

Clinical Profile of Hoarseness of Voice: A Hospital-Based Cross-Sectional Study

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Abstract

Introduction Hoarseness is a symptom with a varied etiology ranging from inflammatory condition, benign lesions to malignant lesions. Benign conditions are more common than malignant. Proper knowledge of clinical profile and evaluation is necessary to treat the cause.

Objective It was conducted with the aim to study the clinical profile of patients with hoarseness of voice.

Materials and Methods It was a descriptive cross-sectional study of 2 years conducted at Department of ENT at Tertiary Health Care Hospital, India. Patients aged above 10 years presenting with hoarseness of voice were included in the study. After detailed history related to sociodemographic particulars, clinical examinations including Hopkin's rod examination in all patients and direct laryngoscopy, and radiological and histopathological examination were performed whenever indicated.

Results Out of total 100 patients, maximum patients (32%) were in the age group of 21 to 30 years. There was slight male preponderance with male:female ratio of 1.17:1. Laborer (29%) was the major group affected in terms of occupation. Most common predisposing factor was smoking (35%). Commonest etiology for hoarseness of voice was chronic laryngitis (20%).

Conclusion Hoarseness of voice as a symptom should never be ignored as its etiology may range from simple infection to malignancy. At our tertiary care center majority of patients come from rural area. Most of the etiological factors found in our study were treatable medically or surgically. Early diagnosis is the key to improve the outcome of treatment.

Keywords

- ▶ hoarseness of voice
- ▶ laryngoscopy
- ▶ etiology
- ▶ vocal cord

Introduction

Voice is an integral part of human attribute known as speech. It is a strong tool revealing a person's physical state.¹

A person with complaint regarding voice may present with hoarseness, voice fatigue, breathy voice, reduced phonation range, pitch breaks, etc. Hoarseness of voice is characterized by altered pitch, loudness, vocal effort, and quality that

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decrease voice-related quality of life or impair communication. It is just a symptom and not a disease.

Hoarseness can be of acute or chronic onset. Acute onset of hoarseness can be usually due to viral infections, voice abuse, trauma to the larynx, thyroid surgery, etc. While chronic onset is caused by benign or malignant lesions, chronic granulomatous diseases like tuberculosis or systemic diseases like diabetes mellitus. Benign conditions are more common than malignant conditions.² It is a most common presenting symptom for more serious conditions that needs immediate intervention. If the hoarseness of the voice persists for more than 2 weeks, then it should be investigated properly to find the cause.³

Objective

The aim of the study was to study the clinical profile of patients with hoarseness of voice.

Materials and Methods

It was a descriptive cross-sectional study conducted at Department of ENT of Tertiary Health Care Hospital of Central India, from November 2017 to October 2019. All patients of either sex with hoarseness of voice of age above 10 years were included in the study, while patients with change in voice due to nasal and nasopharyngeal pathology, oral or oropharyngeal pathology, congenital laryngeal causes, voice disorders due to articulation disorders, central nervous system lesion like bulbar palsy, Wegner's granulomatosis, multiple sclerosis, stroke, and Parkinson's disease, and those refusing to give informed consent were excluded from the study.

Sample size was calculated in reference to Vengala et al⁴ study as follows:

$$n = Z^2P(1 - P)/d^2$$

Where n = sample size, $Z = 1.96^2$ (Z statistic for a level of confidence), $p = 30\%$ (expected prevalence or proportion), $d = 10\%$ (absolute error)

$$\begin{aligned} n &= 1.96^2 \times 0.3(1 - 0.3)/(0.10)^2 \\ &= 80.64 \text{ (sample size)} \end{aligned}$$

We included 100 cases in present study.

Detailed history related to sociodemographic particulars like age, gender, residence, occupation, habits, and previous medical and surgical history was noted. Personal and family history was enquired. Complete general and local examination of ear, nose, throat, head, and neck were done of each patient. Indirect laryngoscopy and Hopkin's rod examination of larynx and hypopharynx were done. Wherever required direct laryngoscopy with biopsy under general anesthesia was done. Computed tomography scan neck was done wherever required to evaluate the extent of tumor and tissue invasion. Management was done according to the diagnosis. The benign lesions were excised by microlaryngeal surgery and malignant lesions underwent treatment according to the site and staging of the tumor.

Statistical analysis was performed by entering the data into Microsoft Excel spreadsheet. Analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, United States) Windows software program. Descriptive statistics included computation of percentages, means, and standard deviations. Chi-squared test and Fisher's exact test were used for qualitative data whenever two or more than two groups were used to compare.

Results

Total 100 patients were included in the study. As shown in ► **Table 1**, the mean age of males who presented with hoarseness of voice was 41.05 ± 17.94 years and among the females, it was 37.58 ± 13.59 years. The age group ranged from 11 to 77 years. Majority of the patients (32%) belonged to the age group of 21 to 30 years followed by 31 to 40 years (23%). Out of 100 patients, 54% were males and 46% were females with a slight male predominance showing male to female ratio of 1.17:1. About 53% subjects were from rural area and 47% from urban area.

Laborer was the single largest group (29%) followed by housewives (15%) and farmers (13%) who presented with hoarseness of voice. Occupations requiring excessive voice use if combined in a single group were 31% showing hoarseness of voice (► **Table 2**).

Table 1 Distribution of the study subjects based on age group and gender ($n = 100$)

Age groups in years	Gender				Total	
	Male		Female			
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
11–20	4	7.4	2	4.3	6	6
21–30	17	31.5	15	32.6	32	32
31–40	11	20.4	12	26.1	23	23
41–50	5	9.3	8	17.4	13	13
51–60	8	14.8	6	13.0	14	14
>60	9	16.7	3	6.5	12	12
Total	54	100	46	100	100	100
Mean± SD	41.05 ± 17.94		37.58 ± 13.59		39.46 ± 16.1	

Abbreviation: SD, standard deviation.

Table 2 Distribution of the study subjects based on occupation ($n = 100$)

Occupation	Frequency (n)	Percentage (%)
Businessman	12	12
Farmer	13	13
Housewife	15	15
Laborer	29	29
Occupations requiring excessive voice use ($n = 31$)	Receptionist	3
	Salesperson	11
	Singer	3
	Student	7
	Teacher	7
Total	100	100

Maximum number of patients (49%) had duration of hoarseness of voice for 1 to 3 months, 22% had symptoms for less than 1 month, 13% for 3 to 6 months, and 8% had hoarseness for 6 months to 1 year and more than 1 year each.

Associated complaints along with hoarseness of voice were cough and cold (38%), painful swallowing (19%), fever (15%), weight loss (11%), difficulty in swallowing (10%), vocal fatigue (14%), neck swelling (6%), and respiratory distress (9%).

Most common etiology for hoarseness of voice encountered was chronic laryngitis in 20% cases, chronic hyperplastic laryngitis in 6%, and chronic hyperemic laryngitis in 14%, followed by carcinoma larynx seen in 14% and acute laryngitis in 12% cases. Whereas vocal cord palsy was seen in 13%, reflux laryngitis and Reinke's edema was seen in 7% patients each. Vocal cord nodule (9%), vocal cord polyp (8%), and vocal cord cyst (4%) were the benign lesions causing hoarseness of voice. Functional and tubercular etiology was found in 3% cases each (► **Table 3**).

Multiple predisposing factors were found in patients of hoarseness of voice. Smoking was the most common predisposing factor affecting 35% among all the cases followed by vocal abuse (25%) and tobacco chewing (20%).

As shown in ► **Table 4**, smoking was the major predisposing factor in cases of carcinoma larynx (10 out of 14), chronic laryngitis (9 out of 20), and Reinke's edema (5 out of 7), whereas vocal abuse was the main predisposing factor in cases of vocal cord nodule (8 out of 9), vocal cord polyp (6 out of 8), and vocal cord cyst (3 out of 4). Upper respiratory tract infections (10 out of 12) were the major predisposing factor in cases of acute laryngitis, while gastroesophageal reflux (7 out of 7) was the most common predisposing factor in reflux laryngitis.

Discussion

It should be re-emphasized that hoarseness is not a disease in itself, rather a symptom of disease or disturbance in the larynx or along the course of laryngeal motor nerve. It is often first or the only sign of serious local or systemic disease.

A total of 100 cases were examined during the study period. In our study ($n = 100$), 54% patients were males

and 46% were females with male to female ratio of 1.17:1. This coincides with the studies done by Vengala et al⁴ and Rao et al⁵ with male: female ratio (M:F) of 1.28:1 and 2:1, respectively. This could be attributed to the fact that males indulge more in smoking, alcoholism, pollutant exposure, and misuse of voice.

In the present study, mean age of patients with hoarseness of voice was 41.05 ± 17.94 years and majority of patients were seen in age group of third decade (32%) followed by fourth decade (23%). This correlates with the study by Goswami et al⁶ and Rathi and Sharma.⁷ Gupta and Jamwal et al⁸ found majority of patients (20%) in fifth decade. Also, in Kiakojoury et al study, highest prevalence of voice disorders was found in patients of age <45 years.⁹

In our study, 53% patients were from rural area and 47% from urban area. This finding is consistent with Goswami et al⁶ study and Rathi and Sharma study⁷ who found 53.3 and 71.42% patients, respectively, belonging to rural area.

In our study, we had a study population of varied occupation. Laborers (29%) constituted the single largest group having hoarseness of voice followed by housewives (15%). The results are consistent with the studies by Vengala et al,⁴ Rao et al,⁵ and Pal et al.¹⁰ While in study by Gupta and Jamwal, 31% of housewives and 30% of businessman were most affected group.⁸ In a retrospective study of Banjara et al, housewives (19.52%) were the largest group of patients affected by hoarseness of voice followed by laborer (17.53%), farmers (17.53%), and private job/businessman (15.94%), respectively.¹¹

In the present study, duration of hoarseness ranged from 2 days to 3 years. Most of the patients (71%) had hoarseness of voice for less than 3 months. In Banjara et al study, most of the presenting symptoms (61.35%) were seen within 3 months.¹¹ Nanwani et al noticed maximum cases (45.3%) presented with 1 to 12 weeks of onset of hoarseness followed by 28% between 3 and 6 months.¹²

In our study, smoking (35%) was the commonest predisposing factor followed by vocal abuse (25%). This finding was consistent with Vengala et al, who also found smoking (29.45%) and vocal abuse (25.34%) as common predisposing factors.⁴ In the studies by Pal et al¹⁰ and Soni and Chouksey,¹³ history of smoking was found in 33 and 60% cases, respectively, and was a major predisposing factor.

Table 3 Distribution of the study subjects based on etiology of hoarseness of voice ($n = 100$)

Etiology		Frequency (n)	Percentage (%)
Carcinoma ($n = 14$)	Carcinoma glottis	4	4
	Carcinoma supraglottis	8	8
	Carcinoma subglottis	2	2
Acute laryngitis		12	12
Chronic laryngitis ($n = 20$)	Chronic hyperplastic laryngitis	6	6
	Chronic hyperemic laryngitis	14	14
Tubercular laryngitis		3	3
Reinke's edema		7	7
Vocal polyp		8	8
Vocal cord nodules		9	9
Vocal cord cyst		4	4
Vocal cord palsy ($n = 13$)	Idiopathic	11	11
	Iatrogenic	2	2
Functional voice disorder		3	3
Reflux laryngitis		7	7

Table 4 Distribution of study subjects with respect to etiology and predisposing factors ($n = 100$)

Etiology	Frequency of predisposing factors							
	Alcohol	Smoking	Tobacco chewing	Vocal abuse	GERD	URTI	Trauma	No risk factor
Acute laryngitis ($n = 12$)	4	5	2	0	2	10	0	0
Carcinoma larynx ($n = 14$)	4	10	12	0	2	2	0	1
Chronic laryngitis ($n = 20$)	4	9	1	2	2	3	0	4
Tubercular laryngitis ($n = 3$)	0	1	0	0	0	0	0	2
Reinke's edema ($n = 7$)	2	5	0	5	2	0	0	0
Vocal cord nodules ($n = 9$)	1	0	0	8	0	1	0	1
Vocal cord polyp ($n = 8$)	0	2	1	6	1	0	0	1
Vocal cord cyst ($n = 4$)	0	0	1	3	0	0	0	0
Vocal cord palsy ($n = 13$)	1	2	1	0	0	0	2	7
Functional voice disorder ($n = 3$)	0	0	0	1	0	0	0	2
Reflux laryngitis ($n = 7$)	1	1	2	0	7	1	0	0
Total	17	35	20	25	16	17	2	18

Abbreviations: GERD, gastroesophageal reflux disease; URTI, upper respiratory tract infection.

In our study, commonest etiology observed was chronic laryngitis (20%) followed by malignancy of larynx (14%) and acute laryngitis (12%). In study by Vengala et al, common etiopathologies were acute laryngitis in 30.82% cases followed by chronic laryngitis (19.86%) and malignancy (13.01%).⁴ Rathi and Sharma found vocal cord paralysis as a leading cause of

hoarseness seen (23.01%) followed by malignancy (16.66%) and vocal nodule (15.07%).⁷ In Kiakojoury et al study, out of total 197 patients, vocal nodule (24.4%) and Reinke's edema (23.4%) were the commonest causes for hoarseness of voice.⁹ Laryngeal carcinoma (2.5%) and trauma (2.3%) were least common cause of all. Category wise organic dysphonia

(85.78%) was found to be the most common cause of voice disorders, while functional and neurological dysphonia was seen in 8.6 and 5.6% of patients, respectively.⁹ In the present study, functional dysphonia was seen in 3% cases and vocal cord palsy in 13% cases.

Conclusion

Hoarseness of voice is an alarming symptom and should not be ignored. Impact of laryngeal disorders on patient's quality of life is significant specially in those who have to use their voice as their profession. In our study, younger population of third decade affected more with male predominance. Smoking was the commonest predisposing factor and chronic laryngitis was the most common etiology for hoarseness of voice. It is easier to get rid of abusive habits that are not of lengthy period. Abstinence of tobacco preparations and alcohol and avoidance of vocal abuse can lead to significant reduction in the incidence of hoarseness of voice and most of the etiological factors can be treated successfully.

Conflict of Interest

None declared.

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