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A descriptive study of aetiopathological evaluation of hoarseness: our experience

Sindhu B. S.[1], Jayaprabha S.[2]*

[1]Department of Otorhinolaryngology, Government of T D Medical College, Alappuzha, Kerala, India
[2]Department of Otorhinolaryngology, Government Medical College, Thiruvananthapuram, Kerala, India

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***Correspondence:**
Dr. Jayaprabha S.,
E-mail: jpsvinayak@gmail.com

ABSTRACT

Background: Hoarseness is a quality of voice that is rough, grating, harsh, more or less discordant and lower than normal in pitch for the individual. Besides affecting useful communication leading to tremendous alterations in daily living, voice problem may also signify the presence of more serious medical illnesses; such as malignancy or airway compromise. Hence this study is undertaken to determine the relative incidence of cases presented at a tertiary hospital, to analyse the hoarseness population based on age, sex, occupation etc, to find out the pathogenesis of hoarseness in the cases and to postulate the risk factors implicated in each.
Methods: Descriptive cross sectional study was conducted on patients with hoarseness reported at Government Medical College, Trivandrum for a period of twelve months. Detailed history regarding duration, onset, nature of hoarseness, aggravating and relieving factors, voice fatiguability, diurnal variation, associated symptoms and history of upper respiratory infection were taken.
Results: Being the tertiary hospital, the incidence was noted to be 0.7%. Majority of patients are in 4th to 7th decades and the most commonly affected age group was 50-59 years. Male preponderance with 4:1 ratio was observed in which manual labourers constitute the single largest group. Smoking, alcohol intake and vocal abuse are found to be the major etiological factors. Majority of lesions were malignant in nature, commonest being Carcinoma Glottis. In benign lesions, majority was vocal cord polyp.
Conclusions: Early detection of pathology and awareness is very important in the management of hoarseness.

Keywords: Hoarseness, Descriptive, Aetiopathological, Tertiary, Population

INTRODUCTION

An individual is suffering from hoarseness when he/she could produce voice only with a pitch lower than his/her normal. Voice is said to have become 'hoarse' when it is deep, rough and harsh and the clarity of syllables are lost.[1]

Hoarseness as a symptom can occur in conditions as diverse as simple inflammation like laryngitis to the rare malignancies of the larynx.[2]

Hoarseness is more prevalent in certain professionals such as singers and teachers but all age groups and both genders can be affected. In majority of cases it is due to benign conditions but still a thorough and proper evaluation is required.

In the absence of an upper respiratory tract infection, any patient with hoarseness persisting for more than two weeks requires a complete evaluation. Aetiological factors implicated have a far and wide bearing on the pathogenesis of hoarseness; and in turn can serve as a pointer towards prevention and management of the same.

When the patient gives a history of smoking, alcohol and tobacco use, cancer of head and neck must be considered and ruled out. Vocal abuse is one of the most common causes of hoarseness and can lead to other vocal pathologies such as vocal nodule. Good vocal hygiene can prevent and treat some pathologies and voice therapy is a cornerstone of treatment in some cases of hoarseness. In this context, the study is undertaken to analyse the aetiopathogenesis of hoarseness.

METHODS

This is a descriptive study and was approved by Human Ethical Committee, Government Medical College Trivandrum. The study was conducted in the Department of Otorhinolaryngology, Government Medical College, Trivandrum between July 2006 and June 2007. Patients reported to the Outpatient Department of Otorhinolaryngology with hoarseness were taken for the study. Children below the age of 9 years and those patients who could not undergo laryngoscopy were excluded. Detailed history regarding occupation, habits, onset of hoarseness, duration, nature of hoarseness, aggravating and relieving factors, voice fatiguability, diurnal variation, associated symptoms and history of upper respiratory tract infection were taken. All patients in the study group underwent general examination, systemic examination and local examination including indirect laryngoscopy and flexible laryngoscopy. Apart from routine blood and urine tests, blood sugar, RFT, sputum for acid fast bacilli, PA view X- ray chest PA view and soft tissue neck lateral view were taken. Other relevant investigations like FNAC, TFT, Barium Swallow, Thyroid Scan and CT scan base of skull, neck & chest were taken in indicated cases. Patients had detailed evaluation by microlaryngoscopic evaluation and necessary surgical procedures were done. Diagnosis was confirmed by histopathological examination. The statistical data was analysed using SPSS Statistics software (IBM).

RESULTS

A total 25000 cases attended the Outpatient wing of Department of Otorhinolaryngology, Government Medical College, Trivandrum during study period. Out of these, 184 patients presented with hoarseness, thus the incidence was noted to be 0.7%. The age of patients ranged from 9 years to 85 years (Table 1) with 149 (81%) were males and 35 (19%) were females. Male preponderance was observed with M:F ratio 149:35= 4:1. Majority of the patients were in the age group of 50-59 years (20.7%) and 60-69 years (19.6%) followed by 70-79 years (16.8%) and 30-39 years (16.3%) with mean and median of age of 53.95 and 56.5 years respectively. Equally higher percentage of 22.2% of male patients was presented in age group of 50-59 years and 60-69 years while female patients showed in 30-39 years of age group with higher percentage of 28.5%.

Table 1: Distribution according to age group and sex.

Age group (Yrs)	Male	Female	Total	%
□ 9	1	-	1	0.5
10 – 19	-	2	2	1.1
20 – 29	3	6	9	4.9
30 – 39	20	10	30	16.3
40 – 49	23	5	28	15.2
50 – 59	33	5	38	20.7
60 – 69	33	3	36	19.6
70 – 79	27	4	31	16.8
80 – 89	9	-	9	4.9
Total	149	35	184	100.0

Manual labourers constituted the single largest group of patients (50%) (Table 2) followed by housewives (15.2%), unemployed (13.6%), salesmen (5.4%), teachers (4.3%), students (3.8%), and politician and vendor 2.2% each.

Vocal abuse was noted in 12.5% cases. 68.5% of patients were smokers and 24.5% were alcoholics. 3.3% were passive smokers. 93.5% and 38% of manual labourers were smokers and alcoholic respectively. Hoarseness was due to malignant lesions in 56% and benign lesions in 44%. Among the malignant lesions, most common was carcinoma glottis (31%) followed by carcinoma supraglottis (10.3%), carcinoma hypopharynx (8.7%), carcinoma esophagus (2.2%), transglottic carcinoma (1.6%), carcinoma bronchus (1.6%) and carcinoma thyroid (0.5%) (Table 3). Among the premalignant lesions of larynx producing hoarseness, most common was solitary squamous papilloma (1.6%), followed by dysplasia and keratosis.

Of the benign lesions, majority were due to vocal cord polyp (14.1%), followed by vocal cord nodule (6%). 20 cases in the study had laryngitis (10.8%) (Table 4): maximum patients had chronic laryngitis (4.9%) and 4.3% had acute laryngitis. 1.6% patients had TB laryngitis.

Table 2: Incidence according to occupation.

Occupation	No	%
Manual labourer	92	50.0
House wife	28	15.2
Unemployed	25	13.6
Teacher	8	4.3
Salesman	10	5.4
Politician	4	2.2
Student	7	3.8
Vendor	4	2.2
Tailor	1	0.5
Cashew worker	1	0.5
Farmer	1	0.5
Barber	2	1.1
Clerk	1	0.5
Total	184	100.0

7.1% of cases of hoarseness were due to vocal cord palsy (Table 5). Incidence of vocal cord palsy was more in males with M:F ratio 3:1; the commonest etiology being carcinoma esophagus (2.2%) (Table 5) followed by carcinoma bronchus (1.63%) and idiopathic (1.1%). Other causes for Vocal cord palsy included carcinoma thyroid, post thyroidectomy, viral neuronitis and cricoarytenoid joint fixation.

Neck nodes noted in 17.4% patients, tracheostomy was done in 4.9% cases and thyroid swelling noted for 0.5%. FNAC for neck nodes came as metastasis from Squamous Cell Carcinoma (SCC) in 12.5% cases, moderately differentiated SCC in 4.9%, well differentiated SCC in 1.1%, 1.6% was inconclusive and reactive change seen in 1.6% cases. Sputum AFB was positive in 1.1% cases.

Table 3: Incidence and sex distribution of patients as per different conditions causing hoarseness.

Aetiology	Male	Female	Incidence	%
Carcinoma glottis	53	4	57	31.0
Carcinoma supraglottis	19	-	19	10.3
Carcinoma hypopharynx	15	1	16	8.7
Transglottic carcinoma	3	-	3	1.6
Vocal cord polyp	16	10	26	14.1
Vocal cord nodule	8	3	11	6.0
Reinke's edema	4	2	6	3.3
Sulcus vocalis	1	3	4	2.2
TB larynx	2	1	3	1.6
Squamous papilloma	1	3	4	2.2
Vocal cord palsy	10	3	13	7.1
Acute laryngitis	4	4	8	4.3
Ca-in-situ glottis	1	-	1	0.5
Keratosis	1	-	1	0.5
Dysphonia plica ventricularis	2	-	2	1.1
Total	149	35	184	100.0

Table 4: Incidence of laryngitis.

Laryngitis	No	%
Acute laryngitis	8	4.3
Chronic laryngitis	9	4.9
TB larynx	3	1.6
Total	20	10.8

Table 5: Aetiology of vocal cord palsy according to gender.

Aetiology	Male	Female	Total	%
Ca. bronchus	3	-	3	1.63
Ca. esophagus	4	-	4	2.20
Idiopathic	2	-	2	1.10
Cricoarytenoid joint fixation	-	1	1	0.54
Ca. thyroid	-	1	1	0.54
Post thyroidectomy	-	1	1	0.54
Viral neuronitis	1	-	1	0.54
Total	10	3	13	7.1

Table 6: Incidence of different laryngeal diseases causing hoarseness in different studies.

Diseases	Ghosh et al (%)	Baitha et al (%)	Our study (%)
Laryngitis	6	53.89	10.8
Vocal cord polyp	23	4.54	14.1
Vocal cord nodule	30	12.72	6
Reinke's edema	9	-	3.3
Vocal cord palsy	-	9.09	7.1
Neoplastic	8	14.54	56

DISCUSSION

In this descriptive study of hoarseness, incidence of hoarseness among the total OPD patients was 0.7%. The youngest patient reported was 9 year old and the oldest was 85 year old. Majority of patients were in 30-79 years age group (57.1%). According to Baitha et al, 4th decade was the most commonly affected age group.[3] Ghosh et al reported maximum number of patients in 21-30 years age group.[4] In our study, since mean and median of age are 53.95 and 56.5 years respectively, predominant group is 50–59 years (20.7%). Deshmukh and Mehta reported incidence in age group of 20-50 years to be 63.1% and 67.2% respectively.[5,6] Male preponderance was noted in all of the major studies in the literature. According to Ghosh et al the sex incidence was more in male (56%) than in females (44%). Baitha et al observed M:F ratio of 2:1. In our study also M:F ratio was 4:1. Other studies by Deshmukh, Vrat et al and Mehta also showed male preponderance.[5,7]

As far as occupation was concerned, manual labourers constituted the single largest group of patients (50%) and followed by housewives (15.2%). According to Baitha et al, incidence is commonest in manual labourers (36.36%) followed by housewives (21.81%). In the view of Ghosh et al, maximum incidence was among housewives. According to Chopra et al only 5.97% patients were farmers.[8] Our finding was in confirmation with that of Baitha et al. and Ghosh et al who observed vocal abuse in 72% of cases. In our study, vocal abuse only 12.5%.

There is almost invariably an associated social relationship between tobacco and alcohol and thus a distinction between 2 factors is difficult to make. Cohort studies in France are seen to postulate a reduction of laryngeal cancer as a result of deprivation of both alcohol and tobacco (Robin et al).[9] The incidence of smokers in our study of hoarseness population was 68.5%, passive smokers 3.3% and alcoholics 24.5%.

In a series of patients with chronic laryngitis, percentage of smokers is high as reported by Putney and O'Keefe (1953) 89.8% and Norris and Peale 94%.[10,11] Alcohol is also often mentioned as a causative factor (Hinds et al).[12] Baitha et al opines chronic laryngitis as the commonest cause (49%) of hoarseness followed by acute laryngitis (26.3%). In our study also chronic laryngitis was slightly higher (4.9%) than acute laryngitis (4.3%).

According to Bailey, for malignancy larynx M:F ratio has changed from 12:1 to 6:1 due to changing patterns of smoking and alcohol intake in Western countries.[13] But in our study, out of 72 cases of malignancy larynx, only 4 females were detected to have malignancy.

Incidence of malignant lesions in our study was 56% i.e. percentage of malignant lesions was consistently higher than that of benign lesions. A discrepancy in the relative proportion of benign and malignant lesions was noted with respect to previous reported studies. After a careful revision of data and other factors we have come to a conclusion that the altered proportion could be attributed to the fact that cases were selected from a tertiary care hospital. Most of the benign lesions might have tackled in primary or secondary care hospitals and hence didn't come to the tertiary care level.

Chopra, Kapoor reported that the incidence of benign glottic lesions to be 73.14% whereas our study revealed incidence to be 44%.

Incidences of hoarseness vary in children. Silverman and Zimmer reported 23.4%, while Yairi et al reported 13%.[14,15] In our study, incidence of hoarseness in children below 9 year was 0.5% and between 10 to 19 year 1.1%. The low incidence can be attributed to screening of cases in primary or secondary care hospitals.

According to Singh, vocal cord polyp was the commonest non-neoplastic condition as also reported by Kleinsasser (1982).[16,17] Singh found a male preponderance (66.6%) similar to Kleinsasser's (76%) study. Klenisasser opines that polyps of vocal cords are the most common benign lesions of larynx. Incidence noted as 70% for male and 24% for female. Of these 80-90% were smokers. Many of them reported that they had abused their voice. In our study, incidence is 14.1% with M:F ratio of 16:10.

Sinha et al observed 53% incidence for vocal nodules.[18] According to Ghosh et al vocal nodule was the commonest disease of larynx (30%). A comparison of incidence of different laryngeal diseases causing hoarseness in our study with that of Ghosh et al and Baitha et al are given in Table 6, Lundy and Silva found most common incidence as vocal nodules.[19] Chopra and Kapoor observed an incidence of 33.33% for vocal nodules, 16% for vocal polyps and 17.3% for vocal cord cysts. NJ Kay opines that one of the most widely quoted factors associated with vocal nodule in children is vocal

abuse.[20] He found the incidence to be 33%. In our study incidence of vocal abuse is 12.5%.

According to Singh et al, laryngeal papilloma constituted 90% of all benign tumours. This is in accordance with the figures (84%) reported by Jones et al.[21] We observed a very low incidence of 2.2%. Reinke's edema was observed to be 9% of cases (Ghosh et al). Singh et al found only 1% of incidence, which is very near to our observation of 1.75%. According to Robin and Olofsson, Reinke's edema comprises about 10% of benign laryngeal lesions. According to James and Blalock, majority of the patients who had functional voice disorders fitted into the category of vocal abuse syndrome.[22] They included patients with vocal nodules, polypoid degeneration, contact ulcers and granulomas in their study. Six separate functional voice disorders were identified. Over all treatment revealed a successful outcome in 69% of cases. We observed an incidence of 6.5% for functional voice disorders. According to Donna, the two most common causes of hoarseness found in 393 patients older than 65 years were vocal cord bowing and unilateral vocal cord palsy followed by benign vocal cord lesions, voice tremors and spasmodic dysphonia. According to British literature, incidence of recurrent laryngeal nerve palsy range from 1.5 to 14%. Thyroid surgery was the cause in 16.3% cases. In our study, vocal cord palsy has a M:F distribution of 3:1. Carcinoma esophagus noted as the commonest cause, then carcinoma bronchus. Carcinoma thyroid, post thyroidectomy, cricoarytenoid joint fixation, viral infections were the other major causes. Two cases were found to be idiopathic.

Aurebach et al found laryngeal involvement in 37.5% of patients with pulmonary tuberculosis.[23] Age of patients were between 20 and 40 years. In our study, laryngeal tuberculous is 1.6%. Ghosh et al noted incidence to be 1% and Baitha found much higher incidence of 5.45%.[3,4]

CONCLUSION

In our study, incidence of hoarseness during the study period was observed to be 0.7% of all cases attending outpatient wing of Department of Otorhinolaryngology, Government Medical College, Trivandrum which is a tertiary care hospital. Majority of patients were in the group of 30 to 79 years and most commonly affected age group was 50 to 59 years. Hoarseness has a male preponderance of 4:1. Smoking, alcohol intake and vocal abuse are found to be the major etiological factors for hoarseness. Passive smoking is also found to be an etiological factor especially in women and children. Manual labourers constituted the single largest group of patients with hoarseness which may be due to the habit of smoking and alcohol intake. Majority of lesions are malignant in nature. Commonest cause were carcinoma glottis, commonest benign lesion was vocal cord polyp. Vocal cord paralysis was a minor group in the present study. Majority of vocal cord palsy was due to carcinoma esophagus. Commonest premalignant condition for Carcinoma larynx is found to be dysplasia. Early detection of pathology is very important in the management of hoarseness. Microlaryngoscopy is the investigation of choice in the early detection and management of hoarseness. The results of present study very well matches with outcome of the published data for the tertiary care hospitals.

Suggested remedial measures include **a**voidance of risk factors like smoking, alcohol and voice abuse and creation of awareness among public about the ill effects of smoking and alcohol. Screening to be conducted among vulnerable population. Teaching professional voice users about vocal hygiene- avoiding vocal activities such as loud talking, yelling, screaming and habitual throat clearing. Early referral of hoarse patients to otolaryngologist is needed for indirect laryngoscopic examination. Use of specialised diagnostic methods like microlaryngoscopy, stroboscopy, computerized tomography and magnetic resonance imaging are suggested for accurate diagnosis. Increased co-operation between patient, otolaryngologist, speech pathologist, neurologist and gastroenterologist is essential. Prompt and regular follow up of diagnosed cases are essential.

To summarise, hoarseness as a symptom should never be meddled with and requires prompt medical attention, failing which may lead to serious consequences.

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REFERENCES

1. Kataria G, Saxena A, Singh B, Bhagat S, Singh R. Hoarseness of voice: Etiological spectrum Online J Otolaryngol. 2015;5(1):13-22.
2. Gaelyn GC, Ossoff RH. Hoarseness. Med. Clin. North Am. 1999;83(1):115-2.
3. Baitha S, Raizada RM, Singh AKK, Puttewar MP, Chaturvedi VN. Clinical profile of hoarseness of voice. Indian J Otolaryngol Head Neck Surg. 2002;54(1):14-8.
4. Ghosh SK, Chattopadhyay S, Bora H, Mukherjee PB. Microlaryngoscopic study of 100 cases of hoarseness of voice. Indian J Otolaryngol Head Neck Surg. 2001;53(4):270-2.
5. Deshmukh. Clinical Study of hoarseness of voice. A thesis submitted for MS (Otorhinolaryngology) Gujarat University; 1976.
6. Mehta. An Aetiological study of hoarseness of voice. A thesis submitted for MS (Otorhino-laryngology) Gujarat University. 1985.
7. Vrat V, Abrol BM, Fande JN. Evaluation of some of the vocal dynamic function tests in laryngeal disease and voice disorders. Indian J of Otolaryngology. 1981;33(1):15-7.

8. Chopra H, Kapoor M. Study of Benign glottic lesions undergoing Microlaryngeal Surgery. Indian J Otolaryngol Head Neck Surg.1997; 276-9.
9. Robin PE, Jan Olofsson. Tumours of larynx. In-Alan G. Kerr, John Groves, John N. G. Evans John N. G. eds. Scott- Brown's Otolaryngology. 6th ed. 1991;5:1-45.
10. Putney, O'Keefe. The clinical significance of Keratosis of larynx as a premalignant lesion. Ann Otol Rhinol Laryngol. 1953;62(2):348-57.
11. Norris CM, Peale AR. Keratosis of the Larynx. J. Laryng.1963;77:635-47.
12. Hinds MW, Thomas DB, OReilly HP. Asbestos, dental x-rays, tobacco and alcohol in the epidemiology of laryngeal cancer. Cancer. 1979;44:1114-20.
13. Bailey BJ. In: Johnson JT, Newlands SD, Bailey BJ, eds. Head and Neck Surgery Otolaryngology. 4th ed. Philadelphia; Lippincott Williams & Wilkins. 2007.
14. Silverman EM, Zimmer CH. Incidence of chronic hoarseness among school-age children. J Speech Hear Dis. 1975;40: 211–5.
15. Yairi E, Duff M, Proctor A. Prevalence of voice disorders in African American and European American preschoolers. J Voice. 2004;18(3):348-53.
16. Singh M, Bandyopadhyay S, Gupta SC, Rai A. Benign Laryngeal Lesions - A Clinicopathological study of Eleven Years and a Case Report of Pleomorphic Lipoma. Indian J Otolaryngol Head Neck Surg. 2002;54(3):242-4.
17. Kleinsasser O. Pathogenesis of vocal cord polyps. Ann Otol Rhinol.1982;91:378-81.
18. Sinha A, Kacker SK, Pramanik KN. Pathology and etiology of vocal nodules. Indian J Otol. 1966;18:93-9.
19. Lundy DS, Silva C. Cause of hoarseness in elderly patients. Otolaryngol, Head Neck Surg. 1998;118(4):481-5.
20. Kay NJ. Vocal nodules in children aetiology and management J Laryngol Otol. 1992;96:731-6.
21. Jones SR, Benign EM. Neoplasms of larynx. Otolaryngol Clin North Am. 1984;17:151-7.
22. James A, Koufman P. David Blalock. Functional Voice Disorders. OCNA. 1991;24:1059-75.
23. Auerbach O, Hammond EC, Garfinkel L. Histologic changes in the larynx in relation to smoking habits. Cancer. 1970; 25:82-104.

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