Tumours and tumour like lesions of larynx: a clinicopathological study

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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
stages III or IV disease when first evaluated.^{2,9} Rarely adenocarcinomas are seen to arise from larynx, presumably arising from mucous glands.^{2} 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.^{10} 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.^{11,12}

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 in 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].^{13} Tumour like lesions were equally found between rural and urban areas whereas benign and malignant tumours were common in rural areas.

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

| Age in years | <10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | Total |
|--------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|
| No. %        |     |       |       |       |       |       |       |       |       |
| Gender       |     |       |       |       |       |       |       |       |       |
| M            | 1   | 0.6   | 2     | 1.2   | 11    | 6.7   | 42    | 25.9  | 18    | 11.1  | 31    | 19    | 19    | 11.7  | 6     | 6.7   | 0.6   | 2     | 1.2   | 14    | 8.6   | 8     | 4.9   | 3     | 1.8   | 3     | 1.8   | 1     | 0.6   | 1     | 0.6   | 32    | 19.2  |
| F            | -   | -     | 2     | 1.2   | 14    | 8.6   | 8     | 4.9   | 3     | 1.8   | 3     | 1.8   | 1     | 0.6   | 1     | 0.6   | 32    | 19.2  |
| total        | 1   | 0.6   | 4     | 2.4   | 25    | 15.4  | 50    | 30.8  | 21    | 12.9  | 34    | 20.9  | 20    | 12.3  | 7     | 4.3   | 48    | 30.8  |

**Table 2: Distribution of cases according to clinical presentation.**

| Symptoms                  | Tumour like lesions | Benign tumours | 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            |
| Dyspnœa                   | 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               | -        | -               | -      | -              |
| 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. %          | Type of lesion | No. % |
| Vocal polyp         | 51 31.4        | Squamous papilloma| 13 8           | Squamous cell carcinoma | 59 36.4 |
| Vocal nodule        | 23 14.1        |                   |                | Papillary carcinoma | 1 0.6 |
| Chronic laryngitis  | 6 3.7          |                   |                | thyroid invading larynx | 1 |
| Tubercular laryngitis | 5 3         |                   |                |                         |      |
| Epiglottic cyst     | 2 1.2          |                   |                |                         |      |
| 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 3rd and 4th 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).

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 6th and 7th decade. Most of the squamous cell carcinomas are moderately differentiated (40.6%) followed by well differentiated (33.8%) and poorly differentiated (25.4%).

Figure 1: Vocal polyp.
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/apprehensive 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. 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. 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). 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%).

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.

In present study, vocal abuse (67.4%) and laryngopharyngeal 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 Parikh, vocal abuse was observed in 72% and 56% cases respectively. 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. 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.

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 et al.

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. 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.

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.

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. We had one case of papillary carcinoma of thyroid extending to subglottis with secondaries in the neck.

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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.21

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.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Kavitha Y, Chaitanya V, Basavaraju KP. Tumours and tumour like lesions of larynx: a clinicopathological study. Int J Otorhinolaryngol Head Neck Surg 2018;4:794-9.