Clinical Profile of Pharyngeal Malignancy in a Tertiary Care Centre, State of Uttarakhand

Akhil Kukreja · Saurabh Varshney · Nitin Gupta ·
Meena Harsh · S. S. Bist · Sanjeev Bhagat

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Abstract Pharynx is a common site of malignancy in the head and neck region. This study presents a series of 94 cases of pharyngeal malignancy conducted at Himalayan Institute of Medical Sciences, Dehradun, Uttarakhand in the Department of Otorhinolaryngology for a period of one year (2009–2010). Mean age at presentation was 56.8 years (age range 18–100 years). Male:Female ratio was 8.4:1.0. Maximum patients belonged to lower socio-economic status as per Kuppuswamy's classification (2003). Majority of them were farmer (38.2%) by occupation and belonged to rural areas. 90.4% patients had history of tobacco smoking. Dysphagia was the commonest chief complaint. The most common subsite was oropharynx (51.0%) followed by hypopharynx (45.7%). Ulceroproliferative growth was the most common clinical finding. Histopathologically, squamous cell carcinoma (94.6%) was the commonest. CECT was the commonest and most useful radiological investigation done to see the extent of the disease.

Keywords Oropharynx malignancy ·
Pharynx malignancy · Nasopharynx ·
Hypopharynx malignancy

Introduction

Pharynx consists mainly of three parts—nasopharynx, oropharynx and hypopharynx.

Nasopharyngeal cancer accounts for 18% of all malignant neoplasms in the head and neck region in the Cantonese population. The highest incidence is in the fourth decade in the Chinese while sixth decade in the non-chinese [1].

Oropharyngeal carcinoma has an annual incidence of 6–8 per million in UK while 60 per million in USA. The maximum age incidence is seen in the seventh decade with a shift to fourth and fifth decade in the recent period [1].

Hypopharyngeal tumours often present in an advanced state. The overall incidence varies with series to series. Pyriform fossa is the most common subsite with >50% cases followed by post-cricoid region (~40%) and posterior pharyngeal wall (~10%) [1].

Materials and methods

This prospective study was conducted in the Department of Otorhinolaryngology, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun, over a period of 12 months. The patients selected for this study were subjected to a detailed history and complete otorhinolaryngology and head–neck clinical examination. Most of the patients underwent relevant radiological and pathological investigations. All the patients underwent biopsy from representative area and were confirmed as having malignancy, on histopathological examination (HPE). Clinical TNM staging of the tumour was done as per International Union against cancer (UICC) (2002) [2] and American Joint Committee on Cancer (AJCC) (2002) [3] classification.

Observations

A total of 94 patients diagnosed as pharyngeal cancer were included in the study.

A. Kukreja · S. Varshney (✉) · N. Gupta · M. Harsh ·
S. S. Bist · S. Bhagat
Department of E.N.T. and Pathology, Himalayan Institute
of Medical Sciences, Himalayan Institute of Hospital Trust
University, Jolly Grant, Dehradun 248 140, Uttarakhand, India
e-mail: drsaurabh68@gmail.com

Epidemiology

Mean age at presentation was 56.8 years (age range 18–100 years). Maximum patients belonged to fifth decade (32.9%) followed by sixth decade (28.7%) (Fig. 1). There were 89% males and 11% females with a Male:Female ratio—8.4:1.0. Most of the patients were Hindus (87.2%) in our study. As per Kuppuswamy's classification of socioeconomic status (2003), there were 38 cases (40.4%) of lower class followed by lower middle class (28 cases; 29.8%). By occupation, majority of the patients were farmer (36 cases; 38.2%) followed by labourer (18 cases; 19.8%). 74% cases belonged to rural areas. 83 cases (88.2%) belonged to plains while 11 cases (11.8%) were from hilly regions.

Clinical features

The most common presenting complaint was difficulty in swallowing (53 cases; 56.3%) followed by change in voice (22 cases; 23.4%). As per dietary habits, 50 cases (53.1%) were non-vegetarian while 40 cases (46.9%) were vegetarian. There were 83 patients (88.2%) who had history of smoking while only 40 cases (42.5%) had history of alcohol consumption.

In our study, maximum number of cases were of oropharynx (51.0%) followed by hypopharynx (45.7%). There were only three cases (3.3%) of nasopharynx. In oropharynx, base of tongue was the commonest subsite (72.9%), followed by tonsil (22.9%). There was one case (2.1%) each of uvula and posterior pharyngeal wall. In hypopharynx, pyriform sinus (86.0%) was the commonest subsite, followed by posterior pharyngeal wall (9.3%). There were two cases (4.7%) of post-cricoid region (Table 1; Figs. 2, 3).

Clinically, two cases (66.6%) presented with smooth bulge while one case (33.4%) was ulceroproliferative in nasopharynx. Majority (81.2%) of the lesions of oropharynx were ulceroproliferative in appearance followed by smooth bulge (10.4%). All the lesions were indurated on

Table 1 Sitewise incidence of pharyngeal malignancies

Subsites	No. of patients	Percentage
Nasopharynx <i>n</i> = 3	3	100.0%
Oropharynx <i>n</i> = 48		
Base of tongue (Posterior 1/3 rd)	35	72.9%
Uvula	1	2.1%
Tonsil	11	22.9%
Posterior pharyngeal wall	1	2.1%
Hypopharynx <i>n</i> = 43		
Pyriform fossa	37	86.0%
Post-cricoid region	2	4.7%
Posterior pharyngeal wall	4	9.3%

Fig. 2 Endoscopic picture—growth oropharynx seen involving left side base of tongue, vallecula extending up to lingual surface of epiglottis

palpation. In hypopharynx, the commonest clinical presentation was ulceroproliferative growth (90.6%) while there were three cases (6.9%) of smooth bulge and one case (2.7%) of ulcerative lesion.

Fig. 1 Age distribution

Fig. 3 Growth hypopharynx seen involving medial and lateral walls of left side pyriform fossa extending to posterior and lateral pharyngeal wall

It was observed that, 27 lesions (56.2%) of oropharynx could be seen on examination with tongue depressor. Thirty-two lesions (66.6%) were seen on indirect laryngoscopy, while 48 lesions (100%) were identified on pharyngeal endoscopy. Out of 43 lesions of hypopharynx, 29 lesions (67.4%) could be identified on indirect laryngoscopy while 40 (93.0%) of them, were diagnosed on pharyngeal endoscopy. Three lesions (7.0%) could not be seen on pharyngeal endoscopy and were diagnosed on upper gastro-intestinal endoscopy (UGI endoscopy).

Clinically, neck metastasis was seen in 57 cases (60.4%) while 37 cases (39.4%) presented with N0 neck. In nasopharynx, level II and level V nodes of neck were the commonest (66.66% each) to be involved. In oropharynx,

level II (18.5%) was the commonest for metastasis followed by level Ib (18.5%) and then, level IV (16.6%). In hypopharynx, level III (18.6%) was the commonest for metastasis followed by level V (9.3%) (Fig. 4). Of the patients with clinical nodal metastasis (60.6%), 75.5% of these underwent FNAC, 79.1% proved to be metastatic (pathologically) and 20.9% were reported reactive on FNAC.

Staging

In our study, maximum cases presented in stage IVA (45.8%) followed by stage III (29.8%) (Table 2).

Histopathology

On histopathology, all the cases of nasopharynx proved to be undifferentiated nasopharyngeal cancer (NPC) while, in both oropharynx and hypopharynx, moderately

Table 2 Clinical Staging

Stage	No. of cases	Percentage
I	4	4.2%
II	16	17.0%
III	28	29.8%
IVA	43	45.8%
IVB	3	3.2%
IVC	-	-
Not staged	-	-
Total	94	100%

Fig. 4 Cervical node metastasis

differentiated squamous cell carcinoma (SCC) was the commonest histopathological finding followed by poorly differentiated SCC (Table 3).

Table 3 Types of pharyngeal malignancies

Subsite <i>n</i> = 94	Histopathological type	No. of patients	Percentage 100%
Nasopharynx <i>n</i> = 3	Well differentiated NPC	0	0.0%
	Undifferentiated NPC	3	3.4%
Oropharynx <i>n</i> = 48	Well diff SCC	4	4.2%
	Mod. diff SCC	25	26.5%
	Poorly diff SCC	9	10.4%
	SCC	8	6.9%
	Basaloid SCC	1	1.1%
	Papillary SCC	1	1.1%
Hypopharynx <i>n</i> = 43	Mod. diff SCC	23	24.4%
	Poorly diff SCC	12	12.7%
	SCC	6	7.0%
	Basaloid SCC	1	1.1%
	Mucoepidermoid CA (low grade)	1	1.1%

Radiology

CECT was the most common and useful investigation to see the extent of malignancy and chest X-ray was done in all the cases to rule out lung secondaries (Fig. 5).

Discussion

In our study, mean age at presentation was 56.8 years (age range 18–100 years). Maximum patients belonged to fifth decade (32.9%) followed by sixth decade (28.7%). Kim et al. (2003) [4] observed sixth and seventh decade as commonly involved. This has been proved that elderly age is a predisposing factor for development of pharyngeal malignancy. As the age advances, cellular atypia occurs, which makes that region more vulnerable for development of pharyngeal malignancy due to continuous chronic irritation with various forms of carcinogens viz. smoking, tobacco chewing and alcohol.

Males were predominant in our study with a Male: Female ratio—8.4:1. Manjari et al. (1996) [5] and Bhagat

Fig. 5 **a** CECT (sagittal section) showing growth nasopharynx. **b** CECT (sagittal section) showing growth hypopharynx. **c** CECT (coronal section) showing growth oropharynx

et al. (2003) [6] showed similar findings. It was assumed that males were more commonly involved because they are more into the habit of addictions like smoking, alcohol consumption and tobacco chewing which have been proved as predisposing factors in development of pharyngeal malignancy in many studies previously.

As per Kuppuswamy's classification of socio-economic status (2003), there were 38 cases (40.4%) who belonged to lower class followed by lower middle class (28 cases; 29.8%). This can be explained by the fact, that, low socio-economic people have poor oral hygiene, poor diet and are prone to infections of viral origin. The habits of smoking, tobacco chewing and alcohol intake are more common in these people. By occupation, majority of the patients were farmer (36 cases; 38.2%) followed by labourer (18 cases; 19.8%). 74% cases belonged to rural areas.

As per dietary habits, 50 cases (53.1%) were non-vegetarian while 40 cases (46.9%) were vegetarian. It has been proved that, diets low in fruits and vegetables are associated with an increased risk of pharyngeal malignancy. Non-vegetarian diet is low in anti-oxidants which are anti-cancer agents as compared to vegetarian diet.

The most common presenting complaint was difficulty in swallowing (53 cases; 56.3%) followed by change in voice (22 cases; 23.4%). Bhagat et al. (2003) [6] in their study of tumours of hypopharynx observed that dysphagia, neck mass and throat pain were the commonest symptoms.

There were 83 patients (88.2%) who had history of smoking while 40 (42.5%) had history of alcohol consumption. There were 40 patients (42.5%) who were both smoker as well as alcoholic. Kim et al. (2003) [4] observed that cases (42.5%) history of alcohol consumption was present in 20.6% of oropharyngeal cancers and 42.6% of hypopharyngeal cancers.

In our study, maximum number of cases were of oropharynx (48 cases; 51.0%) followed by hypopharynx (43 cases; 45.7%). There were only three cases (3.3%) of nasopharynx. Bhattacharjee et al. (2006) [7] observed that oropharyngeal cancer was the commonest site. These findings were in concordance with our findings.

In oropharynx, base of tongue was the commonest subsite (35 cases; 72.9%), followed by tonsil (11 cases; 22.9%). There was one case (2.1%) each of uvula and posterior pharyngeal wall. Similar findings were observed by Tuli et al. (2003) [8] while Kim et al. (2003) [4] observed tonsil as the most common site of predilection. In case of hypopharynx, pyriform sinus (37 cases; 86.0%) was the commonest subsite, followed by posterior pharyngeal wall (four cases; 9.3%). There were two cases (4.7%) of post-cricoid region. Bhagat et al. (2003) [6] in their study observed that pyriform fossa (80%) was the commonest subsite of hypopharynx which was similar to our study. Similar findings were observed by Kim et al. (2003) [4].

Clinically, neck metastasis was seen in 57 cases (60.4%) while 37 cases (39.4%) presented with N0 neck. In nasopharynx, level II and level V were the commonest (66.6% each) to be involved for cervical metastasis. In oropharynx, level II (18.5%) was the commonest for metastasis followed by level Ib and then, level IV. In hypopharynx, level III (18.6%) was the commonest for metastasis followed by level V. Of the patients with clinical nodal metastasis (60.6%), 75.5% of these underwent FNAC, 79.1% proved to be metastatic (pathologically) and 20.9% were reported reactive on FNAC.

In our study, maximum cases presented in stage IVA (45.8%) followed by stage III (29.8%). Bhagat et al. (2003) [6] in their study observed that 60% of cases presented in advanced stages III and IV.

On histopathology, all the cases of nasopharynx proved to be undifferentiated NPC while, in both oropharynx and hypopharynx, moderately differentiated SCC (52.0%; 53.4%) was the commonest histopathological finding followed by poorly differentiated SCC (18.7%; 27.9%). Manjari et al. (1996) [5] stated that majority were epidermoid carcinoma (88.18%) on histopathology. This was in concordance to our study. These findings were similar to Kim et al. (2003) [4], Bhattacharjee et al. (2006) [7].

Radiologically, CECT was the commonest and useful investigation to assess the extent of the disease in our study. As per the text available, both CT and MRI are useful in assessment of pharyngeal malignancy, but due to financial limitations of the patients in our country, CT is the preferred choice in our study.

Conclusion

In our study of 'Clinical profile of pharyngeal malignancy in a tertiary care centre, State of Uttarakhand', the conclusions are as follows:

- Commonest age group involved was 51 to 60 years (32.9%).
- Median age—55.5 years.
- Male to female ratio was 8.4:1.0.
- Majority of the patients belonged to the lower class (40.4%).
- Farming (38.2%) was the commonest involved profession.
- Seventy-four percent cases belonged to rural areas.
- The most common presenting symptom was difficulty in swallowing (56.3%) followed by change in voice (23.4%).
- 88.2% were smokers and 42.5% were alcoholics while 42.5% had history of both smoking as well as alcohol consumption.

- The commonest site involved was oropharynx (51.0%) followed by hypopharynx (45.7%) and nasopharynx (3.3%).
 - In oropharynx, base of tongue (72.9%) and in hypopharynx, pyriform fossa (86.0%) were the most common subsites.
 - Squamous cell carcinoma was the commonest histopathological finding (95.7%).
 - There were 37 cases (39.4%) with N0 neck.
 - Clinically neck metastasis was seen in 57 cases (60.6%) and 75.5% of these underwent FNAC, 79.1% proved to be metastatic and 20.9% were reported reactive on FNAC.
 - As per clinical staging, maximum cases presented in stage IVA (45.8%) followed by stage III (29.8%).
 - As per radiological investigations profile, CECT was the commonest investigation used for detection of the primary and to see their extent. Chest X-ray was done to rule out pulmonary metastasis.
2. Sobin LH, Whitekind X (2002) TNM classification of malignant tumours. UICC, 6th edn. Wiley-Liss, New York
 3. Greene F, Page DL, Flemming ID, Fritz AG, Balch CM, Haller DG (eds) (2002) The AJCC cancer staging manual, 6th edn. Springer, New York
 4. Kim MK, Kim YM, Shim YS, Kim KH, Chang HS, Choi JO et al (2003) Epidemiologic survey of head and neck cancers in Korea. *J Korean Med Sci* 18:80–87
 5. Manjari M, Popli R, Paul S, Gupta VP, Kaholon SK (1996) Prevalence of oral cavity, pharynx, larynx and nasal cavity malignancies in Amritsar, Punjab. *Indian J Otolaryngol Head Neck Surg* 48(3):191–195
 6. Bhagat S, Singh B, Verma SK, Singh D, Bal MS (2003) Clinicopathological study of tumours of hypopharynx. *Indian J Otolaryngol Head Neck Surg* 55(4):241–243
 7. Bhattacharjee A, Chakraborty A, Purkaystha P (2006) Prevalence of head and neck cancers in the North East: An institutional study. *Indian J Otolaryngol Head Neck Surg* 58(1):16–19
 8. Tuli BS, Gupta KK, Dugg MS (2003) Retrospective and prospective study of head and neck cancer. *Indian J Otolaryngol Head Neck Surg* 55(1):10–13

References

1. Watkinson JC, Gaze MN, Wilson JA (2000) Tumours of the nasopharynx. In: Watkinson JC, Gaze MN, Wilson JA (eds) *Stell and Maran's Head and Neck Surgery*, 4th edn. Butterworth-Heinemann, Oxford, pp 441–458