

## Original Research Article

# Clinicopathological profile of hoarseness of voice

Abhinav Rathi, Shalaka Sharma\*

Department of ENT, Head and Neck Surgery, Jaipur National University Institute of Medical Sciences and Research Centre, Jaipur, Rajasthan, India

**Received:** 07 February 2019

**Revised:** 06 January 2020

**Accepted:** 08 January 2020

**\*Correspondence:**

Dr. Shalaka Sharma,

E-mail: shalaka3112@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

**Background:** Hoarseness of voice is one of the most common symptoms bringing a patient to an ear, nose and throat (ENT) Out Patient Department (OPD). Hoarseness of voice may arise from wide spectrum of diseases ranging from mild infections to fatal malignancies. Hence a study was done to know the incidence, etiology, predisposing factors and clinical profile of patients presenting with hoarseness of voice.

**Methods:** The study was carried out in the Department of ENT, JNU IMSRC, Jaipur from Aug 2017 to July 2018. All the patients coming to ENT OPD with complaint of hoarseness of voice during that period underwent detailed history, clinical examination and routine investigations to know the exact cause of hoarseness.

**Results:** A total of 126 cases with male:female ratio of 1.68:1 were analyzed. Patients age ranged from 13 to 82 years with majority of patients presenting in 4<sup>th</sup> decade. Most commonly hoarseness was seen in labourers (42.06%) with most common cause being vocal cord paralysis (23.01%) and majority of patients having smoking as the commonest predisposing factor (65%).

**Conclusions:** The etiology of hoarseness varies from trivial infections to serious malignancies. In our tertiary centre which is at the outskirts of the city majority of the patients coming to OPD are from rural area and most of these patients are labourers by occupation and have a habit of smoking bidis.

**Keywords:** Hoarseness, Voice, Etiology, Malignancies

### INTRODUCTION

A hoarse voice, also known as dysphonia, is when the voice involuntarily sounds breathy, raspy, or strained, or is softer in volume or lower in pitch.<sup>1,2</sup>

Hoarseness of voice is one of the commonest presenting complaint in ENT practice. For production of normal voice, vocal cords should be able to approximate properly with each other, have a proper size and stiffness, have an ability to vibrate regularly in response to air column.

Any condition that interferes with the above functions causes hoarseness.

The etiology of hoarseness ranges from mild infections to fatal malignancies. Some common causes of hoarseness are inflammatory conditions, tuberculosis, benign tumours (vocal nodule and vocal polyp), trauma, vocal cord paralysis, functional dysphonia and malignancy

It appears to occur more commonly in the elderly.<sup>3</sup> Furthermore, certain occupational groups, such as teachers and singers, are at increased risk.<sup>4,5</sup>

It is often the first and only signal of serious local or systemic disease and therefore warrants a careful determination of the underlying cause in every case.

## Aims and objectives

The objective of the study was to find incidence, clinical profile, common predisposing factors and etiology of hoarseness of voice.

## METHODS

This cross-sectional study was conducted in the ENT OPD of Jaipur National University Institute of Medical Sciences and Research Centre, Jaipur from August 2017 to July 2018 after approval from institutional Ethics committee. A total of 126 patients presenting with hoarseness of voice were included in the study irrespective of their age, sex and duration of disease. Thorough history, clinical and ENT examination were done. Vocal professionals were classified into 4 levels according to Koufmann and Isaacson classification.

Level I (elite vocal performers), level II (professional voice users), level III (non-vocal professionals, Level IV (non-vocal non-professionals). Routine investigations like CBC, B.sugar, routine urine, X-ray chest- PA view and X-ray soft tissue neck- AP and lateral view were done. Larynx was examined by fiberoptic laryngoscopy and if needed by micro laryngoscopy followed by biopsy if suspicious looking area was seen.

Data was entered in Microsoft Excel. The data was further analyzed using SPSS version 21.

## RESULTS

### Incidence

Total ENT OPD from August 2017 to July 2018 was 18898 (10946 new and 7952 old). Out of this, 126 patients presented with hoarseness of voice. Thus, the incidence calculated was 0.66 of all cases and 1.15% of new OPD cases.

**Table 1: Age distribution.**

Age group (in years)	N (%)
11-20	7 (5.55)
21-30	11 (8.73)
31-40	42 (33.33)
41-50	17 (13.49)
51-60	14 (11.11)
61-70	30 (23.80)
71-80	3 (2.38)
81-90	2 (1.58)

### Clinical profile of hoarseness

Hoarseness was seen mostly in middle and elderly age group with majority of patients was in 4<sup>th</sup> decade of life (33.33%). The age of patients ranged from 13 to 82 yrs (Mean age - 44.7 yrs).

**Table 2: Sex distribution.**

Total patients	Male (%)	Female (%)
126	79 (62.69)	47 (37.31)

Out of 126 patient's majority were male patients (62.69%).

**Table 3: Demographic distribution.**

Total patients	Urban (%)	Rural (%)
126	36 (28.57)	90 (71.42)

Around 3/4<sup>th</sup> patients (71.42%) belonged to rural areas.

**Table 4: Duration of symptom.**

Duration of symptom	N (%)
3 months	66 (52.38)
3-6 months	25 (19.84)
6-12 months	21 (16.66)
>12 months	14 (11.11)

More than half of the patients (52.38%) presented within 3 months of appearance of symptom.

**Table 5: Occupation distribution.**

Occupation	N (%)
Labourer	53 (42.06)
Housewife	40 (31.74)
Teacher	7 (5.55)
Vendor or hawker	6 (4.76)
Singer	5 (3.96)
Private job	9 (7.14)
Student	6 (4.76)

**Table 6: Etiology wise distribution.**

Etiology	Patients (%)
Acute laryngitis	6 (4.76)
Vocal cord paralysis	29 (23.01)
Vocal nodule	19 (15.07)
Reinke's oedema	6 (4.76)
Malignancy	21 (16.66)
Functional	5 (3.96)
Chronic non-specific laryngitis	15 (11.90)
Tb laryngitis	8 (6.34)
Trauma	4 (3.17)
Keratoses	4 (3.17)
Vocal polyp	9 (7.14)

Labourer class constituted single largest group of patients (42.06%) followed by housewives (31.74%). Vocal professionals were categorised according to classification by Koufman and Isaacson.<sup>6</sup> Level I or the elite vocal performers (singers) 5 (3.96%), level II or the professional voice users (businessmen) 9 (7.14%), level

III or non-vocal professionals (teachers) 7 (5.55%), level IV or non-vocal nonprofessionals (labourer, housewives, students) 105 (83.33%).

Vocal cord paralysis was the leading cause of hoarseness seen in as many as 23.01% patients. It was followed by malignancy (16.66%) and vocal nodule (15.07%).

**Table 7: Predisposing factors for hoarseness.**

Predisposing factors	N (%)
Smoking	82 (65)
Voice abuse	39 (30.95)
Gastroesophageal reflux disease	51 (40)
Upper respiratory infection	8 (6.34)
Trauma to neck	6 (4.76)
Thyroid surgery	4 (3.17)
Intubation	2 (1.58)
Systemic illness (TB, DM, thyroid disorders)	24 (19.04)
Idiopathic	16 (12.69)
Tobacco	41 (32.53)
Alcohol	24 (19.04)

Most of the patients with hoarseness of voice were exposed to multiple predisposing factors but smoking remains the single most important predisposing factor seen in as many as 65% patients. GERD remains the second most important predisposing factor seen in 40% of patients.

## DISCUSSION

In our study 126 patients presented with hoarseness of voice in a year. The incidence calculated was 0.66 of all cases and 1.15% of new OPD cases. In another study, the incidence of hoarseness among total OPD was 0.45% and among new cases was 0.64%.<sup>6</sup>

In our study, the age of patients ranged from 13 to 82 yrs (Mean age - 44.7 yrs). Majority of patients were seen in age group of 31 to 40 years (33.33%) and 61 to 70 years (23.80%). Baitha et al also found majority of patients (28.18%) in the age group of 31 to 40 years.<sup>7</sup> Hansa et al stated majority (22.31%) group fall between the ages of 31 to 40 years.<sup>6</sup> This may be due to vocal activeness of a person is seen mostly in this decade. All these findings are comparable to our study. Herrington-Hall et al stated that taking the variable of age into account, it is clear that laryngeal pathologies occur most frequently in the older age group because carcinoma and vocal fold paralysis being the most commonly found cause of vocal dysfunction in the elderly.<sup>8</sup>

In our study hoarseness was more commonly seen in males with male to female ratio 1.68:1. Male to female ratio in Baitha et al, Mehta et al, Parikh et al and Deshmukh et al were 2:1, 1.8:1, 2:1 and 1.5:1

respectively.<sup>9-11</sup> This can be attributed to the fact that males indulge more in smoking, alcoholism, pollutant exposure and misuse of voice.

In our study 71.42% patients were from rural background and 28.57% were from urban back-ground. Our study correlates with study of Baitha et al with 75.5% patients with rural background and 24.5% patients with urban background.<sup>7</sup>

In our study, labourer or farmer comprised majority of cases (42.06%) followed by 31.74% of housewives. Our study correlates with study of Baitha et al with around 57% labourers and housewives.<sup>7</sup> Kumar et al also found labourers (24%) as single largest group in their study.<sup>12</sup> The high incidence of hoarseness among labourers in our study may be explained by the fact that our hospital is situated in outskirts of the city and caters mostly to the village population comprising mostly of farm labourers.

Koufman and Isaacson evolved a classification of vocal professionals:

- *Level I (elite vocal performers):* It included sophisticated voice users like the singers and actors, where even a slight vocal difficulty causes serious consequences to them and their careers.
- *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.
- *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.
- *Level IV (non-vocal non 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.<sup>13</sup>

In our study, according to this classification, we found 3.96% elite vocal performers, 7.14% professional voice users, 5.55% non-vocal professionals and 83.33% non-vocal or non-professionals. Batra et al found 52.9% of patients in level IV of vocal usage, i.e. non-vocal or non-professional.<sup>14</sup> Similarly Hansa et al found 1.59% elite vocal performers,

3.59% professional voice users, 9.56% non-vocal professionals and 85.26% non-vocal or non-professionals.<sup>6</sup>

In our study, most of the patients (52.38%) presented within 3 months duration of appearance of symptom, 19.84% in 3 to 6 months duration, 16.66% in 6 to 12 months and 11.11% were having duration of more than 1 year. Hansa et al found most of the patients (61.35%) presented within 3 months duration, 25.1% in 3 to 6

months, 10.76% in 6 to 12 months duration and 20.72% after more than 1 year duration.<sup>6</sup> Batra et al found 59% patients within first 5 months of appearance of symptoms.<sup>14</sup> It was found that early consultation of patients in our study was due to cancer phobia.

In our study most common cause of hoarseness was vocal cord paralysis (23.01%). Similar results were found in a study by Pal et al with vocal cord paralysis accounting for 33% of cases of hoarseness of voice.<sup>15</sup> Among all vocal cord paralysis, left sided (68.96%) vocal cord palsy was more common than right sided (27.58%). Bilateral vocal cord palsy was seen in 1 (3.44%) patient. Most common cause of vocal cord palsy was idiopathic seen in 15 patients (51.72%). Other causes include lung and mediastinal diseases (20.68%) including malignancy, thyroidectomy (13.79%). Trauma (10.34%) and intubation (3.44%). Idiopathic origin was seen in 62.6% cases followed by trauma (21%) in a study by Srivastava et al.<sup>16</sup> Left vocal cord was commonly involved (63.6%) and neoplasm was the commonest causes of vocal cord paralysis as per Mehta et al.<sup>9</sup> This is attributed to the longer course of the left recurrent laryngeal nerve. Stell and Maran reported that 25% of vocal cord paralysis was due to malignant diseases, 20% due to surgical trauma.<sup>17</sup>

Carcinoma larynx and hypopharynx was the second most common cause of hoarseness of voice seen in about 21 (16.66%) patients. Our study correlates with study of Banjara et al, Baitha et al, Kumar et al, Parikh et al, with carcinoma larynx as a cause of hoarseness of voice in 9.56%, 14.54%, 15%, 12% respectively.<sup>6,7,12,10</sup>

In our study vocal nodules were seen in 15.07% cases and they were the third most common cause of hoarseness of voice. In all the cases they were bilateral. Parikh reported vocal cord nodule as the most common finding (50%) among patients with chronic laryngitis and the nodules were bilateral in 91% cases.<sup>10</sup> In another study by Baitha et al vocal cord nodules were seen in 12.72% patients and they were bilateral in all the cases (100%).<sup>7</sup>

In our study smoking was the commonest predisposing factor seen in as much as 65% of cases presenting with hoarseness of voice. It was followed by GERD and voice abuse which were seen in 40% and 30.95% cases respectively. In our study around 3/4th patients belonged to rural areas and most of them were labourers who have a habit of smoking bidis which might explain the high association with smoking and GERD. In a study by Pal et al smoking was seen in (33%) cases followed by URI (24%), alcohol intake (22%), chewing tobacco (22%) and vocal abuse (17%).<sup>15</sup> Similarly in a study by Hansa et al commonest habits noted was smoking in 108 cases (43%) followed by vocal abuse (31%), alcohol intake (29.48%) and tobacco or gutkha chewing (29.48%).<sup>6</sup> These data are in concordance with our data.

## CONCLUSION

Hoarseness is a very common symptom in patients coming to ENT OPD. In our study the incidence calculated was 0.66 of all cases and 1.15% of new OPD cases. The etiology of hoarseness varies from trivial infections to serious malignancies. Its etiology, predisposing factors and clinical profile varies from place to place. In our tertiary centre which is at the outskirts of the city majority of the patients coming to OPD are from rural area and hence 71.42% of cases presenting with hoarseness belong to rural background. Most of these patients are labourers by occupation (42.06%) and have a habit of smoking bidis (65%).

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Hoarseness. NIDCD. 2015. Available at: <https://www.nidcd.nih.gov/health/hoarseness>. Accessed on 24 August 2017.
2. Johns MM, Sataloff RT, Merati AL, Rosen CA. Shortfalls of the American Academy of Otolaryngology-Head and Neck Surgery's Clinical practice guideline: Hoarseness (Dysphonia). *Otolaryngol Head Neck Surg.* 2010;143(2):175-7.
3. Cohen SM, Kim J, Roy N, Asche C, Courey M. Prevalence and causes of dysphonia in a large treatment-seeking population. *The Laryngoscope.* February 2012;122(2):343-8.
4. Williams NR. Occupational groups at risk for voice disorders: A review of the literature. *Occup Med.* 2003;53(7):456-60.
5. Verdolini K, Ramig LO. Review: occupational risks for voice problems. *Logopedic Phoniatric Vocol.* 2001;26(1):37-46.
6. Banjara H, Varsha M, Singh D, Gupta A. Hoarseness of voice: A Retrospective Study of 251 Cases. *Int J Phonosurg Laryngol.* 2011;1(1):21-7.
7. Baitha S, Raizada RM, Kennedy Singh AK, Puttevar MP, Chaturvedi VN. Clinical profile of hoarsens of voice. *Indian J Otolaryngol Head Neck Surg.* 2002;54(1):14-8.
8. Herrington-Hall BL, Lee L, Stemple JC, Niemi KR, MC Hone MM. Description of laryngeal pathologies by age, sex, and occupation in a treatment-seeking sample. *J Speech Hear Disord.* 1988;53:57-64.
9. Mehta AS. An etiological study of hoarseness of voice. A thesis submitted for master of surgery (Otorhinolaryngology), Gujarat University. 1985.
10. Parikh N. Aetiology study of 100 cases of hoarseness of voice. *Indian J Otolaryngol Head Neck Surg.* 1991;43(2):71-3.
11. Deshmukh. Clinical study of hoarseness of voice. A thesis submitted for master of surgery (Otorhinolaryngology), Gujarat University, 1976.

12. Kumar H, Seth S, Kishore D. Aetiological study of 100 cases of hoarseness of voice. *Otorhinolaryngol Head Neck Surg.* 2011;8(1):23.
13. The spectrum of vocal dysfunction. In: Koufman J, Isaacson G (eds). *The otolaryngologic clinics of North America: voice disorders.* Philadelphia. WB Saunders; 1991: 47.
14. Batra K, Motwani G, Sagar PC. Functional voice disorders and their occurrence in 100 patients of hoarseness as seen on fiberoptic laryngoscopy. *Indian J Otolaryngol Head Neck Surg.* 2004;56(2):91-5.
15. Pal KS, Kaushal AK, Nagpure PS, Agarwal G. Etiopathological Study of 100 Patients of Hoarseness of Voice: Ina Rural Based Hospital *Indian J Otolaryngol Head Neck Surg.* 2014;66(1):40-5.
16. Srivastava RN, Sardana DS, Dewan VK. A clinical study of laryngeal paralysis. *Indian J Otolaryngol.* 1979;31(1):41.
17. Stell and Maran's head and neck surgery. In: Watkinson JC, Gaze MN Wilson JA. 4th edn. *BJS;* 1978: 361.

**Cite this article as:** Rathi A, Sharma S. Clinicopathological profile of hoarseness of voice. *Int J Otorhinolaryngol Head Neck Surg* 2020;6:484-8.