

## Original Research Article

# Clinical profile of the patients presenting with laryngeal and hypopharyngeal carcinoma: an institution based retrospective study

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## ABSTRACT

**Background:** In India the overall incidence of cancer is low. However the cancers of head and neck have high incidence like that of larynx and pharynx.

**Methods:** This is a retrospective study conducted in the department of ENT, SMGS Hospital, GMC Jammu, for a period of 3 years from June 2016 to March 2019. 112 patients with cancer of larynx and hypopharynx were included in the study.

**Results:** The male to female ratio in the present study was 9:1. Mean age of presentation of the patients was 57.9±4.6 years. Hoarseness was the overall the most common complaint of the patients presenting with malignancy of larynx and hypopharynx (80.35%), followed by the complaint of dysphagia (68.7%). Smoking and alcohol consumption was the most common risk factor associated. 78 (69.6%) had primary malignancy of larynx and 34 (30.4%) had primary malignancy arising from hypopharynx. Most common site of presentation for laryngeal cancer was supraglottis (56/78) while pyriform sinus was the most common site to be involved in hypopharynx (24/34). 76 out of 112 patients (67.8%) presented with neck nodes. 41% of the patients presented in stage III and 32.14% patients presented in stage IV malignancy.

**Conclusions:** Malignant laryngeal and hypopharyngeal cancers are presented in late stages when management options become limited and survival of the patients fall significantly. Awareness of the symptoms developing due to laryngeal and hypopharyngeal cancer is necessary so that people can recognize the developing cancers in earliest stages.

**Keywords:** Cancer, Larynx, Hypopharynx, Risk factors, Staging

## INTRODUCTION

Malignancy or cancer is defined as a pathological disturbance of growth in which cells in the body proliferate so exponentially that it spread throughout the body. Unless successfully treated they eventually cost death of the host.<sup>1</sup> Larynx and pharynx lie in close proximity to each other. Larynx is divided into three sites- supraglottis, glottis and subglottis. Hypopharynx is divided into posterior pharyngeal wall, pyriform sinuses and post cricoid area. Cancer of larynx constitute 11.3-26.85% of the head and neck malignancies while that of hypopharynx constitute 14.13% of the all head and

malignancies.<sup>2-4</sup> Squamous cell cancer constitutes 85-95% of all the malignant tumors of the larynx and hypopharynx. Other types include lymphoepithelioma, spindle cell ca, verrucous ca, adenocarcinoma, adenoid cystic ca, lymphoma, minor salivary gland tumors, esthesioneuroblastoma, sarcomas, melanomas, metastatic tumors.<sup>5,6</sup> Development of carcinoma of larynx and hypopharynx has been strongly associated with exposure to carcinogenic substances. Smoking and alcohol consumption are two most important risk factors for the development of squamous cell carcinoma. Other risk factors include dietary deficiency, laryngopharyngeal reflux, occupational exposure to the carcinogenic

substances. In developing countries, the incidence of malignant tumors is on rise for the reasons unknown. This may be connected to frequent exposure to inhaled carcinogenic substances, irritants and malnutrition.<sup>6,7</sup> Patients of laryngeal and hypopharyngeal malignancy usually present with change in voice which may be due to malignancy arising from the vocal folds, infiltration of tumor into the paraglottic muscles, infiltration of recurrent laryngeal nerve. Other symptoms with which patients present are respiratory distress, dysphagia, cough, haemoptysis, neck swelling. In the developing countries, patients usually present in late stages (stage III and stage IV). Management of such patients becomes a difficult task. A combined multimodality treatment becomes necessary including radiotherapy, chemotherapy and surgery depending upon the stage of the tumor. In country like ours, major challenges for management of a patient are late presentation, acceptance of the treatment by the patient and family, poor nutritional status of the patient. The study was done in a tertiary hospital to present the clinico-pathological profile of the patients with laryngeal and hypopharyngeal tumors.

## METHODS

This is a retrospective study conducted in the department of ENT, SMGS Hospital, GMC Jammu, for a period of 3 years from the hospital records available. All the patients with laryngeal and hypopharyngeal malignancy admitted in the hospital from June 2016 to March 2019 were included in the study.

### Inclusion criteria

All the cases of laryngeal or hypopharyngeal malignancy who were admitted in our hospital were taken up for the study.

### Exclusion criteria

Non-malignant tumors reported on histopathology were excluded from our study. Those with recurrence after previous treatment were also excluded.

A total of 112 patients were included for the study. These included 34 patients of hypopharyngeal malignancy and 78 patients with laryngeal malignancy. Work up of the patients included a detailed history about the symptoms and their progression like change of voice, difficulty in breathing, pain in throat, cough, neck mass etc. Personal history regarding smoking, alcohol intake, tobacco chewing was recorded. A complete examination with special reference to the head and neck including indirect laryngoscopy, flexible laryngeal endoscopy and neck examination for secondary metastasis was done. Radiological investigation included chest X-ray, CECT of neck and MRI (whenever required). All the patients had under-went biopsy from the site of primary lesion and FNAC was performed in case where neck nodes were present. Clinical TNM staging was done as per American

Joint Committee on Cancer (AJCC, 2002).<sup>9</sup> All the findings were analysed using Microsoft excel and presented in number and percentages.

## RESULTS

A total of 112 patients were included in the present study. 101 patients were male and 9 were female. The male to female ratio in the present study is 9:1. Mean age of presentation of the patients was 57.9±4.6 years with range of 25-90 years. Maximum patients in our study were in the age group of 51-60 years i.e. 31% (Table 1). Only 3 patients were below 30 years of age. In the present study 56% of the patients were from the rural areas and 77% of these patients were farmers by occupation followed by labourers (24%). Hoarseness was the overall the most common complaint of the patients presenting with malignancy of larynx and hypopharynx (80.35%) followed by the complaint of dysphagia (68.7%). However, patients of hypopharyngeal malignancy commonly presented with neck node/s (Table 2). 76.7% of the patients in our study were smokers either in the form of cigarette or bidi. Average period of smoking was 30 years. Most of the patients smoked ≥1 bundle/day. 49% of the patients consumed alcohol while 30.3% were both smoker and alcoholic as shown in Table 3.

**Table 1: Age distribution of the patients.**

Age (in years)	No. of patients	Percentage (%)
21-30	3	2.6
31-40	7	6.3
41-50	12	11
51-60	35	31
61-70	28	25
71-80	21	18.7
81-90	6	5.3
<b>Total</b>	<b>112</b>	<b>100</b>

In the present study, 78 (69.6%) had primary malignancy of larynx and 34 (30.4%) had primary malignancy arising from hypopharynx. Table 3 shows the distribution of the patients based on the site of involvement of the primary tumor. Most common site of presentation for laryngeal cancer was supraglottis (56/78) while pyriform sinus was the most common site to be involved in hypopharynx (24/34).

All the patients in our study had squamous cell carcinoma as proved on histopathological examination the biopsy specimen. On laryngoscopic examination, appearance of the growth varied from mucosa covered to ulceroproliferative type. On the basis of histopathological examination of the biopsy specimen from the primary site of tumors, they were classified as well differentiated, moderately differentiated and poorly differentiated carcinomas (Table 5).

**Table 2: Presenting complaints of the patients with laryngeal and hypopharyngeal cancer.**

S. no.	Complaints	Laryngeal cancer	Hypopharyngeal cancer	No. of patients	%
1	Hoarseness	74	16	90	80.35
2	Dysphagia	56	21	77	68.7
3	Neck swelling	48	28	76	40
4	Stridor	28	16	44	39.2
5	Cough with expectoration	30	14	44	39.2
6	Pain in throat	16	10	26	23.2
7	Referred otalgia	6	5	11	9.8
8	Blood stained sputum	3	6	9	8
9	Aspiration	5	0	5	4.4
10	Dyspnea	28	16	35	39.2

**Table 3: Common risk factors associated with laryngeal and hypopharyngeal cancer.**

Risk factor	Laryngeal cancer	Hypopharyngeal cancer	No. of patients	%
Smoking (cigarette/bidi)	64	22	86	76.7
Alcoholic	31	24	55	49
Smoking+alcohol	20	14	34	30.3
Tobacco chewers	10	6	16	14.28
No addiction	8	4	12	10.71

**Table 4: Distribution of patients depending upon the site of origin of the tumor.**

Site	No. of patients	Percentage (%)
<b>Larynx</b>	78	69.6
Supraglottis	56	50
Glottis	18	16
Subglottis	4	3.6
<b>Hypopharynx</b>	34	30.4
Pyriiform fossae	24	21.6
Posterior pharyngeal wall	8	7.2
Postcricoid	2	1.8

**Table 5: Histological grades of differentiation of squamous cell carcinoma.**

Grade of differentiation	WDSCC (well differentiated)	MDSCC (moderately differentiated)	PDSCC (poorly differentiated)	Total
<b>No. of patients</b>	40 (35.7%)	59 (52.67%)	13 (14.56%)	112
<b>Larynx</b>	29	41	8	78
<b>Hypopharynx</b>	11	18	5	34

**Table 6: T staging of the tumors.**

Tumor stage	Larynx	Hypopharynx
<b>T1</b>	8	10
<b>T2</b>	35	12
<b>T3</b>	24	9
<b>T4</b>	11	3
<b>Total</b>	78	34

Seventy six out of 112 patients (67.8%) presented with neck nodes which were confirmed to be metastatic squamous cell carcinoma on fine needle aspiration

cytology (FNAC). Nodal metastasis was seen in 48 out of 78 (61.5%) patients of carcinoma larynx and 28 out of 34 (82.35%) patients of carcinoma pharynx. Nodal status of the patients has been shown in the Table 6.

**Table 7: Distribution of the patients according to the N nodal status.**

Status of node	Supraglottis	Glottis	Subglottis	Pyriform sinus	PPW	Post cricoid	Total	%
<b>N0</b>	18	9	3	2	4	0	36	32.14
<b>N1</b>	24	7	1	8	1	1	42	37.5
<b>N2</b>								
N2a	8	2	0	5	1		16	14.28
N2b	4	0	0	6	0	0	10	8.9
N2c	1	0	0		2	1	4	3.5
<b>N3</b>	1	0	0	3	0	0	4	3.5
<b>Total</b>	112							100

**Table 8: Staging of the cancer.**

Stage	I	II	III	IV
<b>Laryngeal cancer</b>	4	17	37	24
<b>Hypopharyngeal cancer</b>	2	7	9	12
<b>Total no. of patients</b>	6	24	46	36
<b>Percentage (%)</b>	5.35	21.4	41	32.14

The present study showed that 41% of the patients presented in stage III and 32.14% patients presented in stage IV malignancy. Only 6 (5.35%) patients presented at stage I (Table 7).

#### **Treatment modality**

All the patients were subjected to either radical/curative treatment or palliative treatment. Surgery was primary modality of treatment in 12 patients. Total laryngectomy was done in these patients followed by radiotherapy. Radiotherapy or radiotherapy combined with chemotherapy was the mode of treatment in majority of the patients. External beam radiation therapy with cobalt 60 was used for radiation in 5 day a week regimen. A total of 65-70 Gy was given over a period of 6-7 weeks in 33-35 fractions. Cisplatin, 5- fluorouracil, carboplatin, paclitaxel were the commonly used drugs for the chemotherapy.

#### **DISCUSSION**

Incidence of cancer as such is low in India. However cancer of some parts of the body like pharynx and larynx has high incidence.<sup>2</sup> Malignancy of larynx is more common in males. In hypopharynx too males have high incidence of malignancies except the postcricoid region where it is more common in females. Male to female ratio was 9:1. Most of the patients presented in 6<sup>th</sup> and 7<sup>th</sup> decade. This is in agreement with other studies done in the past. Ogura et al reported male to female ratio of 7:1 and most of the patients presenting in 6<sup>th</sup> decade of life for malignancy of larynx and laryngopharynx.<sup>10</sup> Kim et al (2003) reported 6<sup>th</sup> and 7<sup>th</sup> decade as most common age of presentation during a survey of head and cancers in Korea.<sup>11</sup>

Most common overall symptom for which patients came to us was hoarseness (80.35%). Hoarseness is the first feature to develop in glottis carcinoma as slight change of voice lead to change in character of voice. In other subsites also growing tumor causes change in various characters of voice leading hoarseness to commonest presenting feature for which patient consults doctors. Dysphagia is the most common presenting feature in hypopharyngeal carcinoma in our study (21/34) and also reported similarly in other studies.<sup>12,13</sup> Dysphagia is also common in advanced stages of laryngeal carcinoma. Patients tend to ignore hoarseness and dysphagia initially. They usually visit local pharmacist or chemist and take medication for symptomatic relief. Even if they visit a doctor who is not expert in laryngology, these patients face a significant delay in getting a referral to an otolaryngologist.

76.7% of the patients in our study were smokers while 49% were alcoholic. This indicates that smoking is the lone risk factor responsible for the development of laryngeal and hypopharyngeal carcinoma followed by alcohol. Alcohol and smoking play synergistic role in development of malignancy. Zonungangi et al found 96.6% patients with hypopharyngeal tumors as chronic smokers.<sup>1</sup> Verma et al reported 79.59% patients presenting with cancers of larynx and laryngopharynx (hypopharynx) as smokers.<sup>14</sup> Substance benzopyrene found in cigarette smoke might be the responsible factor.<sup>15</sup>

Supraglottis was the commonest site of development of laryngeal carcinoma i.e. 56 out of 78 patients of laryngeal malignancy had supraglottic origin. Supraglottis was also reported to be the commonest site for ca larynx in previous studies.<sup>14,16</sup> Ogura et al reported glottis as the common site (50-60%) and Fasanla et al reported

tranoglottic as the most common site of presentation in laryngeal carcinoma.<sup>6,10</sup> Glottis carcinoma is reported as common laryngeal cancer in western literature while in Indian studies supraglottis remain the commonest site. Glottic cancer produces symptoms like hoarseness in very early stages. In developing countries most of these symptoms tend to be ignored by the patients or either they are being treated as laryngitis. Another reason of supraglottic being common in our country might be the smoking, tobacco chewing and alcohol consumption supra-added with poor nutrition. Commonest site of origin in hypopharyngeal malignancy was pyriform fossa i.e. 20 out of 34 (17.8%) followed by posterior pharyngeal wall. Saleh et al and Zonunsangi et al also reported the pyriform sinus as the common site in hypopharyngeal malignancy.<sup>1,17</sup> There seems to be changing trends in presentation of hypopharyngeal malignancy in previous studies. Verma et al reported post cricoid region as most common site in hypopharynx while Zonungsangi et al found that in all the patients with hypopharyngeal malignancy had primary site of origin from pyriform sinus.<sup>1,14</sup>

Most of the patients had moderately differentiated carcinomas i.e. in 59/112 (52.67%). As per AJCC (2002), T staging was done in all the patients. In patients with laryngeal malignancy, most of the patients had T2 (35/78) or T3 (24/78) tumor stage. In hypopharynx most of the patients had tumor stage of T2 (12/34).

Nodal metastasis occurs with different frequencies in different subsites. Supraglottic cancer metastasizes early as compared to that of glottis. Nodal metastasis is rare in glottic carcinoma owing to its non lymphatic anatomic formation. In hypopharynx primary malignancy has propensity to metastasis and bilateral metastasis is more common as posterior pharyngeal wall and postcricoid area are the midline structures. Nodal metastasis was seen in 76 out of 112 patients in our study with frequency in order of N1 (37.5%)> N2 (29.68%)> N3 (3.5%).

In the present study, most of the patients presented in III and IV stage i.e. 41% and 32.14% respectively. 21.4% patients presented in stage II and 5.35% presented as stage I. The results are comparable to results reported by Kukreja et al also observed maximum cases in stage III (29.8%) and IV (45.8%).<sup>12</sup>

## CONCLUSION

Hereby the conclusion drawn from the present study is that the laryngeal and hypopharyngeal malignancy is more common in males owing to more prevalence of addictions in males compared to females. Incidence of malignancy increases with increasing age. Most common presenting symptoms are hoarseness and dysphagia. Most of the patients present in stage III and stage IV which shows the lack of awareness in common masses and lack of availability of medical help in proximity. Commonest site is supraglottis in larynx and pyriform sinuses is the

commonest site of presentation in cancers of hypopharynx.

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