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**Original Research Article**

# A study into the clinicopathological profile of patients with voice change

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## ABSTRACT

**Background:** Hoarseness is a symptom used to describe change in normal quality of voice and is usually described as harsh, grating voice which can be lower in pitch and more or less discordant.
**Methods:** The present study was carried out on 160 patients in the Department of ENT in PKDIMS over a period of 2 years from 2018 March to 2020 March. All patients with a history of voice change were evaluated.
**Results:** 160 patients between the age group of 21- 80 years were studied. The number of males and females were 97 (61%) and 63 (39%) respectively. Laborers (32%) and housewives (21%) are the major group affected. Smoking (25%) was the most common predisposing factor followed by alcohol consumption (21%). Voice change can be due to various pathologies. In the present study the most common etiology for voice change was vocal nodules (23%) followed by chronic laryngitis (13%), growth in the pharynx and larynx (11%).
**Conclusions:** Voice is important for our communication. Any disturbance in voice affects the individual's social and personal life. Treatment depends on the individuals needs and their diagnosis. Drug therapy, voice therapy, microlaryngeal surgery are the various treatment modalities done for our patients.

**Keywords:** Vocal nodule, Larynx, Pharynx

## INTRODUCTION

Hoarseness of voice is a common presenting complaint in ENT department. It is a symptom used to describe change in normal quality of voice and is usually described as harsh, grating voice which can be lower in pitch and more or less discordant.[1] Hoarseness can be due to abnormal vocal cord movement or due to any laryngeal pathology.[2] It can be either due to inappropriate approximation of vocal cord, abnormal size, abnormal stiffness, or improper vibrations.[3]

The causes of hoarseness vary from mild infections to malignancies. Some common acute causes are inflammatory conditions like acute laryngitis whereas other cause could be viral infection, vocal abuse, laryngeal trauma or thyroid surgery. Chronic causes include vocal cord nodule, vocal cord polyp, laryngopharyngeal reflux disease, functional dysphonia, smoking, vocal abuse, benign and malignant diseases of larynx, malignancy of thyroid, esophagus, lung, or chronic granulomatous disease like tuberculosis.[4]

As it may be the first or alarming symptom of an underlying fatal disease, hoarseness requires vigilant evaluation to find out the underlying cause.[5]

## METHODS

The present study was carried out on 160 patients in the Department of ENT in PKDIMS over a period of 2 years from 2018 March to 2020 March. All patients with a history of voice change for more than 14 days, who presented to the ENT OP Department, were included in the study. History of throat pain, cough, dyspnoea, swelling in the neck, stridor, history of trauma or any other complaints were noted. The mode of onset, duration and associated aggravating and relieving factors are

noted. Past history of recurrent voice change, chronic sinusitis, history of surgery, history of radiation to neck, history of Tuberculosis, syphilis or leprosy were noted. Personal and family history was taken into account. Patients with voice change due to congenital causes, nasal and nasopharyngeal and oral pathologies were excluded.

All patients underwent a complete general examination and a detailed ENT examination. Indirect laryngoscopy and a video laryngoscopy were done for all patients. Patients underwent radiological investigations like chest X-ray, X-ray neck lateral view and computed tomography depending on the differential diagnosis. Microlaryngoscopy and biopsy was done for all malignancy suspected cases. All biopsies were sent for hispathological examination and were treated accordingly. Data was coded and entered in MS excel and analysed using Epi info software. Data was analysed using proportions.

## RESULTS

In our study, we have included 160 patients between the age group of 21-80 years. The maximum numbers of patients were found to be between the age group of 31-40 years. The youngest patient being 21 years and the oldest being 79 years (Table 1).

**Table 1: Incidence of change in voice in different age groups.**

| Age group (in years) | No. of cases | Percentage (%) |
|---|---|---|
| **21-30** | 16 | 10 |
| **31-40** | 42 | 26 |
| **41-50** | 30 | 19 |
| **51-60** | 32 | 20 |
| **61-70** | 24 | 15 |
| **71-80** | 16 | 10 |
| **Total** | 160 | 100 |

Out of the 160 patients 97 (60.6%) were males and 63 (39.4%) were females. Male to female ratio was 1.5:1 (Table 2).

**Table 2: Incidence according to sex.**

| Sex | No. of cases | Percentage (%) |
|---|---|---|
| **Male** | 97 | 61 |
| **Female** | 63 | 39 |
| **Total** | 160 | 100 |

Our study shows that the incidence of voice change is more in laborers and housewives. Incidences of vocal nodule are more common in patients requiring excessive vocal abuse. Incidence of chronic laryngitis was common in patients with reflux disease.

In the present study, 51 patients were laborers by occupation. 33 patients were housewives, 31 were unemployed, 17 were businessmen, 7 were teachers, 8 patients were students, 6 were singers, 4 were bus conductors and 3 were video bloggers (Figure 1).

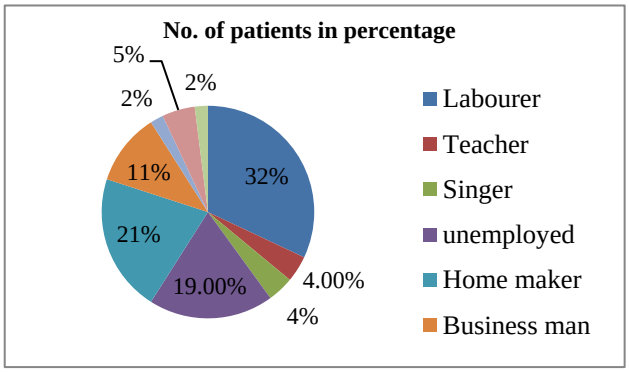


**Figure 1: Incidence according to occupation.**

In our study, 54 patients presented with voice change for 4-12 weeks followed by 52 patients who presented for a period of 2-4 weeks. 32 patients came with complaints for 3-6 months, 18 patients had symptoms for duration of 6 months- 1 year and 4 patients for more than 1 year (Figure 2).

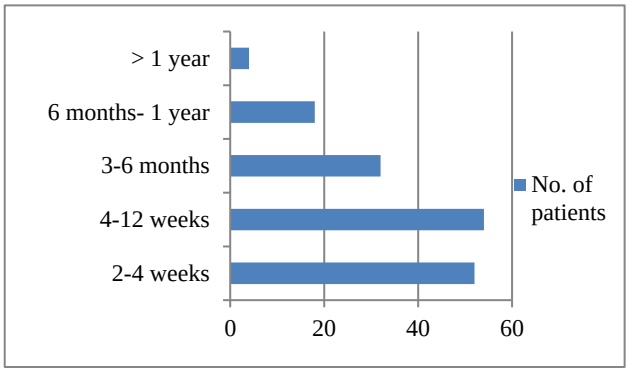


**Figure 2: Incidence according to duration.**

The most common predisposing factor in our study was smoking (25%), followed by alcohol consumption (21%). Smoking and alcohol was the predisposing factor for 20% of patients. Laryngopharyngeal reflux was a factor in 10% of cases. Tobacco was a causative factor in 6% and history of vocal abuse was seen in 14% of patients. (Table 3).

All the 160 patients with voice change taken in our study underwent indirect laryngoscopy and video laryngoscopy. Vocal nodules were the most common etiology which was seen in 36 patients, followed by chronic laryngitis, seen in 20 patients. Out of 18 patients, 10 patients had laryngeal growth, 4 patients had oropharyngeal growth and 4 had laryngopharyngeal growth (Figure 3). Among 15 patients with vocal cord palsy, 11 patients had unilateral palsy and 4 patients had bilateral vocal cord

palsy. The 2 patients with pooling of saliva were found to have upper esophageal carcinoma on follow up (Table 4).

**Table 3: Predisposing factors for voice change.**

| Predisposing factor | No. of patients | Percentage (%) |
|---|---|---|
| **Smoking** | 40 | 25 |
| **Alcohol** | 35 | 21 |
| **Smoking and Alcohol** | 33 | 20 |
| **Vocal abuse** | 23 | 14 |
| **Laryngopharyngeal reflux** | 16 | 10 |
| **Tobacco** | 11 | 6 |

**Table 4: Incidence according to etiology.**

| Etiology | No. of cases | Percentage (%) |
|---|---|---|
| **Vocal nodule** | 36 | 23 |
| **Chronic laryngitis** | 20 | 13 |
| **Growth in the pharynx and larynx** | 18 | 11 |
| **Epiglottic cyst** | 16 | 10 |
| **Vocal cord palsy** | 15 | 9 |
| **Vocal cord polyp** | 13 | 8 |
| **Hemorrhagic polyp** | 9 | 6 |
| **Vocal cord keratosis** | 8 | 5 |
| **Arytenoid granuloma** | 6 | 4 |
| **Vallecular cyst** | 5 | 3 |
| **Sulcus vocalis** | 4 | 2 |
| **Reinke's edema** | 3 | 2 |
| **Vocal cord cyst** | 3 | 2 |
| **Oropharyngeal candidiasis** | 2 | 1 |
| **Pooling of saliva in pyriform fossa** | 2 | 1 |
| **Total** | 160 | 100 |

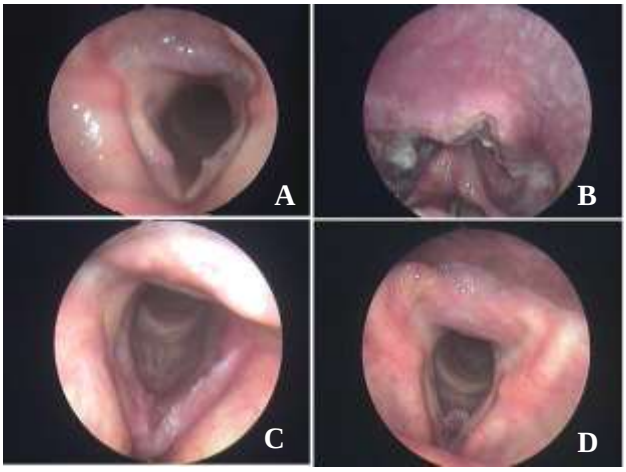


**Figure 3: (A) Left vocal cord nodule (B) malignancy of hypopharynx (C) keratosis left vocal cord (D) hemorrhagic polyp right vocal cord.**

## DISCUSSION

In our study, majority of patients were seen between the age group of 31-40 years followed by 51-60 years. In a study done by Kambic et al on a series of 591 patients, majority of cases presented with vocal cord lesions between the age group of 30-40 years.[6] Another study done by Hansa et al showed that majority of patients fall between the age group of 31-40 years.[7] In our study vocal abuse was commonly seen in this age group.

Most of the patients were males (61%) when compared to females (39%) and the male to female ratio is 1.5:1 with a male preponderance. Studies done by Mehta, Deshmukh, Parikh, Baitha et al, also showed a male to female ratio of 1.8:1, 1.5:1, 2:1, 2:1 respectively with a male preponderance.[8-11] The male preponderance could be explained by the different habits like alcohol consumption, smoking and tobacco use.

In our study most of patients presenting with voice change were laborers (32%) and house wives (21%). Majority of patients being laborers could be explained by the fact that our hospital being rural based with mostly village population comprising mostly of farm laborers. Among females majority of patients who presented were house wives. A study done by Pal et al and Baitha S et al, also showed that most of the cases were laborers followed by house wives.[11,12] Voice change in majority of house wives could be explained by increased use of voice to their children.

Most of the patients came with complaints for duration of 4-12 weeks (34%) followed by 2-4 weeks (32%). In a study done by Soni et al majority of patients presented with complaints for a duration of 3-6 months (28%) followed by 4-12 weeks and 2-4 weeks respectively.[13] Pal stated that most of the patients presented with complaints for duration of 3 months (57.86%) followed by 3-6 months (24.29%).[12] According to Hansa et al most of the patients had a duration of complaints less than 3 months (61.35%) followed by 3-6 months (25.1%).[7] Batra et al found that 59% of patients presented within 5 months of appearance of symptoms.[14]

Our study shows that smoking is a common predisposing factor in majority of patients (25%) followed by alcohol intake (21%). 14% patients had history of vocal abuse. Smoking and alcohol was a factor in 20% of patients 10% of patients had laryngopharyngeal refux and tobacco use was seen in 6% of cases. 14% patients had no predisposing factors. Pal et al found that smoking is commonest factor (33%) followed by URI (24%), alcohol intake ((22%), chewing tobacco (22%), vocal abuse (17%) and 21% had no predisposing factors.[12] Study done by Hansa et al showed smoking to be most common factor (43%), vocal abuse (31%), alcohol intake (29.48%) and tobacco/gutkha chewing (29.4%).[7] Another study showed that smoking was a common factor (25.4%) followed by tobacco chewing (17.27%) and alcohol intake (12.72%).[11] Studies done by Smullen JL and

Gregory et al showed that laryngopharyngeal reflux was a causative factor for hoarseness of voice.[15,16]

The most common cause for voice change in our study was vocal nodule (23%), followed by chronic laryngitis (13%), laryngopharyngeal growth (11%). Vocal nodules are the most common lesion (11.95% cases) in a study by Hansa et al and in a study done by Gupta et al vocal nodule was the most common lesion comprising 30% of patients.[7,17] Another study showed that the incidence of vocal nodules was 12.72%.[11] A study done by Vengala et al showed that the common etiologies for voice change were acute laryngitis (30.82%), chronic laryngitis (19.86%), and vocal nodules (12.32%).[18] Another studies by Parikh and Kumar et al concluded that chronic laryngitis was the most common etiology.[10,19] Pal et al concluded that 15% had laryngeal/ laryngopharyngeal growth, 6% had chronic laryngitis and 4% had vocal nodules.[12]

Gosh et al showed that 8% of patients had malignancy as a causative factor for hoarseness.[20] A study done by Soni et al. found that majority of cases who presented with hoarseness of voice had laryngeal and laryngopharyngeal malignancy.[13]

## CONCLUSION

Voice is important for our communication. Any disturbance in voice affects the individual's social and personal life. A detailed history taking and examination of the patient is important to achieve a clinical diagnosis. In our study the common etiologies for voice change is vocal nodule followed by chronic laryngitis. Patients having risk factors like smoking are to be evaluated immediately by laryngeal examination to find the underlying cause. Drug therapy, voice therapy, microlaryngeal surgery are the various treatment modalities done for our patients.

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