

Clinicopathological Profile of Head and Neck Cancers at Tertiary Care Centre of Gujarat

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Abstract:

Background and Aim: Understanding the regional patterns of cancer is crucial for identifying the most pressing areas for cancer prevention and treatment on a global scale. Our study aims to gather comprehensive data on the demographics, subsite distribution, histologic differentiation, and treatment received, and other pertinent characteristics of patients diagnosed with head and neck cancer. Our study also seeks to understand the results of managing head and neck cancer in a specialized healthcare facility.

Material and Methods: A study was conducted at the Tertiary Care Teaching Institute of India for a period of one year. Information on age, gender, risk factors, clinical features, grading, staging, treatment received, and presenting symptoms during follow-up were collected and analysed statistically. A thorough and comprehensive history was obtained, covering presenting complaints, past medical history, family history, and personal history. Special attention was given to personal habits such as tobacco and alcohol consumption. The patients were monitored for a period of 6 months after they finished their treatment.

Results: Final analysis included a total of 80 subjects. A significant number of cases were observed in individuals aged 61 to 70. Our study found that the majority of patients were male, with only 25% being female. The study found that dysphagia was the most frequently reported symptom, accounting for 40% of cases. Ulcerative lesions were the second most common complaint, reported in 20% of cases, followed by neck swelling, which was observed in 17.5% of cases. It was noted that a significant majority of the cases, 76% to be precise, had habits of smoking, alcohol consumption, and tobacco chewing. The oropharynx was the most frequently affected area, accounting for 20% of cases, closely followed by the hypopharynx and the larynx, both at 17.5%.

Conclusion: Based on the study findings, it is evident that factors such as older age group, smoking, alcohol consumption, and tobacco chewing play a significant role in increasing the risk of head and neck cancers. The study also revealed positive outcomes and minimal side effects in patients who had received chemotherapy, radiotherapy, or surgeries during their treatment. By implementing thorough screening, promptly identifying the disease, and ensuring adherence to treatment, we can enhance the chances of survival for individuals with head and neck cancer.

Keywords: Dysphagia, Head and Neck Cancer, Oropharynx, Radiotherapy.

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Introduction

Head and neck cancer (HNC) ranks as the eighth most prevalent form of cancer based on global incidence data from 2008. [1] the most common type of cancer found in cases of head and neck cancer is squamous cell carcinoma (SCC), accounting for approximately 90-95% of all cases. In developing countries, squamous cell carcinoma of the head and neck (HNSCC) is a major contributor to cancer mortality, accounting for a

significant portion of the cancer burden. Head and neck cancers can have a significant impact on a person's quality of life, as they can interfere with essential functions like breathing, swallowing, speech, hearing, vision, taste, and smell. [2] When it comes to cancer, the impact on the body is hard to ignore, especially with tumours in the head and neck region, which are highly visible. Managing the care and treatment of these patients can be quite

intricate, given that multimodality treatment is often necessary.

Head and neck cancers are frequently observed in various parts of the world, including the Indian sub-continent. [3-6] there seems to be a hidden truth about the incidence of head and neck cancers in India, hinting that it may be just the beginning of a much larger problem.

The outcome and longevity of individuals with HNC rely on the stage of the disease when diagnosed and the level of care given to each patient. Treatment options for early to locally advanced stage HNSCC include surgery, radiation, or a combination of both. Various large clinical trials have demonstrated the effectiveness of combined multimodality treatment in improving the treatment outcome of HNSCC, compared to either surgery or radiotherapy (RT) alone. [7,8]

Our study aims to provide a comprehensive documentation of the gender, age, subsite distribution, histologic differentiation, and treatment received, and other relevant characteristics of patients diagnosed with head and neck cancer. Our study also seeks to understand the results of managing head and neck cancer in a specialized healthcare facility.

Material and Methods

A study was conducted at the Tertiary Care Teaching Institute of India over a period of one year. Patients with histopathologically confirmed head and neck malignancy who visited the ear nose and throat outpatient department (ENT OPD) were included in the study. Approval was obtained from the institutional ethical committee and written consent was obtained from all participants. A total of 80 patients were included in the study.

Criteria for inclusion

All patients above the age of 18 years, regardless of gender, with confirmed malignancies in the head and neck region were included in the study.

Criteria for exclusion

Excluded from the study were patients under 18 years old, individuals with cervical oesophageal malignancies, malignancies of the scalp, ear, skin, and eyes, those who had previously been treated for head and neck malignancies, cases of recurrence after previous surgery or chemo radiotherapy, and patients who declined to participate.

We conducted a study on patients with head and neck cancer who visited the ear, nose, and throat (ENT) department at our hospital. Information on age, gender, risk factors, clinical features, grading, staging, treatment methods, and follow-up symptoms were collected and analysed statistically. A thorough and comprehensive history was

obtained, covering presenting complaints, past history, family history, and personal history. Special attention was given to personal habits such as tobacco and alcohol consumption. The patients were monitored for a period of 6 months after they finished their treatment. Analysed were the presenting symptoms of patients at the end of the 1st follow-up (1 month), the end of the 2nd follow-up (2 months), and the end of the 3rd follow-up (6 months). Statistical analysis was conducted to examine the data.

Statistical analysis

The data was compiled and entered into a spreadsheet computer programme (Microsoft Excel 2007) and then exported to the data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). The quantitative variables were reported using either means and standard deviations or median and interquartile range, depending on their distribution. The presentation of qualitative variables was in the form of counts and percentages. Confidence level and level of significance were set at 95% and 5% respectively for all tests.

Results

There were a total of 80 subjects included in the final analysis. A significant portion of the cases (46.25%) occurred among individuals aged 61 to 70. Our study found that the majority of patients were male, with only 25% being female. The study found that dysphagia was the most frequently reported symptom, accounting for 40% of the cases. Ulcerative lesions were the second most common complaint, reported by 20% of the participants, followed by neck swelling, which was reported by 17.5% of the participants. It was noted that a significant majority of the cases, around 76%, had habits of smoking, alcohol consumption, and tobacco chewing. Approximately 39% of the cases were reported within a span of 4 weeks, while 21% of cases were reported between 5 to 8 weeks after the onset of symptoms.

Tumour appearance can vary, with the most common being ulcer proliferative (34%) followed by proliferative (30%). An analysis was conducted on the head and neck cancer patients based on the primary site of the lesion. The oropharynx was the most frequently affected area, accounting for 20% of cases, closely followed by the hypopharynx and the larynx, both at 17.5%.

In the oropharynx, the soft palate was found to be the most common subsite, accounting for 9.5% of cases. On the other hand, the pyriform sinus was identified as the most common subsite in the hypopharynx, making up 11.5% of cases. Following the biopsy, the medical team thoroughly examined the histopathological features of the lesion. Most of the lesions observed were

squamous cell carcinoma, accounting for 88.5% of the cases. Most of the tumours were found to be moderately differentiated, as observed. The tumours were classified based on the site of the lesion using the TNM staging system. Most of the tumours were found to be at stage III. The majority of patients underwent chemoradiation (CT-RT) as their chosen treatment method. The patients were examined for notable symptoms during follow-up,

with the initial check-up occurring at 1 month, the second check-up at 2 months, and the third check-up at 6 months after treatment was finished. Mucositis was the most frequently reported symptom during the first and second follow-up, with rates of 26.5% and 13.5% respectively. Residual lesion and dysphagia were the most common symptoms reported during the third follow-up, each accounting for 9.5%.

Table 1: Age distribution in the study population

Age (Years)	Number	Percentage (%)
≤50	9	11.25
51-60	18	22.5
61-70	37	46.25
71-80	11	13.75
>80	5	6.25

Table 2: Descriptive analysis of chief complaints in the study population (n=80)

Chief complaint	Number	Percentage (%)
Dysphagia	32	40
Voice change	7	8.75
Dysphagia and voice change	3	3.75
Neck swelling	14	17.5
Nasal bleeding	2	2.5
Nasal mass	2	2.5
Odynophagia	2	2.5
Toothache	2	2.5
Ulcer	16	20

Table 3: Descriptive analysis of personal habits in the study population (n=80)

Personal habits	Yes	No	Average years
Smoking	70	10	10.45
Alcohol	68	12	4.1
Tobacco	71	9	2.9

Table 4: Descriptive analysis of the site of lesions in the study population (n=80)

Site	Number	Percentage (%)
Nasal cavity and PNS	8	10
Oral cavity	15	18.75
Nasopharynx	5	6.25
Oropharynx	16	20
Hypopharynx	14	17.5
Larynx	14	17.5
Salivary gland	3	3.75
Thyroid	7	8.75

Discussion

Collecting regional epidemiological data on cancer is crucial for identifying the key areas to focus on for cancer control in various parts of the world. [9,10] Head and neck cancers are a significant global health issue that has gained recognition. [9]

According to the study, individuals between the ages of 61 and 70 were found to be most susceptible to head and neck cancer. According to a study conducted by Miyaishi et al, it was found that the highest incidence of cancer occurred in individuals aged 60-64. [11] The study revealed a

higher representation of males, accounting for 75% of the participants, while females made up the remaining 25%. Our study reveals a male-to-female ratio of 3:1. In a study conducted by Dasgupta et al, it was found that there was a significant difference in the male to female ratio, with males making up 73.15% of cases and females accounting for 26.85% of patients. [12] There appears to be a higher number of males in these studies, possibly due to a greater prevalence of smoking, tobacco chewing, and alcohol consumption among men. These behaviours are known to increase the risk of head and neck cancers.

Most of the patients reported experiencing difficulty swallowing, with some also mentioning ulcers and swelling in the neck. In a study conducted by Chauhan et al, it was found that the most common presenting symptom was dysphagia in 63% of cases. Hoarseness of voice was reported in 50.76% of cases, followed by neck swelling in 49.23% of cases. [13] In our study, a significant majority of patients reported engaging in smoking, alcohol consumption, and chewing tobacco. In a recent study conducted by Dasgupta et al, it was found that 58.33% of the cases had a history of smoking, 37.96% had a habit of tobacco/betel nut chewing, and 41.67% reported alcohol consumption. [12]

The prognosis and survival of patients with HNC are closely tied to the stage of the disease when it is diagnosed. However, the overall outcome of each patient can also be influenced by the quality of care they receive. Various factors can influence treatment choices and outcomes, such as the diagnostic process, patient assessment, and variations in the availability and quality of oncology surgery, radiotherapy, and medical oncology services. Additional factors, such as a patient's comorbidities, socioeconomic factors, and educational background, also contribute to the overall picture.

Many of the major randomized trials took place in controlled research settings, mainly in developed countries, and focused on specific groups of patients. In addition, the current clinical guidelines for managing HNC have typically been created in and tailored to the privileged western societies, where advanced resources for optimal care are consistently accessible. In developing countries, patients often have different profiles compared to those in more developed regions. These profiles may include poorer nutrition, lower performance status, compromised renal function, prior anaemia, and limited resources for managing toxic effects. As a result, these patients may have a lower tolerance for more aggressive treatment regimens like concurrent chemo radiotherapy (CCRT) or postoperative radiotherapy (RT).

According to the study, the oropharynx was found to be the most frequent location for head and neck cancer, followed by the hypopharynx and larynx. A study conducted by Siddiqui et al revealed that oropharyngeal cancer is the most prevalent form of head and neck cancer in Northeast India. [14] the most common subsite in the oropharynx was the soft palate, while in the hypopharynx, the pyriform sinus took the lead. In a study conducted by Sanghvi et al, it was found that the pyriform sinus was the most frequently affected subsite, which aligns with the current findings. In the study conducted by Sanghvi et al, it was found that the tonsil is the most common subsite in the

oropharynx, while the glottis is the most common subsite in the larynx, accounting for 52% of cases. [15]

Most of the tumors observed on histopathological examination were squamous cell carcinoma. Next, there were cases of differentiated thyroid cancers. According to a study conducted by Kumar et al, the histopathology findings indicated that squamous cell carcinoma was the most common type of cancer, accounting for 92-99% of the cases. In contrast, when it came to thyroid malignancies, the majority of cases (67%) showed histopathological features suggestive of papillary carcinoma. [16] Our findings align with previous reports from Nepal and other regions, where squamous cell carcinoma is the most prevalent type of head and neck cancer, accounting for approximately 62% of cases. In separate studies conducted by Thapa et al. (2003) and Baskota et al. (2005), it was discovered that the majority of head and neck carcinomas were squamous cell carcinomas, with percentages of 75% and 78% respectively. In our study, anaplastic carcinoma (7.2%) emerged as the second most common type of carcinoma. Interestingly, Thapa et al [18] and Baskota et al [17] did not report on this particular type. According to a study conducted by Baskota et al [17], papillary carcinoma was found to be the second most common type of carcinoma, with follicular carcinoma and adenocarcinoma following closely behind. During our study, we found that papillary carcinoma, follicular carcinoma, and adenocarcinoma accounted for a small percentage of carcinoma cases, specifically 3.1%, 3.1%, and 1% respectively.

Most of the tumors observed under the microscope showed moderate differentiation, with well-differentiated tumors coming in second. In a study conducted by Chidzonga et al, it was found that well-differentiated tumors accounted for approximately 64.8% of the cases, while moderately differentiated tumors made up around 24.8%. Poorly differentiated tumors were observed in approximately 10.4% of the cases. [19]

A significant number of tumors were found to have stage III lesions in our study. In a study conducted by Kumar et al, it was found that a significant number of oropharyngeal, hypopharyngeal, nose, and PNS malignancies were diagnosed at stage 3, with percentages of 69%, 54%, and 60% respectively. [16]

Among our patients during the initial and subsequent check-ups, mucositis was the prevailing symptom, affecting 26.5% and 13.5% of patients, respectively. Male patients experienced a higher number of symptoms compared to their female counterparts during the 1st, 2nd, and 3rd follow-ups. In a study conducted by Baskota et al. [17], it was found that 32% of the patients fell within the

age range of 51-60 years. In contrast, we found that only 10.5% of patients were in their fifth decade of life. Our research revealed that patients who received concurrent chemo radiotherapy as their treatment experienced a prevalent issue known as mucositis. After undergoing surgery, patients reported only minor issues during their follow-up, such as keloid formation and occasional drooling. On the second follow-up, there was a notable disparity in tumor grades and symptoms. Patients with well-differentiated tumors experienced fewer symptoms during follow-up, while those with moderately differentiated and poorly differentiated tumors reported more symptoms. The findings remained consistent during the third follow-up as well.

Grade III differentiation, along with node positive disease (specifically N2 and N3 disease) and the presence of lymphovascular invasion, had a detrimental impact on overall survival. In a recent study conducted by J.F. Jardim et al., it was found that tumours with a higher T stage, more than two clinically positive nodes, and positive LVI were associated with lower overall survival rates. [20]

A study conducted by Richard J and colleagues found that LVSI had a detrimental effect on the survival of patients with HNSCC. [21] A recent study conducted by Johnny Kao and his colleagues revealed a concerning trend in patient survival rates, particularly among those with higher N stage. [22] Two significant trials, the Veterans Affairs Laryngeal Cancer Study and the Radiation Therapy Oncology Group 91-11, have played a crucial role in determining the preservation of the larynx as an outcome.

A significant number of patients with T4 primaries were not included in either of the trials. There was no significant difference in the two-year overall survival rates between patients who underwent primary surgery followed by adjuvant radiotherapy and those who received induction chemotherapy followed by primary radiotherapy. [23,24] However, the available evidence does not definitively show that chemo radiotherapy is better than partial/total laryngectomy and adjuvant treatment for T3-4a laryngeal cancer in terms of long-term cancer outcomes.

Conclusion

The study showed that older age group, smoking, alcohol consumption and tobacco chewing are important predisposing factors for head and neck cancers. The study also showed good results with minimal side effects on follow up in patients after undergoing treatment with chemotherapy, radiotherapy or surgeries. Hence with proper screening, early diagnosis and compliance to treatment, the survival rate of head and neck cancer patients can be improved.

Efforts to increase the proportion of patients presenting in earlier stages, increase in the use of combined modality treatment especially CCRT and implementation of IMRT should lead to better outcomes for our HNC patients.

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