# **Original Research Article**

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# Tumours and tumour like lesions of larynx: a clinicopathological study

# Y. Kavitha, V. Chaitanya\*, K. P. Basavaraju

Department of Otolaryngology Head and Neck Surgery, JJM Medical College, Davangere, Karnataka, India

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# \*Correspondence: Dr. V. Chaitanya,

E-mail: chaitanya\_v\_dvg@yahoo.com

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## **ABSTRACT**

**Background:** Larynx is an important structure in human being forming a part of upper airway and responsible for voice production. Varieties of tumours and tumour like lesions of larynx significantly affect its functions. The aim of the study was to study the clinicopathological aspects of various lesions of larynx.

**Methods:** An observational study was conducted from January 2012 to December 2017 in a tertiary care centre retrospectively. Data collected from departmental registers. History, clinical presentation, relevant investigations and histopathology of biopsy from laryngeal lesions were analysed.

**Results:** The incidence of laryngeal lesions was found to be high between 30-40 years (30.8%) followed by 51-60 years age group (20.9%) with higher preponderance among males (80.25%) compared to females (19.75%). Hoarseness of voice was the commonest presenting symptom in our patients accounting for 80%. It was observed that 27.1% patients were smokers, 10% were addicted to alcohol, and 6% patients had history of both smoking and alcohol consumption. Vocal polyp was the commonest tumour like lesion found in our study (31.4%) followed by vocal nodule (14.1%). Laryngeal papilloma was the only type of benign tumour found in our study (8%) and squamous cell carcinoma of larynx accounts for majority of malignant tumours most of which were moderately differentiated (40%).

**Conclusions:** Majority of the laryngeal lesions are seen among rural population with poor socioeconomic status. Hence, creating awareness about risk factors, symptomatology and better cure with early detection can be life saving.

Keywords: Tumours of larynx, Tumour like lesions, Clinicopathological

#### INTRODUCTION

The human larynx protects the lower respiratory tract, provides a controlled airway, allows phonation and the generation of a high intrathoracic pressure for coughing and lifting.<sup>1</sup>

The larynx is divided into the supraglottic, glottis and subglottis based on anatomical location. Tumors of the larynx can be divided into benign or malignant. Laryngeal granulomas, vocal cord nodules, and vocal cord polyps are tumor-like (non-neoplastic) lesions of the larynx. Benign laryngeal tumors include a large number

of lesions such as papillomas, hemangiomas, fibromas, chondromas, myxomas, and neurofibromas.<sup>2</sup> The common factors responsible for the development of benign lesions are vocal abuse, misuse, overuse, speaking in unnatural tones, exposure to various irritants like smoke, dust, fumes, alcohol etc. Allergy and infective conditions of larynx (as human papilloma virus in respiratory papillomatosis) are also responsible alone or in combination with other factors for the development of such lesions.<sup>2-8</sup>

About 95% of laryngeal carcinomas are typical squamous cell tumors; approximately 40% of patients will have

stages III or IV disease when first evaluated.<sup>2,9</sup> Rarely adenocarcinomas are seen to arise from larynx, presumably arising from mucous glands.<sup>2</sup> Tobacco use, alcohol consumption, and HPV16 infection are considered to be the major risk factors for this disease. Occupational risk factors that include exposure to asbestos have also been described although dust exposures other than asbestos have been historically understudied.<sup>10</sup> Most cases of laryngeal cancer are associated with a history of tobacco and/or alcohol use, the treatment of patients is complicated by medical comorbidity and the development of second primary cancers.<sup>11,12</sup>

In spite of development in the field of laryngeal surgeries in recent years, still there is significant morbidity and mortality in advanced laryngeal lesions because of delayed presentation. Hence, there is a need to detect these lesions early so that curative measures can be taken to improve quality of life.

#### Aims

This study aimed at determining the distribution of tumours and tumour like lesions of larynx in terms of age, gender, personal habits, symptoms, site, clinical and histopathological diagnosis.

#### **METHODS**

We conducted an observational study on 162 histopathologically confirmed cases of tumours and tumour like lesions of larynx in the department of Otolaryngology Head and Neck Surgery of Bapuji Hospital attached to J.J.M. Medical College, Davanagere,

Karnataka during a 6 years period between January 2012 to December 2017 retrospectively. Only histopathologically confirmed cases of tumours and tumour like lesions were included in the study. Cases with inconclusive histopathological reports and incomplete data were excluded from the study. Age and gender distribution, symptom profile, location, risk factors, clinical diagnosis and histopathological reports were obtained from medical record section and were analysed. Consent for publishing clinical photographs from concerned patients was taken. Institutional ethical committee clearance was obtained. Descriptive statistical measures like percentages and proportions were utilised to present the data.

#### **RESULTS**

In this study, patient's age ranged from 10 years to 78 years. The peak incidence of laryngeal lesions found to be in 30-40 years (30.8%) age group followed by 50-60 years age group (20.9%) with male preponderance compared to female (male to female ratio 8:2). Tumour like lesions was most common in 4<sup>th</sup> decade followed by 3<sup>rd</sup> decade and minimum in 1<sup>st</sup> and 8<sup>th</sup> decade. Malignant tumours were commonly found 1in 51-60 years age group (Table 1).

Tumour like lesions were more common in middle class (66%) whereas benign and malignant lesions were more common in upper lower class (43%) followed by lower class (22.8%) [Socioeconomic status based on Modified Kuppuswamy classification 2017].<sup>13</sup> Tumour like lesions were equally found between rural and urban areas whereas benign and malignant tumours were common in rural areas.

<10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 Total Age in years No. % 2 1.2 11 6.7 42 25.9 18 19 11.7 3.7 132 80.2 M 1 0.6 11.1 31 19.1 6 Gender 2 1.2 F 8.6 8 4.9 3 3 1.8 0.6 32 19.2 14 1.8 1 0.6 1 total 1 0.6 2.4 25 15.4 30.8 21 12.9 34 20.9 20 12.3 7 4.3 162 100

Table 1: Distribution of cases according to age and gender.

Table 2: Distribution of cases according to clinical presentation.

Symptoms	Tumour like lesions		Benign tu	mours	Malignant tumours		
	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)	
Hoarseness of voice	81	91	11	84.6	42	70	
Foreign body sensation	10	11.2	2	15.3	43	71.6	
Dysphagia	-	-	-	-	12	20	
Vocal fatigue	64	71.9	3	23	48	80	
Throat pain	12	13.4	-	-	5	8.3	
Referred otalgia	-	-	-	-	6	10	
Cough	8	8.9	3	23	19	31.6	
Blood stained sputum	2	2.2	-	-	5	8.3	
Dyspnoea	2	2.2	1	7.6	23	38.3	
Stridor	-	-	3	23	3	5	
Loss of weight	5	5.6	-	-	13	21.6	

**Table 3: Distribution of cases according to risk factors.** 

Risk factors	Tumour like	lesions	Tumours	
	Number	Percentage (%)	Number	Percentage (%)
Smoking	18	11.1	26	16
Alcohol	-	-	12	7.4
Smoking + alcohol	-	-	10	6.1
Tobacco chewing	-	-	11	6.7
Betel nut chewing	-	-	9	5.5
Vocal abuse	60	37	-	-
H/o intubation	2	1-2	-	-
Laryngopharyngeal reflex	20	12	-	-
No risk factors	2	1.2	-	-

Table 4: Distribution of cases according to various lesions of larynx.

Tumour like lesions		Benign tumours			Malignant tumours			
Type of lesion	No.	%	Type of lesion	No.	<b>%</b>	Type of lesion	No.	%
Vocal polyp	51	31.4	Squamous papilloma	13	8	Squamous cell	59	36.4
Vocal nodule	23	14.1				carcinoma	39	30.4
Chronic laryngitis	6	3.7				Papillary carcinoma		
Tubercular laryngitis	5	3				thyroid invading	1	0.6
Epiglottic cyst	2	1.2				larynx		
Intubation granuloma	2	1.2						
Total	89	54.9		13	8		60	37

In our study, hoarseness of voice was the most common symptom in 91% of patients with tumours like lesions 72% of patients with benign and malignant tumours followed by vocal fatigue, foreign body sensation in throat, neck swelling, dyspnoea, cough, loss of weight, throat pain, dysphagia, blood stained sputum, stridor and referred otalgia (Table 2).

Most of the patients with tumour like lesions (67.4%) had history of voice abuse. Among them, 30 were teachers and 20 were housewives contributing to the majority of the group. 22.4% patients had history of smoking and 11% had symptoms of laryngopharyngeal reflux. Among patients with malignant tumours, 43.3% were smokers, 20% were alcoholics, 16.6% patients had history of both smoking and alcohol consumption whereas 11% patients had history tobacco chewing and 9% had history of betel nut/ pan chewing (Table 3).

In our study, 89 cases had tumour like lesions (54.9%) followed by 60 cases of malignant tumours (37%) and 13 cases of benign tumours (8%). Vocal polyp (Figure 1) found to be the most common tumour like lesion (31.4%) in our study followed by vocal nodule (14.1%). Rest were chronic laryngitis, tubercular laryngitis, intubation granuloma (Figure 2) and epiglottic cyst in decreasing order of frequency. Both vocal polyps and vocal nodules were found commonly in 3<sup>rd</sup> and 4<sup>th</sup> decade in our study.

All patients with benign tumours accounting for 8% of total laryngeal lesions had squamous papilloma. Among them one patient was a 10 years old boy with juvenile

recurrent laryngeal papillomatosis. Malignant tumours were found in 60 patients (98.3%) in our study. Among them, squamous cell carcinoma was the commonest found in 59 patients and 1 patient had papillary carcinoma thyroid infiltrating larynx with secondaries in the neck (Table 4).

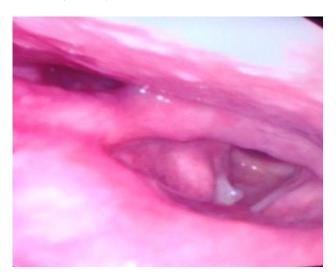


Figure 1: Vocal polyp.

Squamous cell carcinoma was commonly found in glottis (51.5%) followed by supraglottis (44%) and then in subglottis (3%). All of them were commonly observed in  $6^{th}$  and  $7^{th}$  decade. Most of the squamous cell carcinomas are moderately differentiated (40.6%) followed by well differentiated (33.8%) and poorly differentiated (25.4%).

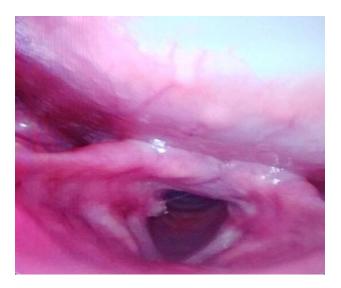


Figure 2: Intubation granuloma.

#### **DISCUSSION**

Tumours and tumours like lesions are usually detected early due to change of voice, but the early and precise diagnosis of malignant tumours is still a challenge. This was a retrospective, observational study in a tertiary care centre over a period of 6 years on histopathologically confirmed cases of tumours and tumour like lesions of larynx. Biopsy from majority of supraglottic lesions were taken on OPD basis using flexible nasopharyngoscopy under topical anaesthesia. Those who were uncooperative and/apphrensive were evaluated with direct laryngoscope under sedation with external laryngeal nerve block and biopsies were taken. In all glottic and subglottic lesions, direct laryngoscopy and biopsy done under general anaesthesia. An attempt can be made to rule out malignant lesions at the earliest by utilising affordable health care services available at the nearest health centre.

In our study, tumour like lesions were more common between 30 – 40 years (30.8%) which correlates with similar reports from Hegde et al and Singhal et al. <sup>14,15</sup> Malignant tumours were observed between 40-80 years with major occurrence between 50–70 years which correlates with studies from Kumar et al and Mishra et al. <sup>16,17</sup> As majority of the affected individuals are in earning age group, not only quality of the life of the patient is affected, it also adds to the socioeconomic burden of the family.

In both tumours and tumour like lesions of larynx, there was male preponderance (80%), which is similar to other studies (Bakshi et al, Hedge et al and Goiato et al). <sup>14,18,19</sup>

Tumours like lesions were more common in middle class (60%) whereas benign and malignant tumours were more common in upper lower and lower class (22.8%). Smith states that low socioeconomic status is associated with cancers of larynx. Bakshi et al in their study found that malignant tumours were more in low socioeconomic

class (60%) followed by middle class (25%) and then high class (15%).  $^{18}$ 

In our study it was observed that tumours like lesions and benign tumours equally distributed among rural and urban population whereas malignant tumours were more among rural population which correlates with similar reports from Sharma et al and Bakshi et al.<sup>2,18</sup>

present study, vocal abuse (67.4%) larvngopharvngeal reflux and smoking (22.4%) found to be the major risk factors for tumour like lesions. In the studies done by Ghosh et al and Parik, vocal abuse was observed in 72% and 56% cases respectively. 5,20 Whereas Pal et al in their study found that laryngopharyngeal reflux is also a major risk factor for tumour like lesions next only to vocal abuse (100%) accounting for 52.9% and none of them were smokers. 21 43.3% of patients with malignant tumours had history of smoking tobacco in the form of beedi/cigarette, followed by alcohol consumption (12%) and both smoking and alcohol consumption (16.6%) which was similar to a study from Maier et al which reported that smoking and drinking alcohol increase the dose dependent risk of laryngeal malignancies. <sup>22</sup>

In our study, hoarseness of voice was the commonest presenting symptoms in all patients with tumours (72%) and tumour like lesion (91%) of larynx followed by vocal fatigue (70.9%) and foreign body sensation in throat in correlation with Bakshi et al and Sharma at al. 2.18

Tumour like lesions constituted about 54.9% of cases with vocal polyps being the commonest type seen in 57.3% cases as correlated to Hedge et al, Dikkers et al and Kambic et al.<sup>4,14,23</sup> The second commonest lesion was vocal nodules (25.8%) but it was the most common cause of hoarseness of voice in studies done by Parikh and Ghosh.<sup>5,20</sup>

In our series, we had 5 cases of laryngeal tuberculosis as in accordance with Chopra et al and MC Hegde et al who had 3 cases and 6 cases respectively. 14,24

In the present study, benign tumour constituted 8% of cases whereas malignant tumours 37% and of them were found to be squamous papilloma. Squamous cell carcinoma was the commonest malignant tumour (98%) comprising of 20 cases (33.8%) of well differentiated, 24 (40.6%) of moderately differentiated and poorly differentiated in 15 (25.4%) of patients. Among laryngeal malignancies, 99% were squamous cell carcinomas. It is correlated with study done by Pal et al who observed that squamous cell carcinoma was the commonest malignant tumour with majority of them being moderately differentiated.<sup>21</sup> We had one case of papillary carcinoma of thyroid extending to subglottis with secondaries in the neck.

In this study, glottis was the commonest site (51.6%) of laryngeal malignancies followed by supraglottis (43.3%) and 3 were in subglottis which is in correlation with study done by Aslam et al where glottis 56%, supraglottis 36% and no subglottic involvement seen.<sup>21</sup>

## **CONCLUSION**

Majority of our patients were belonging to lower socioeconomic group from rural population of central part of Karnataka and had a definite relationship with smoking, alcohol intake and tobacco and betel nut chewing. In recent days, laryngopharyngeal reflex is emerging as a contributing factor in development of various tumours and tumour like lesions of larynx. Most of the affected individuals were the only earning member of the family which had a major impact in causing socioeconomic burden to the family.

Thus, this study reflects there is an urge to raise awareness and educate people regarding detrimental effects of alcohol and tobacco consumption, preventive measures, early symptoms and availability of diagnostic tools at affordable prices so that early diagnosis and appropriate treatment can be executed to reduce the morbidity and mortality.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

## REFERENCES

- Beasley N. Anatomy of the larynx and tracheobronchial tree. In: Scott – Brown's Otolaryngology, Head and Neck Surgery, 7th edn edited by Micheal Gleeson. Great Britain: Hodder Arnold; 2008: 2130-2144.
- 2. Sharma DK, Sohal BS, Bal MS, Aggarwal S. Clinicopathological study of 50 cases of tumors of larynx. Indian J Otolaryngol Head Neck Surg. 2013;65(1):29-35.
- Sharma M, Kumar S, Goel M, Angral S, Kapoor M. A Clinical Study of Benign Lesions of Larynx. Int J Oral Health Med Res. 2015;2(2):22-8.
- 4. Kambic V, Radsel Z, Zargi M, Acko M et al. Incidence of vocal polyps. J Laryngol Otol. 1981;95:609-18.
- 5. Ghosh SK, Chattopadhyay, Bora H, Mukherjee PB. Microlaryngoscopic study of 100 cases of hoarseness of voice. Ind J Otolaryngol Head Neck Surg. 2001;53:270-2.
- Mackenzie K. Chronic laryngitis. In: Scott-Brown's Otorhino-laryngology, Head and Neck Surgery, 7th edn. Gleeson M, Browning GG, Burton MJ, Clarke R, Hibbert J, Jones NS, Lund VJ, Luxon LM, Watkinson JC, eds. Hodder Arnold; 2008: 2258.
- Glashan. Disorders of voice. In: Scott Brown's Otorhinolaryngology, Head and Neck Surgery, 7th

- edn. Gleeson M, Browning GG, Burton MJ, Clarke R, Hibbert J, Jones NS, Lund VJ, Luxon LM, Watkinson JC, eds. Hodder Arnold; 2008: 2198.
- 8. Dabholkar JP, Chhabria S, Mishra M, Chirmade S, Sikdar A. Benign laryngopharygeal lesions: a case series. Ind J Otolaryngol 2008;60:7-10.
- 9. Suen, JY; Stern, SJ. Cancer of the head and neck. In: Myers, EN; Suen, JY, editors. Cancer of the head and neck. 4th ed. Philadelphia: Saunders WB; 2003: 462-484.
- Langevin SM, McClean MD, Michaud DS, Eliot M, Nelson HH, Kelsey KT. Occupational dust exposure and head and neck squamous cell carcinoma risk in a population-based case-control study conducted in the greater Boston area. Cancer Med. 2013;2(6):978-86.
- Cumming, CW; Fredrickson, JM; Harker, L; Krause,CJ; Richardson, MA; Schuller, DA. Malignant tumors of the larynx and hypopharynx. In: Adam, GL, editor. Cummings otolaryngology head and neck surgery. 5th ed. Chicago: Elsevier (Mosby); 2010: 2130-2175.
- 12. Hong WK, Lippmann SM, Itri LM, Karp DD, Lee JS, Byers RM, et al. Prevention of second primary tumors with isotretinoin in squamous-cell carcinoma of the Head and Neck. N Engl J Med. 1990;323(12):795-801.
- 13. Singh T, Sharma S, Nagesh S. socio-economic status scales updated for 2017. int J Res Med Sci. 2017;5:3264-7.
- 14. Hegde MC, Kamath MP, Bhojwani K, Peter R, Babu PR. Benign lesions of Larynx— a clinical study. Ind J Otolaryngol and Head Neck Surg. 2005;57(1):35-8.
- Singhal P, Bhandari A, Chouhan M, Sharma MP, Sharma S. Benign tumours of larynx: A clinical study of 50 cases. Ind J Otolaryngol Head Neck Surg. 2009;1:26-30.
- 16. Kumar JS, Bhutia NN, Bhutia TJ, Malik P, Singh M, Devi HP. Malignat tumours of the larynx: A clinicopathological study of 30 cases. Middle East J Cancer. 2015;6(2):71-8.
- 17. Sathyajit, Sujata. Profile of carcinoma larynx patients attending a tertiary care hospital in Western Odisha. J Evol Med Dental Sci. 2013;2(7);683-8.
- Bakshi J, Panda NK, Sharma S, Gupta AK, Mann SBS. Survival patterns in treated cases of carcinoma larynx in North India: a 10 years follow up study. Ind J Otolaryngol Head Neck Surg. 2004;56(2):99-103.
- 19. Goiato MC, Fernandes AUR. Risk factors of laryngeal cancer in patients attended in the oral oncology centre of Aracatuba. Braz J Oral Sci. 2005;4(13):741-4.
- 20. Parikh N. Aetiology study of 100 cases of hoarseness of voice. Indian J Otolaryngol Head Neck Surg. 1991;43(2):71–3.
- 21. Pal P, Sood AS, Manchanda L, Singh B. Clinicoetiopathological and management profile of

- laryngeal tumours in a tertiary care centre. Int J Otorhinolaryngol Head Neck Surg. 2017;3:913-7.
- 22. Maier H, Gewelke U, Dietz A, Heller W. Risk factors of cancer of the larynx: results of the Heidelberg case—control study. Otolaryngol Head Neck Surg. 1992;107(4):577-82.
- 23. Dikkers FG. benign lesions of the vocal folds. Histopathology and phonotrauma. Ann Otol Rhinol Laryngol. 1995;104:698-703.
- 24. Chopra H, Kapoor M. Study of benign glottic lesions undergoing microlaryngeal surgery. Indian J Otolaryngol Head Neck Surg. 1997;49:276-9.
- 25. Aslam MJ, Ahmed Z, Aslam MA, Ahmed MI. Complications of total laryngectomy. Pak J Med Sci. 2006;22(1):33-7.

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