



EVALUATION OF ETIOLOGICAL FACTORS OF HOARSENESS IN PATIENTS ATTENDING A TERTIARY CARE HOSPITAL

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ABSTRACT Hoarseness is a common clinical complaint with a wide range of etiological factors, from benign inflammatory conditions to malignancies. **Objective-** To evaluate the etiological factors and laryngeal findings in patients presenting with hoarseness at a tertiary care hospital. This cross-sectional study was conducted over a one-year period at a tertiary care center, involving 144 patients with hoarseness. A detailed clinical history, general and otorhinolaryngological examination, and video laryngoscopic evaluation were performed for each patient. Etiological factors were categorized, and laryngeal findings were documented and analyzed. **Results:** The most common findings were acute laryngitis (23.6%), followed by laryngopharyngeal reflux (22.9%), malignancy and vocal cord (VC) nodules (12.5%) on laryngeal examination. Female predominance was noted, and laryngopharyngeal reflux disease (LPRD) and vocal misuse were significant contributing factors. **Conclusion:** Hoarseness has diverse etiologies, ranging from benign to malignant conditions. Identifying the underlying causes and associated laryngeal findings is essential for accurate diagnosis and effective management.

KEYWORDS : Hoarseness, Laryngoscopy, Etiology, Vocal cord lesions, Laryngeal pathology, Voice disorders

INTRODUCTION

The human voice is an essential tool for communication, self-expression, and artistic performance. Its production involves a complex interplay between the respiratory system, vocal folds, and resonance structures, enabling a diverse range of sounds, tones, and emotions. Its uniqueness and versatility make it a topic of interest across various fields, including linguistics, music, and technology.

Voice is produced when air passes through the vocal folds, causing them to vibrate passively, usually during exhalation. These vibrations generate pressure waves that are transmitted through the air and interpreted as sound by the auditory system. Hoarseness refers to any alteration in the voice, specifically a rough, raspy, strained, or coarse vocal quality. It involves changes in pitch, loudness, or vocal effort that affect vocal function.¹ It can result from a spectrum of conditions ranging from common cold to malignancies.

Hoarseness can be classified as either acute or chronic.² Acute hoarseness is more common and is primarily caused by inflammation, such as acute laryngitis. Other contributing factors include viral infections, smoking, vocal strain, laryngeal trauma, or thyroid surgery.³ Chronic hoarseness is often associated with conditions such as vocal cord nodules, polyps, laryngeal papillomatosis, vocal cord tumours, functional dysphonia, smoking, vocal strain, laryngopharyngeal reflux disease, postnasal drip, neoplasms of the thyroid, esophagus, or lungs, as well as chronic granulomatous diseases like tuberculosis and systemic conditions such as diabetes mellitus.⁴

Persistent hoarseness over an extended period may indicate a serious underlying condition and should not be overlooked. A comprehensive assessment, including a detailed history, endoscopic examination, and, if necessary, imaging or biopsy, helps determine the precise cause. Given the potential severity of some conditions, prolonged or unexplained hoarseness should never be ignored.

This study is aimed at assessing the etiological factors and laryngeal findings in patients with hoarseness attending ENT OPD of Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram over a period of 1 year.

MATERIALS AND METHODS

This cross sectional study was conducted in the Department of

Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram over a period of 1 year from September 2023 to August 2024. Sample size were calculated as follows.

Sample Size

$$n = Z_{\alpha}^2 pq/d^2 \\ = 1.96 \times 1.96 \times 40 \times 60 / 64 \\ = 144$$

This is calculated in reference to A clinical study on etiopathology of hoarseness of voice done by Dr Prasanna et al in Guntur Medical college in 2021 where p is taken as proportion of patients with carcinoma larynx and hypopharynx presenting with hoarseness of voice.¹²

Inclusion Criteria

This study includes patients of age >3 years with hoarseness attending ENT outpatient department (OPD)

Exclusion Criteria

Patients who are unconscious, underwent tracheostomy
Patients who are not willing for flexible endoscopy

Data Collection Procedure

All the patients with complaints of hoarseness of voice above the age of 3yrs who attended our department during the study period was included in our study. A written informed consent was obtained from patients and guardians of all children and assent was obtained from children above 7 years. Patients were grouped into 5 age group.

Group	Age group
1	Less than 10 years
2	11-20 years
3	21-30 years
4	31-40 years
5	41-50 years
6	51-60 years
7	61-70 years
8	More than 71 years

All the required information were collected and recorded in a predesigned proforma. Patients who were unconscious, who

underwent tracheostomy and those who were not willing for flexible endoscopy were excluded. Detailed history was taken from patients and guardians of children. Physical examination included general examination and complete ENT examination. Routine blood investigations were done. Flexible endoscopy was done to assess the laryngeal findings in patients. Computed tomography was done in indicated patients.

RESULTS

Among the 144 patients who presented with hoarseness of voice, the highest proportion were in the 51–60 year age group (23.6%), followed by those aged 61–70 years (18.8%) and 41–50 years (17.4%). Females accounted for 58.3% of the total patients, while males made up 41.7%. Within the 51–60 years age group, 64.7% of the patients were female. In patients of age group above 70yrs, 87.5% were males. 50.3% of patients were housewives, 15.3% were daily wage workers and 10.4% were teachers. 69% of female patients were housewives while 13.1% were teachers. 35% of male patients were daily wage workers. (table 1)

Table 1: Occupation Of Patients With Hoarseness Of Voice

Occupation	Frequency	Percentage
Bank employee	1	0.7%
Driver	7	4.9%
Hotel staff	1	0.7%
Housemaid	2	1.4%
Housewife	58	40.3%
Lab technician	1	0.7%
Mason	1	0.7%
Unemployed	15	10.4%
Plumber	1	0.7%
Shopkeeper	8	5.6%
Singer	1	0.7%
Student	10	6.9%
Teacher	15	10.4%
Daily wage worker	22	15.3%
Clerk	1	0.7%

Upper respiratory infections (URI) were seen in 30.6% of patients. 36.1% of patients had recurrent allergic symptoms. 11.8% of patients had past history of LPRD, 9% had history of hypothyroidism, 2.8% had history of neurological disorders, 2.8% had history of respiratory system disorders and one of the person had history of bronchogenic carcinoma. Regarding past surgical history 4.9 % of patients had history of thyroid surgery while one of the patient had history of long term intubation in the past. 11.1% of patients had family history of allergic rhinitis. Smoking and alcohol use were identified as predisposing factors in 31.3% of patients, while tobacco chewing was reported in 6.3% of cases. Flexible nasopharyngoscopy (Table 2) (Fig 3) revealed 23.6% of patients with LPRD changes, 22.9% had changes of acute laryngitis, 12.5% had vocal cord nodule and 12.5% had ulceroproliferative growth suggestive of malignancy (Fig 1). The sites of malignancy were pyriform sinus in 7 patients, supraglottis in 5, vocal cords in 3, subglottis in 2 and base of tongue in one patient.



Fig 1: Flexible endoscopic image showing Carcinoma larynx

Vocal cord polyps were observed in 8.3% of patients (Fig. 2), while 5.6% had unilateral vocal cord palsy and 4.9% had unilateral vocal cord paresis. Unilateral vocal cord edema was noted in 4.2% of cases. Bilateral vocal cord paresis, bilateral vocal cord palsy, and phonatory gap were each identified in 1.4% of patients.



Fig 2: flexible endoscopic image showing vocal cord polyp

Table 2: Flexible Nasopharyngolaryngoscopic Findings In Patients With Hoarseness

Laryngeal Findings	Frequency	Percentage
Vocal cord polyp	12	8.3%
Vocal cord edema	6	4.2%
Vocal cord nodule	18	12.5%
Carcinoma	18	12.5%
Phonatory gap only	2	1.4%
Unilateral Vocal cord palsy	8	5.6%
Bilateral Vocal cord palsy	2	1.4%
Unilateral Vocal cord paresis	7	4.9%
Bilateral Vocal cord paresis	2	1.4%
LPRD	33	22.9%
Acute laryngitis	34	23.6%
Psychogenic	2	1.4%

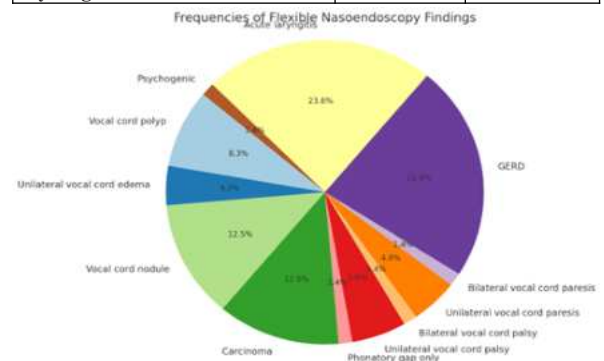


Fig 3: Laryngeal findings in patients with hoarseness

In patients of age group less than 20 years of age, 75% had acute laryngitis, 12.5% had vocal cord nodule and 12.5% had unilateral VC edema as flexible nasopharyngolaryngoscopic finding. In patients of age group 61–70 yrs, 33.3% of them had changes of LPRD, 22.2% had ulceroproliferative growth suggestive of malignancy, 14.8% had vocal nodule, 11.1% had VC polyp and 7.4% had unilateral VC edema. In patients above 70 years of age, 37.5% had ulceroproliferative growth suggestive of malignancy, 18.8% had LPRD changes, 12.5% had bilateral VC paresis, 6.3% had phonatory gap, 6.3% had unilateral VC paresis and 6.3% had bilateral VC palsy. Of the 12.5% of patients with carcinoma 88.9% of them are of male gender. In 12.5% of patients with VC nodule, 83.3% of them are of female gender.

DISCUSSION

The present study aimed to assess the etiological factors of hoarseness of voice in 144 patients attending ENT OPD. The study was conducted in the Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Trivandrum. The data was analysed across various parameters, including demographic distribution, allergic symptoms, LPRD symptoms, medical history, family history, flexible nasopharyngolaryngoscopic findings, and associations

between different clinical variables and the endoscopic findings.

In our study the most common age group affected was group 51-60 yrs (23.6%) followed by 61-70 yrs (18.8%) and 41-50 yrs (17.4%). Similar findings were reported in a study by Kamana Sindhu Pal et al.⁵, where the highest incidence of cases occurred in the fourth (24%) and sixth (21%) decades of life, followed by the third decade (18%). In a study by Kambic et al.⁶ with 591 patients, the incidence of benign lesions of larynx were observed in the age group of 30-40 years.

In our study malignancies were not seen in patients below 40 yrs of age and was common in age group above 60 yrs. Of the 12.5% patients with suspected malignancies, pyriform sinus was involved in 7 patients, supraglottis in 5, vocal cords in 3, subglottis in 2 and base of tongue in 1 patient. It was consistent with a study by Kambic et al.⁶ where carcinoma larynx was rare under the age of 30 years and common in 5th and 6th decade of life. This finding also aligns with the study by Kamana Sindhu Pal et al.⁵, which reported that malignancies of the larynx or laryngopharynx accounted for 15% of hoarseness cases, noted most commonly in 6th and 7th decades of life (62.5%) and the sites involved were glottis (8%), supraglottis (5%), subglottis (1%) and postcricoid area (1%).

In our study 58.3% of patients were females while 41.7% of them were males. Benign lesions were common among female patients and malignancies were mostly seen in male patients. This may be due to the higher prevalence of addictions in males. This was in contrast to the study by Kamana Sindhu Pal et al.⁵ which showed that among 100 cases, 60 (60%) were males and 40 (40%) were females. It was also in contrast to a study by Hansa Banjara et al which showed that among 251 cases, 164 (65.34%) were males and 87(34.66%) were female.⁷

In our study, females were more prevalent in the 51-60 years age group (64.7%), while males predominated in the age group over 70 years (87.5%). In the study by Kamana Sindhu Pal et al.⁵, males represented a higher percentage (28.33%) in the 51-60 years age group, while females were more common in the 31-40 years age group (35%).

In our study, 50.3% of patients were housewives, 15.3% were daily wage workers and 10.4% were teachers. 69% of female patients were housewives while 13.1% were teachers. 35% of male patients were daily wage workers. According to the study by Kamana Sindhu Pal et al.⁵, the majority of patients were laborers/farmers (33%), followed by housewives (30%), private employees/businessmen (15%), students (10%), teachers (9%), and singers (3%).⁵ This was also consistent with the findings of a study by Hansa Banjara et al., which revealed that the largest group of patients were housewives (19.52%), followed by labourers/farmers (17.53%), private job holders/businessmen (15.94%), students (7.97%), teachers (7.57%), retired persons (5.18%), and factory workers (3.98%).⁷

In our study, GERD symptoms were seen in 44.4% of patients. It was consistent with a study by Sydney R A Korsunsky et al. where 5% of patients had LPRD symptoms.⁸

In our study, URI was found in 30.6% of patients. Similarly, M. Rama Sridhar et al.⁹ noted short-term vocal abuse and URI as the most common causes of acute laryngitis.

In our study, 31.3% of patients had smoking and alcohol as predisposing factors, while 6.3% had tobacco chewing. In Hansa et al.'s study⁷, smoking was the most common factor (43%), followed by vocal abuse (31%), alcohol (29.48%), and tobacco/gutkha chewing (29.48%). Kamana Sindhu Pal et al.⁵ found smoking (33%) to be the most common factor, followed by URI (24%), alcohol (22%), tobacco chewing (22%), and vocal abuse (17%).

In our study, flexible nasopharyngolaryngoscopy revealed acute laryngitis in 23.6%, LPRD in 22.9%, vocal cord nodules in 12.5%, ulceroproliferative growths suggestive of malignancy in 12.5%, vocal cord polyps in 8.3%, unilateral vocal cord palsy in 5.6%, unilateral vocal cord paresis in 4.9%, unilateral vocal cord edema in 4.2%, bilateral vocal cord paresis in 1.4%, bilateral vocal cord palsy in 1.4%, and a phonatory gap in 1.4%. In Musarrat Feshan et al.'s study⁹, 58.42% had normal findings, followed by LPRD (19.8%), carcinoma (11.88%), vocal cord palsy (2.97%), vocal cord nodules (1.98%), vocal cord polyps, premalignant lesions, post-instrumentation injury, candidiasis, and cysts contribute to 0.99% each. Mahbub et al.¹¹ showed that on fiberoptic laryngoscopy (FOL) examination, 30% of

cases presented with vocal cord polyps, 21% with vocal cord growths, 14% with vocal cord nodules, 8% with vocal cord palsy, 5% with ulcerated lesions, and 2% showed normal findings.

In our study there were 10 persons with vocal cord palsy, of which 8 of them had unilateral and 2 of them had bilateral involvement. Of the 8 persons with unilateral VC palsy, 5 of them had left vocal cord involvement while 3 of them had right vocal cord involvement. In the study by Kamana Sindhu Pal et al.⁵, left vocal cord paralysis was more common (60.60%) than right-sided paralysis (27.27%), which can be attributed to the longer course of the left recurrent laryngeal nerve.

In our study, 12.5% of patients had vocal cord nodules, with 83.3% females and 16.7% males. In the study by Hansa et al.⁷, nodules were the most common lesion, found in 11.95% of cases, with a M:F ratio of 1:1.7.

Among the 8.3% of patients with vocal cord polyps in our study, 66.7% were male and 33.3% were female. It was consistent with the study by Kamana Sindhu Pal et al.⁵ which showed 10% cases of vocal cord polyps are responsible for hoarseness of voice with M:F ratio 4:1.

Limitation

The sample size, though informative, may not fully represent all demographic or occupational groups. Certain lifestyle factors, such as smoking and alcohol history, were not quantitatively assessed.

CONCLUSION

The majority of patients with hoarseness were aged 51-60 years (23.6%), followed by 61-70 years (18.8%) and 41-50 years (17.4%). Females comprised 58.3% of cases. Most were housewives (50.3%) followed by daily wage workers (15.3%) and teachers (10.4%). Common associated conditions included recurrent allergic symptoms (36.1%), upper respiratory infections (30.6%), LPRD (11.8%), hypothyroidism (9%), and neurological disorders (2.8%). Smoking and alcohol use were found in 31.3% of cases, and tobacco chewing in 6.3%.

Flexible nasopharyngolaryngoscopy revealed acute laryngitis (23.6%), LPRD-related changes (22.9%), vocal cord nodules and suspected malignancies (12.5% each), polyps (8.3%), and various vocal cord mobility disorders. Malignancies were absent in patients under 40 and more common in those over 60.

This study reveals the multiple causes of hoarseness and stresses the impact of lifestyle habits, calling attention to the need for greater public awareness of their link to serious conditions such as laryngeal cancer.

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