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Original Research Article

Clinico-etiopathological and management profile of laryngeal tumours in a tertiary care centre

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ABSTRACT

Background: Laryngeal tumours may be neoplastic or non-neoplastic. Our study aimed to analyze the incidence, clinico-etiopathological and management profile of laryngeal tumours.
Methods: This prospective study was performed on 90 cases of laryngeal tumours in the Department of Otolaryngology in a tertiary care hospital from Jan 2015 to June 2016. A detailed clinical history was taken, head & neck examination done, and supplemented with necessary imaging when required. The data thus obtained was recorded and statistically analyzed.
Results: The ratio of benign to malignant tumours was 1:4. Of the benign tumours, 59% were vocal nodules. They were most common in the third decade (23.5%) and presented with hoarseness. Most patients were housewives (29%) and were associated with vocal abuse. All cases were managed surgically. Ninety seven percent of malignant tumours were squamous cell carcinoma, and seen in the seventh decade (37%). Forty one percent were labourers, and smoking, alcohol and laryngopharyngeal reflux were the predominant risk factors. The supraglottis was the commonest site involved, and dysphagia was the predominant presenting symptom. Majority of patients (42.5%) presented with stage IV disease. Malignant tumours were treated with radiotherapy (55%), chemoradiation (44%) and surgery (1%).
Conclusions: Vocal nodule is the commonest benign tumour of the larynx and presents with hoarseness. The supraglottis is the main subsite to be involved in laryngeal cancer, and presents with dysphagia. Most patients present with stage IV disease. Laryngopharyngeal reflux is an important risk factor for carcinoma larynx.

Keywords: Larynx, Laryngeal tumours, Laryngopharyngeal reflux

INTRODUCTION

The larynx may be afflicted by various benign and malignant conditions affecting laryngeal function. Men are traditionally more commonly affected, but the incidence among women is increasing as smoking in this group has become more common. Laryngeal cancer continues to be a major health problem despite advances in medical technology for its diagnosis and treatment.[1]

Therefore, we planned to conduct a study on the clinico-etiopathological and management profile of laryngeal tumours in a tertiary care centre.

METHODS

The present prospective study was performed in the ENT Department of a tertiary care centre from January 2015 to June 2016. Consecutive patients presenting in the Out

Patient Department with benign or malignant laryngeal lesions and confirmed on examination, were included in the present study. Approval of the Institute Research Council and Ethics Committee was obtained prior to patients' enrolment. The study was explained to the patient and informed written consent was taken as a part of ethical concern. All procedures were in accordance with the Helsinki Declaration. A complete history was taken from the enrolled patients including chief complaints, duration of symptoms, details of presenting illness, past history, addiction history, occupational history, family history and socio-economic status of the patient. Hopkins laryngoscopy and thorough general physical and head and neck examination was done and provisional diagnosis established.

Benign lesions were subjected to microlaryngoscopy and planned surgical excision in the same sitting. Fine needle aspiration cytology (FNAC) was done from significant cervical lymph nodes when present and was supported with radiological imaging when indicated. Direct laryngoscopy or microlaryngoscopy under general anaesthesia was done for suspected malignant lesions and biopsy was taken for histopathological confirmation. At the end of examination the patients with laryngeal carcinoma were staged as per TNM staging. The treatment plan was formulated and patients were treated accordingly.

The data thus obtained was tabulated and statistical analysis was performed using SPSS software version 22 for Windows.

RESULTS

The study population comprised of 90 consecutive patients of laryngeal tumours presenting between Jan 2015 and June 2016**.**

Incidence of tumours

Of the 90 cases, 17 (18.9%) were benign while 73 (81.1%) were malignant. Vocal cord nodule was the commonest benign lesion seen in 10 of the 17 cases (58.8%), followed by vocal cord polyp and cyst in 5 (29.4%) and 2 (11.8%) cases respectively. In malignant tumours, the supraglottis was the commonest subsite involved, seen in 39 of the 73 cases (53.4%), followed by glottic tumours in 33 (45.2%) cases and one case (1.4%) of subglottic malignancy (Table 1).

Age-wise distribution

The younger age group was more commonly involved by benign lesions with 5 (29.4%) patients in the age group ≤30 years followed by 4 (23.5%) patients in the age group 31-40 years (Table 2). However, malignant lesions were more often seen in the elderly age group with 61-70 years being the most commonly involved in 27 (37%) patients, followed by 51-60 years in 21 (28.8%) patients.

Table 1: Demographic data and clinical characteristics of study participants (n=90).

Clinical character	No. of patients
Age	(Mean±SD)
Overall	55.1±12.9
Benign	44.8±16.8
Malignant	57.5±10.5
Sex	N (%)
Males	75 (83.3)
Females	15 (16.7)
Benign	
Overall	17 (18.9)
VC nodule	10 (11.1)
VC polyp	5 (5.6)
VC cyst	2 (2.2)
Malignant	
Overall	73 (81.1)
Ca supraglottis	39 (43.3)
Ca glottis	33 (36.7)
Ca subglottis	1 (1.1)

Table 2: Age-wise distribution of benign and malignant lesions.

Age group (years)	Benign N (%)	Malignant N (%)
≤30	5 (29.4)	1 (1.4)
31-40	4 (23.5)	5 (6.85)
41-50	2 (11.8)	15 (20.5)
51-60	3 (17.6)	21 (28.8)
61-70	2 (11.8)	27 (37.0)
≥70	1 (5.9)	4 (5.5)
Total	17	73

Table 3: Gender-wise distribution of benign and malignant lesions.

Gender	Benign N (%)	Malignant N (%)
Males	10 (58.8)	65 (89.0)
Females	7 (41.2)	8 (11.0)
Total	17	73

Gender wise distribution

Both benign and malignant lesions were more common in males. Ten (58.8%) of total 17 cases of benign tumours were males, while in laryngeal malignancy, 89% (65 cases) were males (Table 3).

Etiology

Vocal abuse and laryngopharyngeal reflux were the two etiological factors associated with benign lesion, seen in 13 (76.5%) and 9 (52.9%) respectively. Among malignant lesions, smoking was the commonest etiological factor noted, seen in 51 (69.9%), followed by alcoholism, tobacco chewing and laryngopharyngeal

reflux seen in 47 (64.4%), 39 (53.4%) and 25 (34.2%) patients respectively (Table 4).

Table 4: Etiological association observed in benign and malignant lesions.

Etiological factor	Benign N =17 (%)	Malignant N =73 (%)
Voice abuse	13 (76.5)	0 (0%)
Laryngopharyngeal reflux	9 (52.9)	25 (34.2%)
Smoking	0	51 (69.9%)
Alcohol	0	47 (64.4%)
Tobacco chewing	0	39 (53.4%)

Occupation

The maximum occurrence of benign tumours was in housewives (29%) while that of malignant tumours was among labourers (41%).

Symptomatology

All cases (100%) of benign tumours presented with hoarseness and 4 (23.5%) cases presented with additional symptom of foreign body sensation in throat. Among laryngeal malignancy, the commonest presenting complaint was dysphagia, seen in 64 (87.7%) patients, followed by foreign body sensation in the throat in 58 (79.5%) and hoarseness in 43 (58.9%) patients. Thirty two (43.8%) patients had dyspnea, while 16 (21.9%) patients had complains of referred otalgia (Table 5). On subset analysis, dysphagia was seen in all patients with supraglottic malignancy, while in case of glottic tumours, hoarseness was the most common presenting symptom (90.9%). The only case of subglottic malignancy presented with dyspnea.

Table 5: Symptomatology in benign and malignant lesions.

Symptom	Benign N=17 (%)	Malignant N =73 (%)
Hoarseness	17 (100)	43 (58.9)
Foreign body sensation	4 (23.5)	58 (79.5)
Dysphagia	0 (0)	64 (87.7)
Dyspnea	0 (0)	32 (43.8)
Referred Otalgia	0 (0)	16 (21.9)

Histology

Nearly all the malignant tumours (97.3%) were squamous cell carcinoma (SCC), while only two (2.7%) patients were of adenocarcinoma. Of the 71 cases of SCC, 55 (75.3%) were moderately differentiated, while 13 (17.8%) were well differentiated and 3 (4.2%) were poorly differentiated.

Staging of malignant tumours

Most patients of carcinoma larynx i.e. 31 of 73 cases (42.5%) presented to us with stage IV disease, followed by stage III in 19 (26%), stage II in 18 (26.6%) and stage I in only 5 (6.8%) patients. The most common stage of presentation in supraglottic carcinoma was stage IVA (43.6%), and in glottic carcinoma was stage III (36.4%). The single case of subglottic carcinoma presented with stage IVA disease. Seven patients (9.6%) presented with Stage IVB disease involving the supraglottis and glottis in 5 and 2 cases respectively (Table 6).

Table 6: Stage of presentation of carcinoma larynx according to subsite involved (n =73).

Subsite involved	Staging N (%)					Total
	I	II	III	IV A	IV B	
Supraglottis	0 (0)	10 (25.6)	7 (18.0)	17 (43.6)	5 (12.8)	39
Glottis	5 (15.1)	8 (24.2)	12 (36.4)	6 (18.2)	2 (6.1)	33
Subglottis	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)	1
Total (%)	5 (6.8)	18 (24.7)	19 (26.0)	24 (32.9)	7 (9.6)	73

Table 7: Management of Carcinoma Larynx patients (n=73).

Diagnosis	Management N (%)			Total
	Laryngectomy	Chemoradiation	Radiotherapy	
Ca Supraglottis	0 (0)	12 (30.8)	27 (69.2)	39
Ca Glottis	1(3.0)	19 (57.6)	13 (39.4)	33
Ca Subglottis	0 (0)	1 (100)	0 (0)	1
Total	1	32	40	73

Management

All patients of benign tumours were treated with surgical excision followed by speech therapy and counselling regarding lifestyle modification. In case of malignant tumours, patients with stage I and stage II disease received only radiotherapy. Out of 19 stage III patients, 16 (84.2%) received concurrent chemo-radiotherapy, and

three (15.8%) patients unsuitable for chemotherapy received only radiotherapy.

Of 24 cases of Stage IVA carcinoma larynx, one patient (4.2%) underwent total laryngectomy with neck dissection. 9 (37.5%) patients unwilling for surgery received chemo-radiation and 14 (58.3%) patients unsuitable for surgery or chemotherapy received only radiotherapy. All stage IVB patients received chemo-radiation (Table 7).

DISCUSSION

Benign tumours of the larynx include vocal nodules, vocal polyps and vocal cysts, and usually present with hoarseness, sometimes accompanied with foreign body sensation in throat. Among malignant lesions, squamous cell carcinoma (SCC) is the commonest histology encountered, while other variants such as adeno-carcinoma are rarely seen.[1] They may present with hoarseness, dysphagia, difficulty in breathing, foreign body sensation in the throat, lymph node metastases and referred otalgia depending on the subsite involved and stage of presentation.[2]

Incidence

In the present study, of the total 90 cases of laryngeal tumours, the majority i.e. 81.1% (73 cases) were malignant tumours, of which nearly all were SCC. The commonest subsite was the supraglottis (53.4%), followed by the glottis (45.2%), and just one case of subglottic carcinoma. There were no cases of transglottic carcinoma in the present study. This is in concordance with most of the studies, which show the supraglottis to be the commonest subsite. Amongst benign tumours, vocal nodule was most common (58.8%), followed by vocal polyp and vocal cord cyst in 29.4% and 11.8% respectively. This is similar to findings by Sellars who observed vocal cord nodules to be the commonest among benign tumours.[3]

Age

As observed in other studies and in the present study too, benign tumours were most common in young patients in age group ≤30 years. The maximum occurrence of malignant tumours was observed in the elderly patients with peak incidence seen in age group of 61-70 years (37.0%). According to a three year report of Population Based Cancer Registries 2009-2011 in India, the maximum numbers of cases of laryngeal carcinoma were reported in the age group of 60-69 years.[4]

Gender

In the present study, occurrence of both benign as well as malignant tumours was higher in males as compared to females; however this difference was more marked in malignant tumours. The male to female ratio was 1.4:1 in case of benign tumours and 8.1:1 in case of malignant tumours. Goiato and Fernandes in a study of 66 cases of laryngeal cancer found males were affected in 97% of cases with a male: female ratio of 32:1.[5] In India, as per 2013 National Cancer Registry Program (ICMR), laryngeal cancer contributes to approximately 3-6% of all cancer in males and only about 0.2-1% of all cancers in females.[4]

Etiology

In benign tumours, vocal abuse was the commonest predisposing factor seen in 13 patients (76.5%), followed by laryngopharyngeal reflux which was present in nine cases (52.9%). Tobacco and alcohol are known causative agents in laryngeal cancer, associated in the present study in 69.9% and 64.4% cases respectively.[6-8] A significant relation of laryngeal cancer was also seen with laryngopharyngeal reflux (LPR), with 34.2% patients of carcinoma larynx with symptoms of LPR. Although the association of laryngopharyngeal reflux with laryngeal cancer has been described previously, its role as an etiological factor has not been explored.[9,10]

Occupation

The maximum occurrence of benign tumours was found in housewives (29%) followed by teachers (17.5%). This could be due to the high incidence of vocal abuse present in these patients. Malignant tumours on the other hand, were most often found in labourers (41%) probably due to the common practice of tobacco consumption in them. Bakshi et al in their study found that 45% patients were farmers and 39% were labourers in case of malignant tumours which is similar to the present study.[8]

Symptomatology

All 17 patients with benign tumours of the larynx presented with hoarseness. However, the predominant symptom in patients with laryngeal malignancy was dysphagia, seen in 87.7% cases. This could be due to majority of cases involving the supraglottis and the advanced stage of presentation with involvement of adjacent subsites.

Histopathology

Of the 73 cases of carcinoma larynx, there were only two cases (2.7%) of adenocarcinoma, while the remaining was squamous cell carcinoma (97.3%). As seen in similar studies, majority (75.3%) of SCC were moderately differentiated, followed by well and poorly differentiated carcinoma.[11]

Staging

Most patients with laryngeal cancer presented to us in advanced stages, with 32 (42.5%) cases with stage IV disease, of which seven (21.9%) patients had unresectable stage IVB disease. This could be due to lack of awareness among the patient or primary health care

provider, or lack of treatment facilities, and needs to be corrected to improve patient prognosis.

Management

In benign tumours, excision was done in all the cases followed by speech therapy. In case of malignancy, depending on the extent of disease, carcinoma larynx is managed with surgery, radiotherapy, chemotherapy, or a combination of these modalities. In this study, all patients with stage I and stage II disease received radiotherapy. Out of 19 stage III patients, three received radiotherapy and 16 received chemo-radiation. This is in concordance with the findings of Mendenhall et al. who concluded chemotherapy combined with radiotherapy improved patient outcomes in T3 to T4 glottic SCC.[12] One of the 24 stage IVA patients was suitable for and underwent total laryngectomy. Of the rest, those suitable received chemo-radiotherapy and the rest only radiotherapy. All stage IVB patients received chemoradiation. Rube et al also in a retrospectively study on 283 patients of laryngeal carcinoma concluded that combined treatment with surgery and radiotherapy had better results in more advanced stages.[13]

CONCLUSION

Vocal cord nodule is the commonest benign lesion of the larynx, and presents with hoarseness. Supraglottis was the commonest subsite involved, and dysphagia was the predominant presenting symptom in patients with laryngeal carcinoma. Most patients of carcinoma larynx presented in advanced stages, majority with Stage IV A disease, indicating a need to sensitize the general population and primary care-givers in order to improve prognosis. Laryngopharyngeal reflux is an important preventable etiology of carcinoma larynx which needs to be further evaluated.

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