Otolaryngology online journal

ISSN: 2250-0359 Volume 5 Issue 1.5 2015

Hoarseness of voice: Etiological spectrum

Gaurav Kataria[1] , Aditi Saxena[2] , Baldev Singh[3] , Sanjeev Bhagat[3] , Ravinder Singh[3]

[1] SGRDIMSR, Amritsar, Punjab , [2] GMC, Amritsar, Punjab [3] GMC, Patiala, Punjab.

ABSTRACT

Hoarseness of voice is a symptom, not a diagnosis and therefore warrants a careful determination of the underlying cause in every case. The etiology of hoarseness ranges from trivial infections to life threatening malignancies. This study was done to analyze clinical profile of hoarseness, to find out common etiological factors and association of common predisposing factors leading to hoarseness.

Material and Methods

The study comprised of 180 patients attending the ENT department from Feb. 2012 to Jan. 2013. A thorough clinical history, clinical examination, ENT examination and investigations routine as well as special like X-ray chest, computed tomography scan were performed to find out the diagnosis. Patients of all ages and both sexes were included. Already diagnosed cases, voice change due to central nervous system lesions, nasal, nasopharyngeal and oral pathologies were excluded.

Conclusion

Hoarseness is an early symptom and indicates some underlying cause. The etiology ranges from trivial infections to life threatening malignancies. So, sequential history, examination and investigations can lead to appropriate diagnosis. Avoidance of vocal abuse, cessation of smoking, tobacco and alcohol can lead to significant reduction in burden of hoarseness.

Introduction:

Hoarseness is a vague term that is used to describe a change in quality of voice ranging from voice harshness to voice weakness.[1] The hoarseness refers to laryngeal dysfunction caused by abnormal vocal cord vibrations. Voice is the natural medium, well adapted to communicate emotional contact, whereas speech is a cultural medium that is suitable to convey intellectual contact. Voice is an auditory perceptual term that means the audible sound produced by the larynx, which embodies such parameters as pitch, loudness, quality and variability.[2] It is the abnormal quality of voice that is rough, grating, harsh and more or less discordant and has lower pitch than normal for the individual.[3]

There are three phases in speech. The pulmonary phase creates the energy flow with inflation and expulsion of air. This activity provides the larynx with a column of air for the laryngeal phase in which vocal cords vibrate at certain frequencies to create sound that is unique to the individual. The oral phase occurs in the oral cavity where sound is modified and words are formed by the action of the pharynx, tongue, lips and teeth. Dysfunction in any of these can lead to voice changes. Disorders originating in either the lungs or oral cavity are not considered to be true hoarseness. True hoarseness from a laryngeal origin usually results in rough raspy voice.[1]

Hoarseness of voice is merely a symptom and not a diagnosis and therefore warrants a careful determination of the underlying cause in every case.[4]

The etiology of hoarseness is very diverse and varies greatly. Hoarseness can be divided into acute and chronic onset.[5] Acute onset may be secondary to viral infection, voice abuse, smoking, or trauma to larynx and thyroid surgery.[6] Chronic onset may be caused by vocal polyps, vocal cord nodules, laryngeal papillomatosis, laryngeal neoplasms, tumors of vocal cords, functional dysphonia, smoking, voice abuse, gastroesophageal reflux,[7] post nasal drip, malignant neoplasms of thyroid, oesophagus, lungs and neurological involvement by systemic diseases like diabetes mellitus[8] and chronic granulomatous diseases like tuberculosis.[9] The complaints of hoarseness may imply serious disease, so it should not be ignored.[10]

This study was conducted to categorize the patients presenting with hoarseness of voice by age, sex, occupation, socioeconomic status and associated symptoms, to analyze clinical profile of hoarseness, to find out incidence of common etiological factors of hoarseness and to find out association of common predisposing factors leading to hoarseness.

Materials and Methods:

The present study was conducted on 180 patients of hoarseness of voice attending ENT OPD and indoor over a period of 12 months from Feb. 2012 to Jan. 2013. A thorough clinical history, clinical examination, ENT examination and investigations routine as well as special like X-ray chest, computed tomography scan, direct laryngoscopy and histopathological examinations were performed to find out the diagnosis. Patients of all ages and both sexes, presenting with hoarseness of voice were included. Diagnosed cases of hoarseness for follow up, voice change due to central nervous system lesions, nasal, nasopharyngeal and oral pathologies were excluded. Informed consent was obtained from every patient after explaining the procedure.

Observations and Results:

A total of 180 patients were included in this study. Among 180 cases, 113 (62.78%) were males and 67 (37.22%) were females (table-1). Male predominance was observed with male female ratio of 1.69:1. Age range was between 9 years to 78 years with mean age of 36.67 years. Majority of patients were presented in 4th decade (29.44%), followed by 6th decade (21.67%), 3rd decade (17.22%), 5th decade (13.89%) and 2nd decade (9.44%), table-2. In 4th decade the no. of female patients were more than male patients. Patients with hoarseness of voice were predominantly from rural areas comprising of 134 (74.44%). Only 46 patients (25.56%) were from urban area with a rural urban ratio of 2.91:1 (table-3). Labourers (26.11%) formed the predominant group followed by housewives (23.89%), farmers (14.44%), businessmen (13.33%), students (8.89%), teachers (7.22%) and others (6.11%). Duration of hoarseness ranged from 7 days to more than 3 years.

Most of the patients were having duration less than 3 months (48.33%) followed by duration of 3-6 months (21.67%), duration of more than 1 year (19.44%) and duration between 6 months and 1 year (10.55%). In Koufman and Isaacson11 classification of vocal professionals 1.67% patients were included in level I (the elite vocal performers), 2.77% patients in level II (the professional voice users), 8.33% patients were in level III (non-vocal professionals) and 87.22% patients were included in level IV (non-vocal non-professionals).

Change in voice was a predominant symptom present in all patients (100%) followed by cough, fever, irritation in throat, vocal fatigue, dysphagia, weight loss, dyspnoea, neck swelling, respiratory distress, heart burn and haemoptysis (table-4). The table 5 showed the distribution of hoarseness as per etiology. Among them, the most common cause was chronic laryngitis (20.55%) followed by vocal cord nodule (15.55%), carcinoma larynx (11.67%), vocal cord palsy (11.11%), acute laryngitis (8.89%), functional (7.22%), vocal cord polyp (5.00%), hypothyroidism, trauma, tuberculosis, vocal cord cyst, leukoplakia, post thyroid surgery, mitral stenosis, granuloma, haemangioma, keratosis and sulcus vocalis. Vocal cord nodules were more common in females. All patients with hypothyroidism, sulcus vocalis and laryngeal papilloma were found to be females. Among 37 patients (20.55%) with chronic laryngitis, the commonest predisposing factor noted was the usage of tobacco preparations and smoking, 20 patients (54.05%). Laryngopharyngeal reflux was present in 17 patients (45.95%). In 21 patients of laryngeal malignancies, common predisposing factors noted were smoking (100%) followed by tobacco preparations (90.47%). Overall, smoking (41.67%) was the most common predisposing factor associated with hoarseness followed by voice abuse (36.67%), tobacco preparations, alcohol, septic foci and respiratory tract infections.

Table -1

Sex distribution of patients (n=180)

Sex	No. of patients (%)
Male	113 (62.78%)
Female	67 (37.22%)
Total	180

Table -2

Age distribution of patients (n=180)

Age (years)	No. Of patients (%)
0-10	1 (0.55%)
11-20	17 (9.44%)
21-30	31 (17.22%)
31-40	53 (29.44%)
41-50	25 (13.89%)
51-60	39 (21.66%)
>60	14 (7.78%)
Total	180

Table- 3

Demographic distribution of patients (n=180)

Distribution	No. of patients (%)
Rural	134 (74.44%)
Urban	46 (25.56%)
Total	180

Table – 4

Clinical presentation of patients with hoarseness

Presentation	No. of cases (%)
Change in voice	180 (100%)
Cough	55 (30.55%)
Fever	46 (25.55%)
Foreign body sensation/ irritation	44 (24.44%)
Vocal fatigue	44 (24.44%)
Dysphagia	28 (15.55%)
Weight loss	26 (14.44%)
Dyspnoea	25 (13.89%)
Neck swelling	16 (8.89%)
Respiratory distress	8 (4.44%)
Heart burn/ vomiting	6 (3.33%)
Haemoptysis	3 (1.67%)

Table-5

Etiology of hoarseness of voice

Etiology	No. of patients (%)	No. of male patients (%)	No. of female patients (%)
Chronic laryngitis	37 (20.55%)	28 (15.55%)	09 (5.00%)
Vocal cord nodule	28 (15.55%)	12 (6.67%)	16 (8.89%)
Carcinoma larynx	21 (11.67%)	15 (8.33%)	06 (3.33%)
Vocal cord palsy	20 (11.11%)	15 (8.33%)	05 (2.78%)
Acute laryngitis	16 (8.89%)	10 (5.55%)	06 (3.33%)
Functional	13 (7.22%)	05 (2.78%)	08 (4.44%)
Vocal cord polyp	09 (5.00%)	06 (3.33%)	03 (1.67%)
Hypothyroidism	06 (3.33%)	0 (0.00%)	06 (3.33%)
Reinke's oedema	06 (3.33%)	05 (2.78%)	01 (0.55%)
Trauma/injury	05 (2.78%)	03 (1.67%)	02 (1.11%)
Tuberculosis	04 (2.22%)	03 (1.67%)	01 (0.55%)
Scarring	03 (1.67%)	02 (1.11%)	01 (0.55%)
Vocal cord cyst	03 (1.67%)	02 (1.11%)	01 (0.55%)
Leukoplakia	03 (1.67%)	03 (1.67%)	0 (0.00%)
Laryngeal papilloma	01 (0.55%)	0 (0.00%)	01 (0.55%)
Mitral stenosis	01 (0.55%)	01 (0.55%)	0 (0.00%)
Intubation granuloma	01 (0.55%)	01 (0.55%)	0 (0.00%)
Haemangioma	01 (0.55%)	01 (0.55%)	0 (0.00%)
Sulcus vocalis	01 (0.55%)	0 (0.00%)	01 (0.55%)
Keratosis	01 (0.55%)	01 (0.55%)	0 (0.00%)
Total	180 (100%)	113 (62.77%)	67 (37.22%)

Discussion:

A total of 180 patients were included in our study. In our study, males were 113 (62.78%) and females were 67 (37.22%), with male predominance and male female ratio of 1.7:1. This coincides with study by Karan Sharma et al[12], Parikh N13, Ahmad et al[14], Baitha S et al[15], Mehta AS16, Deshmukh[17], Banjara H et al18, Kumar H et al[19], Batra et al[20] and Behera et al[21]. All these studies were showing male predominance and male female ratio between 1.65:1 to 2:1. In our study majority of patients were seen in age group of 31-40 years (29.44%) and 51-60 years (21.66%) followed by 3rd decade (17.22%). Baitha et al[15] also found majority of patients (28.18%) in the age group of 31 to 40 years. Batra et al20 found largest group comprising 25% in 31 to 40 years age group. Kumar H et al19 found 31% patients in 31-40 years age group. In our study 60.55% patients were seen in age group of 21-50 years. This observation is supported by Deshmukh[17], Mehta AS[16] and Baitha et al[15] with 63.1%, 67.2% and 61.81% patients in 21-50 years age group respectively. So our study results correlates with results of all these studies.

In our study 74.44% patients were from rural background and 25.56% were from urban background. Our study correlates with study of Baitha et al[15] with 75.5% patients with rural background and 24.5% patients with urban background.

In our study labourers (26.11%) constituted a single largest group followed by housewives (23.89%), farmers (14.44%), businessmen, students and teachers. In our study labourers and housewives together were around 50%. Our study correlates with study of Baitha et al[15] with around 57% labourers and housewives. Kumar H et al[19] also found labourers (24%) as single largest group in their study.

Koufman and Isaacson[11] evolved a classification of vocal professionals based on their voice use and risk.

1. Level I (elite vocal performers): Included sophisticated voice users like the singers and actors, where even a slight vocal difficulty causes serious consequences to them and their careers.

2. Level II (professional voice users): For whom even moderate vocal difficulty would hamper adequate job performance. Clergymen, lecturers, teachers, politicians, public speakers and telephone operators would classify in this level of voice users.

3. Level III (non -vocal professionals): It includes teachers and lawyers. They can perform their jobs with slight or moderate voice problems; only severe dysphonia endangers adequate job performance.

4. Level IV (non-vocal no- professionals): It includes labourers, homemakers, businessmen and clerks. These are the persons who are not impeded from doing their work when they experience any kind of dysphonia.

In our present study, according to this classification, we found 1.67% elite vocal performers, 2.77% professional voice users, 8.33% non-vocal professionals and 87.22% non-vocal non-professionals. Banjara H et al18 found 1.59% elite vocal perfomers, 3.59% professional voice users, 9.56% non-vocal professionals and 85.26% non-vocal non-professionals. So, our study correlates with study of Banjara H et al[18].

Duration of hoarseness ranged from 7 days to more than 3 years. Most of presenting complaints (48.33%) were seen within 3 months, 21.67% within 3 to 6 months, 10.55% within 6 to 12 months and 19.44% complaints were of more than 1 year duration. Batra et al[20] found 59% patients within first five months of appearance of symptoms and 86% of patients were found to present within first year of appearance of symptoms. Baitha et al[15] noted duration range from 1 day to 5 years and 50% patients had duration of hoarseness in months. Chopra and Kapoor22 found 68.65% patients with duration of hoarseness of less than one year. Banjara H et al18 found 20.72% complaints were of more than 1 year duration. In our study, 19.44% complaints were of more than 1 year duration. So, our study correlates with all these studies.

In our study, change in voice was found in all patients (100%). Other symptoms were cough, fever, foreign body sensation, vocal fatigue, dysphagia, weight loss, dyspnoea, neck swelling, respiratory distress etc.

Mehta AS16, Parikh N13 and Baitha et al[15] also found change in voice in all 100% patients. Other symptoms were also comparable with our study.

In our study chronic laryngitis (20.55%) was found the most common etiology of hoarseness of voice. Other cause were vocal cord nodule (15.55%) followed by carcinoma larynx (11.67%), vocal cord palsy (11.11%), acute laryngitis (8.89%), functional (7.22%), vocal cord polyp (5.00%), hypothyroidism (3.33%), Reinke's oedema (3.33%) etc.

Chronic laryngitis was the most common cause of hoarseness of voice (20.55%). Behera et al[21] found chronic laryngitis as the most common cause and found in 25% cases. Our study also correlates with study of Baitha et al[15] with 21.81% cases with chronic laryngitis. Chronic laryngitis was associated with tobacco in 54.05% patients and laryngopharyngeal reflux in 45.95% patients. This is comparable to the study by Koufmann[23] in which laryngopharyngeal reflux was associated with 40% cases of chronic laryngitis.

Vocal nodules were found in 15.55% patients. Vocal nodules were bilateral in all patients. Baitha et al[15] and Mehta et al[16] also found bilateral vocal nodules in all patients. Kumar H et al19 found vocal nodules in 18% cases. Behera et al[21] found vocal nodules in 15% cases. Banjara H et al18 found vocal nodules in 11.95% cases. Baitha et al[15] found vocal nodules in 12.72% cases.

Carcinoma larynx was found a cause of hoarseness of voice in 11.67% patients. Our study correlates with study of Banjara H et al[18], Baitha et al[15], Kumar H et al[19], Parikh et al[13], Saeed M and Mian FA[24] with carcinoma larynx as a cause of hoarseness of voice in 9.56%, 14.54%, 15%, 12% and 11% respectively.

Vocal cord palsy was found in 11.11% patients in our study. Our study correlates with study of Behera et al[21], Banjara H et al18, Baitha et al15, Batra et al[20], Saeed M and Mian FA[24] with vocal cord palsy as a cause of hoarseness in 11.88%, 11.16%, 9.09%, 9.0% and 12.5% patients respectively. Vocal cord polyps were found in 5% patients. These results correlates with study of Banjara H et al[18], Baitha et al[15] with 3.59% and 4.54% cases respectively.

In our study, smoking was the most common predisposing factor found in 41.67% patients. Our study correlates with study of Banjara H et al18 and Behera et al[21] with 43% and 43.75% patients were associated with smoking. Vocal abuse was found in 36.67% patients. It correlates with study of Banjara H et al[18], Behera et al21 with 31% and 35% patients with vocal abuse respectively. In our study, vocal abuse was main predisposing factor in vocal nodules, vocal cysts and vocal cord polyps. Smoking and tobacco chewing together constitute major predisposing factor in malignancy, acute and chronic laryngitis and leukoplakia.

Chronic mucosal irritation by heavy smoking, excessive intake of alcohol and tobacco chewing in Asian countries play significant role in etiology of hoarseness. It was observed that in India and other developing countries the prevailing lower economic status, poor nutrition and general health, vocal habits, smoking and drinking habits, unhealthy environment, and different social customs influence the incidence of hoarseness[13].

Conclusion:

The etiology of hoarseness ranges from trivial infections to life threatening malignancies. A sequential history, physical examination and appropriate investigations can lead to appropriate diagnosis.

Maximum number of cases(20.55%) of hoarseness of voice were due to chronic laryngitis followed by vocal cord nodules (15.55%) and carcinoma larynx (11.67%). Laryngopharyngeal reflux was found in 45.95% patients of chronic laryngitis. Males were affected more than females (1.69:1). Most of the patients were in the age group of 21 to 50 years. Peak incidence was in the 4th decade. Labourers formed the predominant group. Majority of patients were from low socioeconomic class and rural background. Smoking, vocal abuse, tobacco chewing, alcohol and infections were the common predisposing factors.

A patient presenting with hoarseness in ENT OPD may have anything from a viral infection that just needs voice rest to an overtly malignant lesion, the treatment for which may be aggressive. Therefore early diagnosis of the underlying cause becomes all the more important in every case. The earlier a malignancy is identified, the better the prognosis. It is easier to get rid of abusive habits that have not had a lengthy period to develop. So early diagnosis and treatment may shorten the time period for which the patient remains dysfunctional.

Cessation of smoking and usage of other tobacco preparations and alcohol can lead to significant reduction in the incidence of laryngitis and carcinoma of larynx and in turn will reduce the burden of hoarseness. Avoidance of vocal abuse can also lead to decrease the burden of hoarseness. So, hoarseness of voice is an alarming symptom and it should not be ignored and thorough investigations should be done to make a final diagnosis.

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