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Clinicopathological Factors of Hoarseness of Voice Presenting to Otorhinolaryngology OPD at A Tertiary Care Hospital

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ABSTRACT

Background

Hoarseness is a common symptom with multiple causes presenting to ENT OPD. The purpose of the study was to determine the clinical and pathological causes of hoarseness so that early diagnosis and treatment could be made. The objective of this study is to evaluate the clinicopathological factors in patients with hoarseness presented to Otorhinolaryngology out patient department.

Methods

This analytical cross-sectional study was conducted in patients with hoarseness lasting for at least 3 weeks presenting to Otorhinolaryngology outpatient department during period of September 2024-July 2025 in College of Medical Sciences Teaching Hospital, Bharatpur, Nepal. The collection of data regarding patients' demographics, nasopharyngolaryngoscopic findings, history of addiction to tobacco, alcohol or other drugs and histopathologic examination was done. Statistical analysis was done using frequencies, percentages and mean whenever applicable.

Results

We observed male dominance (68% male vs 32% female), with mean age being 45.1 years. 44% patients with hoarseness had history of addiction. Nasopharyngolaryngoscopy findings included true vocal cord nodules in 36% and laryngopharyngeal reflux in 25% of cases. Among 45.45% of biopsies taken showed malignancy.

Conclusions

Hoarseness of voice is more common in middle age male and has frequent association with occupation and addiction to either tobacco, alcohol or both. Early identification and histopathological examination are crucial and malignancy should be suspected in patient with hoarseness with vocal cord masses.

Keywords: addiction; hoarseness; histopathology; malignancy; nasopharyngolaryngoscopy; vocal cord nodule.

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INTRODUCTION

Hoarseness of voice is a common symptom encountered by otorhinolaryngologists in daily practice, often defined as the change in the quality of voice.[1] It is a symptom of an underlying pathology of the larynx. So, workup is necessary to look for any underlying cause.[2] Hoarseness can be acute in onset or chronic. Abnormal vibration of vocal cord of any etiology leading to incomplete glottic closure, change in vocal cord stiffness and imbalance in mechanical properties of cords causes hoarseness. Predisposing factors for acute hoarseness include smoking, excessive voice use, laryngopharyngeal diseases, post nasal drip, laryngeal trauma and thyroid surgery.[3] Chronic cases include vocal cord nodule, polyps, papillomatosis, tumor of vocal cord, neoplasm of thyroid, and tuberculosis of larynx.[4,5] Despite modern clinical advancement, available evidence regarding pathophysiology behind hoarseness is insufficient.[6] A complete history and physical examination, along with the investigations like nasopharyngolaryngoscopy and Stroboscopyare required for diagnosis.[7] Delay in diagnosis of hoarseness can lead to late diagnosis of malignancies.[8] This study aims to explore the demographic and clinicopathological profile of patients presenting with hoarseness in our hospital to better understand diagnostic patterns and malignancy risks. This study emphasizes the hidden burden of laryngeal cancer in the population of Chitwan and underscores the importance of early laryngoscopy and biopsy in at-risk patients.

METHODS

This is a descriptive cross-sectional study. This study was conducted in the Department of Otorhinolaryngology of College of Medical Sciences and Teaching Hospital Bharatpur, Nepal. The ethical approval was taken from Institutional Review Committee (IRC) of College of Medical Sciences, Bharatpur, Nepal (Ref. No. COMSTH-IRC/2024-048). This study was conducted for a period from September 2024 to August 2025. The study was conducted in patients aged 15 to 65 years. Those patients presented in the ENT OPD with hoarseness for a duration of 3 or more weeks during the period. Based on available prevalence of hoarseness (37%)[4] in Nepal sample size calculation was done by using formula: $n = (Z^2 * p * (1-p))/e^2$ with 95% CI and 5% margin of error.

After the sample size calculation from the known prevalence of hoarseness in a study done in Nepal sample size was calculated. Therefore, a total of 122 patients were included in the study. Patients of both genders were included in this study. They were in the age group of 15-65 years. Those patients with with chief complaints of hoarseness of voice for 3 or more week's duration were included in the study. Patients with this complaint and who gave informed written consent for the study were included in the study. Patients who were uncooperative, mentally retarded, unconscious and patient with recent history (6 months) of surgery or head and neck and trauma cases were excluded from the study. Informed written consent was obtained from all patients. A self-structured questionnaire was used for data collection. Patients were asked for chief complaints, duration of disease, history of difficulty in swallowing, blood in sputum, occupational history, history of addiction to alcohol and smoking, history of any surgery in the head and neck in the past and mental status. After history taking these patients were examined clinically with head light in the OPD. Indirect laryngoscopy was done. Findings were noted. Palpation of the neck was done for any swellings in the neck. These patients were then evaluated by nasopharyngolaryngoscopy. A nasopharyngoscope was inserted through the nose and entered into the larynx. All the structures of the larynx were evaluated. Supraglottis, glottis and subglottis were evaluated. Status of the vocal cord mobility was evaluated. Any mass lesion seen was noted and the site as well. Any suspicious lesions was noted for the site of origin, extension and mobility of the vocal cords. These cases were advised for biopsy and CT scan of the neck and chest. The reports were traced. All the findings were recorded and data entered into Microsoft Excel. Collected data was entered into Microsoft Excel. Descriptive statistics were analyzed using python and included frequencies, percentages and mean.

RESULTS

A total of 122 patients participated in the study with mean age of 45.1±10.6 years. 68% (n=83) were male and remaining 32%(n=39) were female.The most common affected age group presenting with hoarseness was 35-44 years accounting for 40.90% (n=50). A history of some addiction either alcohol, tobacco, both or other drugs was reported in 44% (n=54) patients. Professional voice users with hoarseness were reported to be 32.7% (n=40) (Table 1).

Table 1. Demographic distribution of patients. (n=122)

Variables	Frequency (%)
Gender	
Male	83(68)
Female	39(32)
Mean Age (years) = 45±10.6	
Age Group	
15-24	6(4.9)
25-34	9(7.3)
35-44	50(40.90)
45-54	16(13.11)
55-65	41(33.6)
Addiction	
Yes	54(44)
No	46(37)
Occupation	
Professional voice users	40(32.7)
Non professional voice users	82(67.2)

Among patients undergoing nasopharyngolaryngoscopy, the most common findings were true vocal cord (TVC) nodules 36.1% (n=44), followed by laryngopharyngeal reflux (LPR) 25.4% (n=31), with TVC mass 8.2% (n=10), TVC polyp 7.3% (n=9), chronic laryngitis 5.7% (n=7), TVC palsy 5.7% (n=7), acute laryngitis 2.5% (n=3) and others 9.1% (n=11) are observed. The nasopharyngolaryngoscopic findings are mentioned in Table 2.

Table 3 shows the histopathological outcomes based on the biopsy status and findings. Biopsy was taken from 18% (n=22) of patients. We observed malignancy in 45.45% (n=10) of suspicious biopsy samples sent for histopathological examination. 54.5% (n=11) of biopsy samples were non-malignant. When compared with total number of patients with hoarseness, the incidence of malignancy was 8.19% (n=10) (Table 3).

Table 2. Nasopharyngolaryngoscopic (NPL) findings. (n=122)

NPL finding	Frequency (%)
True vocal cord nodules	44(36.1)
Laryngopharyngeal reflux	31(25.4)
True vocal cord mass	10(8.2)
True vocal cord polyp	9(7.3)
Chronic laryngitis	7(5.7)
True vocal cord palsy	7(5.7)
Acute laryngitis	3(2.5)
Others	11(9.1)

Table 3. Histopathological outcomes based on biopsy status and findings. (n=122)

Biopsy status and findings	Frequency (%)
Biopsy taken	22(18)
Biopsy not taken	100(82)
Positive for malignancy	10(8.19)
Percentage positive among biopsy samples	45.45%

DISC USSION

This study indicated that hoarseness of voice is more prevalent in middle aged males (35-44 years). This could be secondary to occupational voice use. Occupational voice users include teacher, singer, public speaker. The higher rates of addiction to tobacco and or alcohol is seen in those middle-aged male patients with hoarseness. Most common nasopharyngolaryngoscopy findings were benign true vocal cord nodules and Laryngopharyngeal reflux. However, a significant percentage of patients with masses or polyps seen on nasopharyngolaryngoscopy were diagnosed with malignancy. The masses were either seen on Vocal cords or it could be in supraglottic or subglottic area. Besides hoarseness, these patients also complained of difficulty in swallowing or globus like sensation. Some also presented with Haemoptysis and weight loss. These findings highlight the importance of prompt nasopharyngolaryngoscopy in patients with hoarseness. Early diagnosis of hoarseness is necessary. This leads to early histopathological evaluation in suspicious cases is of great importance in management of the condition. This may decrease morbidity and mortality.

We observed male dominance (68% male Vs 32% female) in the occurrence of hoarseness. Similar to our study various other authors Zads B et al.,[9] Arifuzzaman et al.,[10] Alrahim et al.,[11] Soni et al.,[12] and Parajuli R et al.,[4] observed more frequent occurrence on hoarseness in male patients. This increased incidence in male patients is supposed to be due frequent use of alcohol, tobacco or other substances and also secondary to occupational overuse of voice. Few other authors Singh D et al.,[14] and Thapa J et al.,[15] observed female dominance. They have postulated that more frequent use of voice secondary to household works and teaching profession in crowded schools for female gender as cause of increased frequency. Thapa J et al.,[15] have hypothesized the anatomical shortness of vocal cord and lower amount of hyaluronic acid in superficial lamina propria of vocal cords as possible reason for more common incidence of hoarseness in female patients.

In our study we found that 32.7% patients were occupational voice over users. Alrahim et al.,[11] found high incidence of hoarseness in teachers of age 42-45 years of age. Incidence was higher in public schools with higher number of students. They observed that more the number of students per class, the more likely it was for the teacher to develop hoarseness (p-value=0.038) which indicates occupational over speech as a factor of hoarseness.

The most common etiology of hoarseness we observed was true vocal cord nodule followed by laryngopharyngeal reflux and true vocal cord mass. Similar to our study Parajuli R[2] observed vocal cord nodule as most common etiology (34.21%) followed by adduction gap and acute laryngitis. Singh D et al.,[14] also observed similar etiological incidence vocal cord nodules 38.9%, laryngopharyngeal reflux 19.6%, muscle tension dysphonia 17.8 % and vocal cord polyp 2.2%. However, Rudolf R et al.,[13] found acute laryngitis (42.1%) as most common etiology followed by functional vocal cord abnormalities (30%) and chronic laryngitis (9.7%). Thapa J et al.,[15] observed laryngitis (acute and chronic) in 40.3% of cases followed by laryngopharyngeal reflux disease 28.4% and vocal nodule 12.8%.

54% of patients in this study have had some kind of addiction to alcohol, smoking, chewing tobacco or to any other substances. Similar to our study Soni et al.,[12] observed 60% association with Smoking and 33% association with chewing tobacco. Arifuzzaman et al.,[10] found 43.68 % of patients presenting with hoarseness were smokers. In this study we didn't study individual separate group of patients with type of addiction so association with kind of addiction was not studied.

We observed 8.18% incidence of malignancy in patients with hoarseness. Similar to our study, Zada B et al.,[9] observed 8.7% incidence of malignancy among the 150 patients with hoarseness. Another author Parajuli R[2] observed malignancy in 15.78% of cases. Other authors Soni et al.,[12] Rudolf R et al.[13] and Thapa j et al.,[15] observed similar incidence of malignancy in patients with hoarseness. Arifuzzaman et al.,[10] and Soni et al.,[12] however observed increased incidence (>37%) of malignancy in patients presented with hoarseness. In their study population average duration of hoarseness was 4 months and maximum up to 2 years and in our study was less than 1 month on average. This late hospital visit could have increased the rate of incidence of malignancy in their study.

Limitations

This study was conducted in a single tertiary center, which may limit the generalizability of the findings.

CONCLUSIONS

Hoarseness of voice is usually a result from benign disease of larynx but may indicate some serious conditions underlying including malignancies. Male predominance and history of addiction to some substances are found to be significant during workup of hoarseness of voice. Prompt laryngoscopic examination and biopsy of suspicious lesion are crucial. It is therefore recommended that all patients with hoarseness should undergo nasopharyngolaryngoscopy and biopsy should be taken from all suspicious lesions.

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