where majority of patients were >42 years of age,Gaurav K et al observed in their study of 180 patients, majority of patients were between 31-40 years of age and above with chronic laryngitis being a common cause of hoarseness (20). In yet another study by Singh D et al, among 275 patients included in the study, the mean age of patients was 42.59 ± 15.37 years with the most common age group being between 31 to 40 years (27.3%). The most common etiology of hoarseness of voice reported in the study was due to vocal nodule in 38.9 % of patients.The majority of patients in the study with hoarseness fell between 21-50 years age group (67.6 %) (21).

Published literature suggests that the point prevalence of hoarseness in patients above 50 years of age is around 7 % (22). Although the common etiology with regards to hoarseness of voice reported is either dysphonia, thyroid related surgeries, vocal cord nodule or polyp, however in older age groups; cancer and chronic laryngitis tend to remain the more common causes of hoarseness (23).

Although the findings of this study were in line with the results observed in other studies, however, the study was not free from limitations. Limited sample size and single-centered study along with the study design and sample selection technique could have been a source of bias, due to which the further studies are required so that the findings of this study can be generalized.

Conclusion

The findings of this study showed that majority of patients with hoarseness of voice were older than 40 years of age with the most common etiology of hoarseness being thyroid surgery and vocal cord paralysis. Further studies are needed to authenticate the findings of our study.

References

1. Reiter R, Hoffmann TK, Pickhard A, Brosch S. Hoarseness—causes and treatments. DeutschesÄrzteblatt International. 2015 May;112(19):329-37.
2. Born H, Rameau A. Hoarseness. Medical Clinics. 2021 Sep 1;105(5):917-38.
3. House SA, Fisher EL. Hoarseness in adults. American Family Physician. 2017 Dec 1;96(11):720-8.
4. Lechien JR, Saussez S, Harmegnies B, Finck C, Burns JA. Laryngopharyngeal reflux and voice disorders: a multifactorial model of etiology and pathophysiology. Journal of Voice. 2017 Nov 1;31(6):733-52.
5. Martins RH, do Amaral HA, Tavares EL, Martins MG, Gonçalves TM, Dias NH. Voice disorders: etiology and diagnosis. Journal of voice. 2016 Nov 1;30(6):761-e1.
6. Vivek S, Shankar G. Changing Trend in the Etiological Spectrum of Hoarseness of Voice in Rural India: A Prospective Hospital-Based Study. Indian Journal of Otolaryngology and Head & Neck Surgery. 2020 Jun 16:1-6.

7. Baitha S, Raizada RM, Singh AK, Puttewar MP, Chaturvedi VN. Predisposing factors and aetiology of Hoarseness of voice. Indian journal of otolaryngology and head and neck surgery. 2004 Jul;56(3):186-90..
8. Stinnett S, Chmielewska M, Akst LM. Update on management of hoarseness. Medical Clinics. 2018 Nov 1;102(6):1027-40.
9. Soni S, Chouksey S. A study of clinicopathological profile of patients of hoarseness of voice presenting to tertiary care hospital. Indian Journal of Otolaryngology and Head & Neck Surgery. 2017 Jun;69(2):244-7.
10. Rao SV, Sharma VS, SubbaRao MV, Keerthi GS, Deta SI, Seepana PT. Etiopathology of hoarseness of voice: a clinical study. Int J PhonosurgLaryngol. 2016 Dec 1;6(02):64-7.
11. Nanwani P, Nigam R, Jain AK. Clinico-aetiological study of hoarseness of voice. J Med SciClin Res. 2019;7(01):686-91.
12. Roy N, Merrill RM, Gray SD, Smith EM. Voice disorders in the general population: prevalence, risk factors, and occupational impact. The Laryngoscope. 2005 Nov;115(11):1988-95.
13. Stachler RJ, Francis DO, Schwartz SR, Damask CC, Digoy GP, Krouse HJ, et al. Clinical practice guideline: hoarseness (dysphonia). Otolaryngology–Head and Neck Surgery. 2018 Mar;158(1):1-42.
14. Cooper LN, Quested RA. Hoarseness: An approach for the general practitioner. Australian family physician. 2016 Jun;45(6):378-81.
15. Taous A, Hossain SM, Rahman MM. Aetiological factors of hoarseness of voice in patients attending in a district level hospital. Bangladesh Journal of Otorhinolaryngology. 2018;24(2):125-30.
16. Roy N, Kim J, Courey M, Cohen SM. Voice disorders in the elderly: A national database study. The Laryngoscope. 2016 Feb;126(2):421-8.
17. Pal KS, Kaushal AK, Nagpure PS, Agarwal G. Etiopathological study of 100 patients of hoarseness of voice: in a rural based hospital. Indian Journal of Otolaryngology and Head & Neck Surgery. 2014 Jan;66(1):40-5.
18. Babu VS, Shaik S. Hoarseness of voice: a retrospective study of 251 cases. Indian Journal of Applied Research. 2016;6(6):458-62.

19. Ridha SA. Etiological spectrum of the hoarseness of voice. Journal of Pharmaceutical Sciences and Research. 2018 Sep 1;10(9):2326-7.
20. Gaurav K, Aditi S, Baldev S, Sanjeev B, Ravinder S. Hoarseness of voice: Etiological spectrum. Online Journal of Otolaryngology. 2015;5:13-22.
21. Singh D, BhandariAM, Shahi S, Shrestha NK. Etiological Spectrum of Hoarseness of Voice in Western Regional Hospital, Pokhara, Nepal. Medical Journal of Pokhara Academy of Health Sciences. 2020 Dec 31;3(2):249-53.
22. Srirangaprasad K, Mahajan R, Kanithavalli K, Deepa P. A Prospective Study to Determine Clinico-Etiological Factors in Hoarseness of Voice. Journal of Evolution of Medical and Dental Sciences. 2020 Feb 17;9(7):374-8.
23. Ahmmed SU, Asaduzzaman AK, Ahsan MA, Hossain MZ, Azad MA, Alam MI. Hoarseness of Voice: An Etiological Study. Bangladesh Journal of Otorhinolaryngology. 2017;23(1):47-51.