

Original Research Article

A clinicopathological study and management of tumor and tumor like lesions of larynx

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ABSTRACT

Background: The aim of the study was to (a) determine the incidence and distribution of cases according to age, sex, etiology etc; (b) to know common etiology for the different diseases; (c) to understand pathophysiology of the disease; (d) to know various presentations of the disease; (e) to determine various diagnostic tools; and (f) to know modalities of treatment available.

Methods: Prospective observational study, method of sampling: non-random, purposive. department of ENT, Government medical college and tertiary care centre. Fifty-one patients with benign and malignant lesion of larynx were analysed. Only cases with persistent hoarseness for more than three weeks were selected. Benign lesions included neoplastic and non-neoplastic lesions. All cases underwent a thorough ENT examination. Once suspected the cases were examined under direct laryngoscope, fiberoptic laryngoscope and if needed microlaryngeal examination was also done.

Results: The study showed 86.6% benign lesions and 41.1% malignant lesions of larynx with male preponderance. It was observed that vocal polyp was the commonest benign non-neoplastic lesion and papilloma was the commonest neoplastic lesion. Squamous cell carcinoma accounted predominantly in malignant lesions and was commonly found in glottis.

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

Keywords: Laryngectomy, Tracheostomy, Clinicopathological study of larynx lesions

INTRODUCTION

The larynx is a major component of the upper respiratory tract and lies just anterior to the upper end of the digestive tract. It is, therefore, vulnerable to inflammation and other phenomenon which lead to the formation of various lesions of the larynx.

The larynx serves to protect the lower airways, facilitates respiration and plays a key role in phonation.¹ The protective function is entirely reflexive and involuntary,

whereas the respiratory and phonatory functions are initiated voluntarily but regulated involuntarily. The larynx is divided into the supraglottic, glottis and sub glottis 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.² 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. Hence, there is a need to detect these lesions early so that curative measures can be taken to improve quality of life. The aim of the study was to describe the clinicopathological features of patients with non-neoplastic and neoplastic lesions of the larynx and their management.

METHODS

Type of study

The type of study was prospective observational study.

Study approval

Prior to commencement of this study- thesis and ethical committee (Institutional Ethics Committee) of Tertiary Care Centre and Government Medical College had approved the thesis protocol.

Place of study

Place of study was department of ENT, Government Medical College and Tertiary Care Centre

Period of study

The study period was 2 years.

Sample size

The sample size included 51 cases.

Selection of patients

Patient data collection and evaluation

Fifty-one patients with benign and malignant lesion of larynx were analysed. Only cases with persistent hoarseness for more than three weeks were selected with proper informed written consent for the study and publication. Benign lesions included neoplastic and non-neoplastic lesions. All cases underwent a thorough ENT examination. Once suspected the cases were examined under direct laryngoscope, fiberoptic laryngoscope and if needed microlaryngeal examination was also done.

Benign non-neoplastic lesions were treated by voice rest, laser, or excision biopsy and the biopsy results were confirmed. The benign neoplastic lesions underwent video direct laryngoscope (70°, 4 mm) (Figure 1), direct laryngoscopic examination and routine X-rays. If needed Computed tomography (CT) scan was done.

The malignant lesions underwent either surgery or palliative care or been referred for chemo and radiotherapy. The deserving cases underwent open

surgical procedures, laser surgery and management results were analysed. With all this information analysis is made to obtain the aim of the study.

Inclusion criteria

The study included- (a) patients who were clinically diagnosed laryngeal lesions irrespective of their age, sex, occupation, and onset or duration of symptoms are included in this study; (b) patients attending in ENT out-patient department and ward, Tb and chest out-patient department and ward are also included in this study; and (c) patients complaints of: voice change and dysphagia which persists even after medical treatment of >3 weeks.

Exclusion criteria

The study excluded- (a) patients with oral and oropharyngeal lesions and cases with nasal and nasopharyngeal lesions; and (b) patients not willing to participate in the study.

Study procedure

Method of sampling was non-random, purposive. A short history was taken and physical examination was conducted on each patient who are clinically diagnosed with laryngeal lesions. Baseline investigations, as routinely required, were done followed by imaging studies, bacteriological studies, histopathological-cytological examination. Patients were then explained about their disease process and the line of management. All the necessary information regarding the study was explained to the patients or their valid guardian. Informed written consent was taken from the patients or their guardian willing to participate in the study. Detailed history was taken from the study group to establish proper diagnosis. Thorough physical examination was done in each case. Data collection sheets were filled in by the investigator himself. After completing the collection of data, it was compiled in a systematic way.

Investigations

Radiological

It included Contrast enhanced computed tomography neck and thorax, chest X-ray, X-ray neck anteroposterior and lateral view

Diagnostic

It included video direct laryngoscope (endoscope 70°, 4 mm), direct laryngoscopy with or without biopsy.

Blood

It included hemoglobin, differential count, erythrocyte sedimentation rate, platelet count, bleeding time, clotting

time, prothrombin time and International normalized ratio (INR).

Urine

It included albumin, sugar, and microscopy.

Bacteriological

It included sputum for acid fast bacilli.

Histopathological

It included excision biopsy, fine needle aspiration cytology.

Serological testing

It included any other investigations if applicable.

Management

Follow-up of patients

Patients will be followed up (a) until the completion of their treatment; (b) after the treatment patient will be kept on regular long term follow up every 2-3 months.

RESULTS

Table 1 shows that the benign lesions were found in all age groups but according to our study it is commonest in the 30-40 years (50%) of age and the malignant lesions were found in age groups 40-80 years but according to our study it is commonest in the 61-70 years of age.

As the Table 2 showed that there was male preponderance (72.5%) in both benign and malignant lesions. From the Table 3, vocal abuse considered as a common risk factor in benign lesions with 66.6%. As per the Table 4, the study showed 26 cases of tumour like lesions (86.6%) followed by 4 cases of benign tumours (13.3%) and it is noted that

vocal polyp is found to be the most common tumour like lesion (30%) followed by vocal nodule (20%). All patients with benign tumours accounted for 13.3% of total benign lesions had squamous papilloma.

According to the Table 5 it was found that, Squamous cell carcinoma (SCC) of glottis (57.1%) is more common, followed by supraglottis (38.2%) and then in subglottis (4.7%) with incidence in 6th and 7th decade. Most of the SCC are moderately differentiated (47.6%) followed by well differentiated (33.3%) and poorly differentiated (19.0%). Table 6 showed the history of smoking, alcohol and both as the risk factors in development of malignant lesions with people having smoking history (42.8%), alcohol consumption (9.5%) and with addictions of both (14.2%). With the distribution of malignant lesions according to subsites involved and staging (Table 7) most patients of carcinoma larynx i.e.; 12 of 21 cases (57.1%) presented to us with stage IV disease, followed by stage III in 5 (23.8%). The most common stage in supraglottic carcinoma was stage IVA (50%) and in glottic carcinoma was stage III (41.6%). A single case of subglottic carcinoma was presented with stage IVB.

Table 8 explained the treatment modalities of laryngeal malignancy, of the 8 cases of supraglottic carcinoma, 5 cases (62.5%) underwent total laryngectomy with permanent tracheostomy and neck dissection, 3 cases (37.5%) one was not willing for surgery and so received chemotherapy and radiotherapy. Of the 12 cases of glottic carcinoma, 6 cases (50%) underwent total laryngectomy as the extension was vast for organ preservation and, 2 (16.6%) were posted for laser excision and 4 cases (33.3%) received chemotherapy and radiotherapy.

And one subglottic carcinoma patient was inoperable and hence palliative care was given. As per Figure 2, all the patients who were taken in our study underwent video direct laryngoscopy (51) patients (100%) and patients who were suspected for malignant lesions underwent contrast enhanced computed tomography and pre-operative biopsy- 21 patients (41.1%).

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

Age group (years)	Benign					Malignant						
	Male		Female		Total	Male		Female		Total		
	N	%	N	%		N	%	N	%	N	%	
1-10	1	5.3	1	9	2	6.7	0	0	0	0	0	0
11-20	1	5.3	1	9	2	6.7	0	0	0	0	0	0
21-30	4	21	2	18.2	6	20	0	0	0	0	0	0
31-40	11	57.9	4	36.4	15	50	1	5.6	1	33.3	2	9.5
41-50	2	10.5	3	27.3	5	16.6	0	0	1	33.3	1	4.8
51-60	0	0	0	0	0	0	2	11.1	0	0	2	9.5
61-70	0	0	0	0	0	0	9	50	1	33.3	10	47.7
71-80	0	0	0	0	0	0	4	22.2	0	0	4	19
>80	0	0	0	0	0	0	2	11.1	0	0	2	9.5
Total	19	100	11	101	30	100	18	100	03	100	21	100

Table 2: Diagnosis and sex distribution.

Types	Male		Female		Total	
	N	%	N	%	N	%
Benign	19	63.3	11	36.7	30	58.8
Malignant	18	85.7	3	14.3	21	41.2
Total	37	72.5	14	27.5	51	100

Table 3: Voice abuse as a risk factor in benign lesions.

Pathology	Male		Female		Total	
	N	%	N	%	N	%
Vocal polyp	7	46.6	2	40	9	45
Vocal cyst	1	6.7	1	20	2	10
Vocal nodule	5	33.3	1	20	6	30
Rinkes edema	0	0	1	20	1	5
Leucoplakia	1	6.7	0	0	1	5
Sulcus nocalis	1	6.7	0	0	1	5

Table 4: Distribution of benign diseases according to gender.

Diseases	Male		Female		Total	
	N	%	N	%	N	%
Vocal cyst	1	5.3	1	9	2	6.8
Vocal nodule	5	26.3	1	9	6	20
Vocal polyp	7	36.8	2	18.2	9	30
Rinkes edema	0	0	1	9	1	3.3
Sulcus vocalis	1	5.3	0	0	1	3.3
Tuberculous laryngitis	0	0	2	18.2	2	6.7
Recurrent respiratory papillomatosis	2	10.4	2	18.2	4	13.3
Intubation granuloma	1	5.3	2	18.2	3	10
Leucoplakia	1	5.3	0	0	1	3.3
Chronic laryngitis	1	5.3	0	0	1	3.3
Total	19	100	11	100	30	100

Table 5: Distribution of malignant lesions according to subsites and histology and grading.

Distribution	Anatomical site		Histological type	
	N	%	N	%
Supraglottis	8	38.2	SCC	100
Glottis	12	57.1	SCC	100
Transglottis	0	0	-	
Subglottis	1	4.7	SCC	100
Grades				
Well differentiated			7	33.3
Moderately differentiated			10	47.6
Poorly differentiated			4	19.0
Undifferentiated			0	0

Table 6: Distribution of malignant lesions according to addictions.

Distribution	Smoking		Alcohol		Smoking and alcohol	
	N	%	N	%	N	%
SCC	9	42.8	2	9.5	3	14.2

Table 7: Distribution of malignant lesions according to subsites involved and staging.

Subsite involved	Staging												Total	
	I		II		III		IVA		IVB		IVC			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Supraglottis	0	0	0	0	2	25	4	50	2	25	0	0	8	38
Glottis	2	16.6	2	16.6	5	41.6	3	25	0	0	0	0	12	57
Subglottis	0	0	0	0	0	0	0	0	1	100	0	0	1	5
Total	2	95	2	9.5	5	23.8	9	42.8	3	14.2	0	0	21	100

Table 8: Treatment modalities of malignant lesions.

Diagnosis	Management						Total	
	Laryngectomy		Laser surgery		C\RT			
	N	%	N	%	N	%	N	%
Carcinoma supraglottis	5	62.5	0	0	3	37.5	8	38
Carcinoma glottis	6	50	2	16.6	4	33.3	12	57
Carcinoma subglottis	0	0	0	0	1	100	1	5
Total	11	100	2	100	8	100	21	100

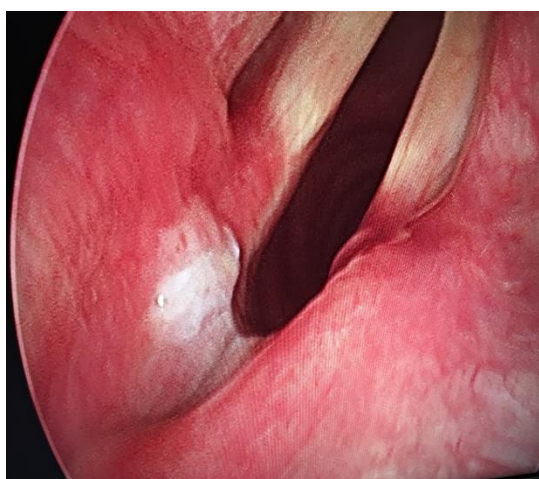


Figure 1: Video direct laryngoscopy picture of a patient with complaints of hoarseness of voice showing left vocal cord (white patch) leucoplakia.

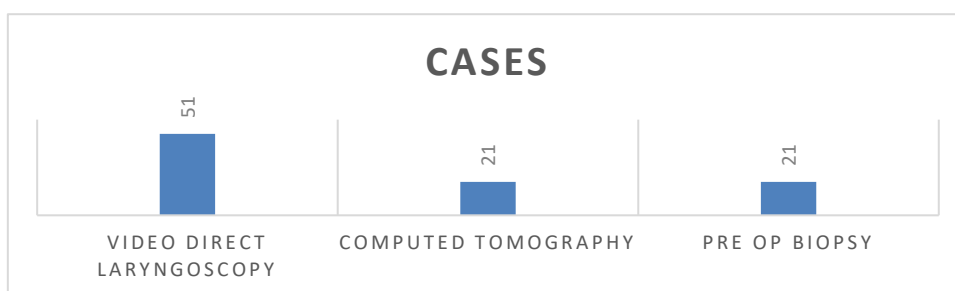


Figure 2: Bar graph depicting the diagnostic tools used in the study.

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 prospective, observational study in a tertiary care centre over a period of 2 years with the above said inclusion criteria. All the patients with laryngeal masses suspicious of malignancy were evaluated with direct laryngoscope under sedation/general anaesthesia and

biopsies were taken. In our study, tumour like lesions were more common between 30-40 years (50%) correlated with similar reports from Hegde et al and Singhal et al which showed that tumor like lesions were common between 30-40 years of age.^{3,4}

Malignant tumours were observed between 40-80 years with major occurrence between 61-70 years correlated with studies from Kumar et al and Mishra et al which showed that occurrence was between 50-70 years of age.^{5,6} 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 benign and malignant lesions of larynx, there was male preponderance (72.5%), similar to other studies which showed male preponderance of 80%.^{7,8} Our study showed the history of smoking, alcohol and both as the risk factors in development of malignant lesions with people having smoking history (42.8%), alcohol consumption (9.5%) and with addictions of both (14.2%) 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. In our study, 26 cases had tumour like lesions (86.6%) followed by 4 cases of benign tumours (13.4%).

Vocal polyp found to be the most common tumour like lesion (30%) as correlated to Hedge et al, Dikkers et al and Kambic et al (68.3%). In our study followed by vocal nodule (20%) in studies done by Parikh and Ghosh (30%). In our study, we had 2 cases of laryngeal tuberculosis as in accordance with Chopra et al who had 3 cases.⁹ This history of endotracheal intubation was present in only three of our cases, who suffered from intubation granuloma.¹⁰ All patients with benign tumours accounting for 13.4% of total benign lesions had squamous papilloma. In our study all the malignant lesions were found to be squamous cell carcinoma (100%) which is correlated with other studies, Kumar et al, in his study, observed that 100% of laryngeal carcinomas are SCC. Most of the squamous cell carcinomas are moderately differentiated (47.6%) followed by well differentiated (33.3%) and poorly differentiated (19.0%).

Among laryngeal malignancies, 99% were SCC. It is correlated with study done by Pal et al who observed that SCC was the commonest malignant tumour with majority of them being moderately differentiated. Most patients of carcinoma larynx i.e.; 12 of 21 cases (57.1%) presents to us with stage IV disease, followed by stage III in 5 (23.8%). The most common stage in supraglottic carcinoma was stage IVA (50%) and in glottic carcinoma was stage III (41.6%). A single case of subglottic carcinoma was presented with stage IVB.

CONCLUSION

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

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Conflict of interest: None declared

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

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