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Original Research Article

Clinicopathological profile and outcomes of treatment of head and neck cancer patients in a tertiary care center: a hospital-based prospective study

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ABSTRACT

Background: Globally head and neck cancers constitute among the 10 most common cancers. The study's main purpose was to study the epidemiological and demographic factors and outcomes of treatment of head and neck cancer patients in a tertiary centre. A Chi-square test was used to analyse the association of various factors. Statistical package for the social sciences (SPSS) version 20 was used for statistical analysis.
Methods: In this prospective observational study, 52 patients with head and neck cancers were evaluated and data regarding age, gender, risk factors, clinical features, grading, staging, and treatment modality received were taken. Presenting symptoms of patients at the 1st follow-up (at 1 month), 2nd follow-up (at 2 months), and 3rd follow-up (at 6 months) were statistically analysed.
Results: Results showed that the mean age group was between 61 to 70 years. Gender distribution showed that 75% were males and 25% were females. The most common site of malignancy was the oropharynx (23.08%). The majority of the tumors were squamous cell carcinoma (88.46%) and are of moderately differentiated type (53.85%). Majority of the tumors (42.31%) presented with stage III lesions. Most of the patients 35 (67.31%) received concurrent chemoradiation (CT-RT). The most common complaint in the first and second follow-up was mucositis.
Conclusions: The majority of the tumors are squamous cell carcinoma and are moderately differentiated. Most of the tumors were in stage III, and most received chemoradiation (CT-RT) for treatment.

Keywords: Head and neck cancer, Squamous cell carcinoma, Chemotherapy, Radiotherapy, Treatment outcomes

INTRODUCTION

Cancer refers to a large group of potentially lethal disorders characterized by abnormal cell growth and metastasis. In Asia, especially in India, head and neck cancers account for 57.5% of cases. Each year in India nearly 200,000 cases of head and neck cancers occur.[1] The majority of HNCs are squamous cell carcinoma (HNSCC).[2] Head and neck cancers are associated with high morbidity because there is interference with vital functions of life such as breathing, swallowing, speech, hearing, vision, taste, and smell.[3] Unlike other forms of cancer, the disease and side effects of treatment cannot be hidden, as tumors of the head and neck affect the most visible area of the body. The care and treatment of these patients are complex, as multimodality treatment is common.

The true incidence of head and neck cancers in India is hidden suggesting it is the 'tip of the iceberg'. The purpose of this study is to document the gender, age, subsite distribution, histologic differentiation, treatment received, and other characteristics of head and neck cancer patients.

Aims

Our study also aims to know the outcome of head and neck cancer management in the tertiary care center.

METHODS

A prospective observational study was done at the Southern Railway Headquarters Hospital, Chennai, between December 2020 and October 2021. All patients who attended ear nose and throat outpatient department (ENT OPD) with histopathologically confirmed head and neck malignancy were selected.

Ethical committee approval was obtained. Epidemiological and demographical profile of head and neck cancer was considered as the primary outcome of interest. Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Chi-square test/Fisher's was used to test statistical significance. P value <0.05 was considered statistically significant. Statistical package for the social sciences (SPSS) version 20 was used for data analysis. The study aimed to evaluate the clinicopathological profile and outcomes of treatment of head and neck cancer patients in a tertiary care center in Tamil Nadu.

Inclusion criteria

Patients above the age of 18 years of both sexes, and all malignancies of head and neck region after histopathological confirmation were included.

Exclusion criteria

Patients below the age of 18 years, cervical oesophageal malignancies, malignancies of scalp, ear, skin, and eyes, previously treated cases of head and neck malignancies, recurrent cases after previously treated with surgery or chemo radiotherapy, and patients who were not willing to participate in the study were excluded.

Methodology

The present study evaluated the head and neck cancer patients coming to the ear, nose, and throat (ENT) department of our hospital. Data regarding age, gender, risk factors, clinical features, grading, staging, modality of treatment received, and presenting symptoms on follow-up were taken and statistical analysis was done. A complete detailed history including presenting complaints, past history, family history, and personal history with an emphasis on personal habits like tobacco and alcohol consumption were taken. The patients were followed up for 6 months after completion of treatment. Presenting symptoms of patients at the end of 1st follow-up (at 1 month), at the end of 2nd follow-up (at 2 months), and at the end of 3rd follow-up (at 6 months) were analysed and statistical analysis was done.

RESULTS

A total of 52 subjects were included in the final analysis.

Characteristics of the patients

The majority of the cases (48.1%) were seen in the 61 to 70 age group. In our study, the majority of the patients i.e. 75% were males and only 25% were females. It was observed that the most common complaint was dysphagia (38.46%), followed by ulcerative lesions (23.08%) and neck swelling (17.31%). It was also observed that 75% of the cases had habits of smoking, alcohol, and tobacco chewing. About 38.46% of the cases presented within 4 weeks and 21.15% of cases within 5 to 8 weeks of the start of the symptoms.

Table 1: Descriptive analysis of age distribution in the study population (n=52).

Age distribution	Number	%
Up to 50	5	9.6
51-60	12	23.1
61-70	25	48.1
71-80	7	13.5
Above 80	3	5.8

Table 2: Descriptive analysis of chief complaints in the study population (n=52).

Chief complaint	Number	%
Dysphagia	20	38.46
Voice change	5	9.62
Dysphagia and voice change	2	3.85
Neck swelling	9	17.31
Nasal bleeding	1	1.92
Nasal mass	1	1.92
Odynophagia	1	1.92
Toothache	1	1.92
Ulcer	12	23.08

Table 3: Descriptive analysis of personal habits in the study population (n=52).

Personal habits	Yes	No	Average years	Maximum years
Smoking	43	9	11.6	40
Alcohol	41	11	3.8	30
Tobacco	40	12	2.6	40

Characteristics of the tumors

The most common appearance of tumor was ulcero-proliferative (34.6%) followed by proliferative (30.8%). The head and neck cancer patients were also analysed according to the primary site of the lesion. The most common site was the oropharynx (23.08%), followed by the hypopharynx (17.31%) and the larynx (17.31%). The

most common subsite in the oropharynx was the soft palate (9.62%) while the most common subsite of the hypopharynx was the pyriform sinus (11.54%). After a biopsy was taken from the lesion, the histopathological characteristics of the lesion were studied. The majority of lesions were squamous cell carcinoma (88.46%). It was also observed that the majority of the tumors were moderately differentiated (53.85%). The tumors were staged as per the TNM classification according to the site of the lesion. It was observed that the majority of the tumors presented at stage III (42.31%).

Table 4: Descriptive analysis of the site of lesions in the study population (n=52).

Site	Number	%
Nasal cavity and PNS	5	9.62
Oral cavity	8	15.38
Nasopharynx	3	5.77
Oropharynx	12	23.08
Hypopharynx	9	17.31
Larynx	9	17.31
Salivary gland	2	3.85
Thyroid	4	7.69

Treatment and symptoms on follow-up

Most of the patients (67.31%) received chemoradiation (CT-RT) as the modality of treatment. The patients were analysed for significant symptoms on follow-up, with the first follow-up at 1 month, the second follow-up at 2 months and 3rd follow-up at 6 months after completion of treatment. The most common symptom on the first and second follow-up was mucositis, accounting for 26.92% and 13.46% respectively. The most common symptoms on the third follow-up were residual lesion and dysphagia accounting for 9.61% each.

Table 5: Descriptive analysis of subsite of lesions in the study population (n=52).

Site and subsite	Number	%
Oral cavity		
Tongue (anterior 2/3rd)	2	3.85
Buccal mucosa	2	3.85
Angle of mouth	1	1.92
Buccal-alveolar sulci	1	1.92
Upper alveolus and gingiva	1	1.92
Lower alveolus and gingiva	1	1.92
Nose and paranasal sinus		
Lateral wall of the nose	2	3.85
Maxilla	2	3.85
Nasolabial fold	1	1.92
Nasopharynx		
Floor of nasopharynx	1	1.92
Lateral wall of NP	1	1.92
Posterior wall of NP	1	1.92
Oropharynx		
Soft palate	5	9.62
Tonsil	4	7.69
Base of tongue	3	5.77
Hypopharynx		
Pyriform sinus	6	11.54
Post cricoid	3	5.77
Larynx		
Vocal cord	4	7.69
Suprahyoid epiglottis	3	5.77
Aryepiglottic fold	2	3.85
Salivary glands		
Parotid	2	3.85
Thyroid		
Right lobe of the thyroid	4	7.69

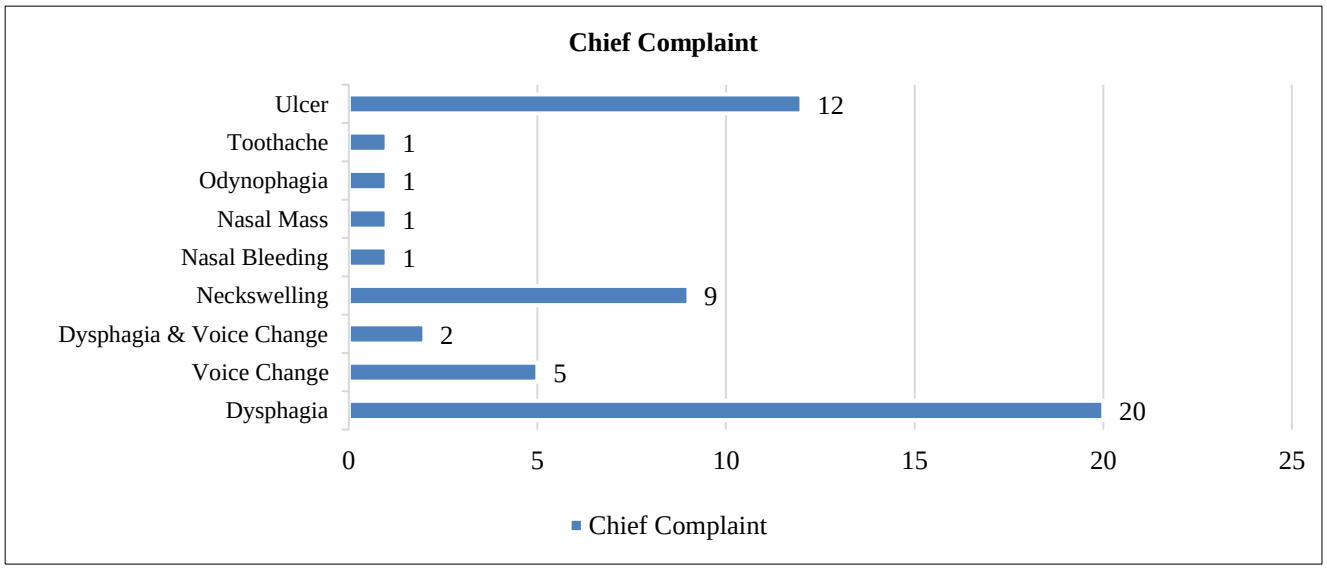

Figure 1: Chief complaints in the study population.

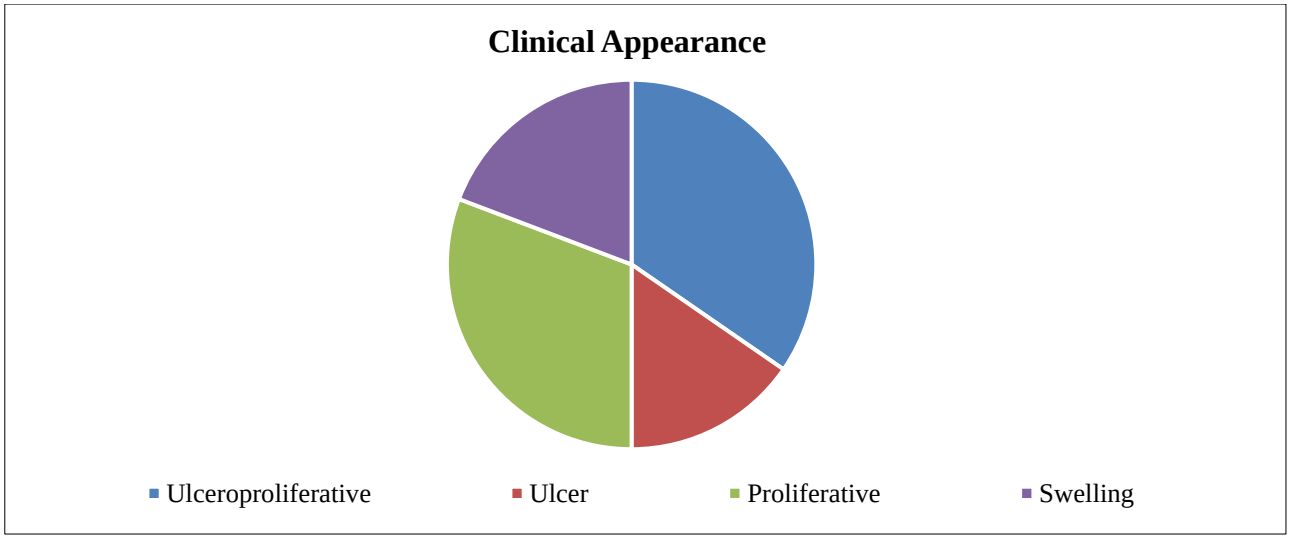

Figure 2: Clinical appearance of lesions in the study population.

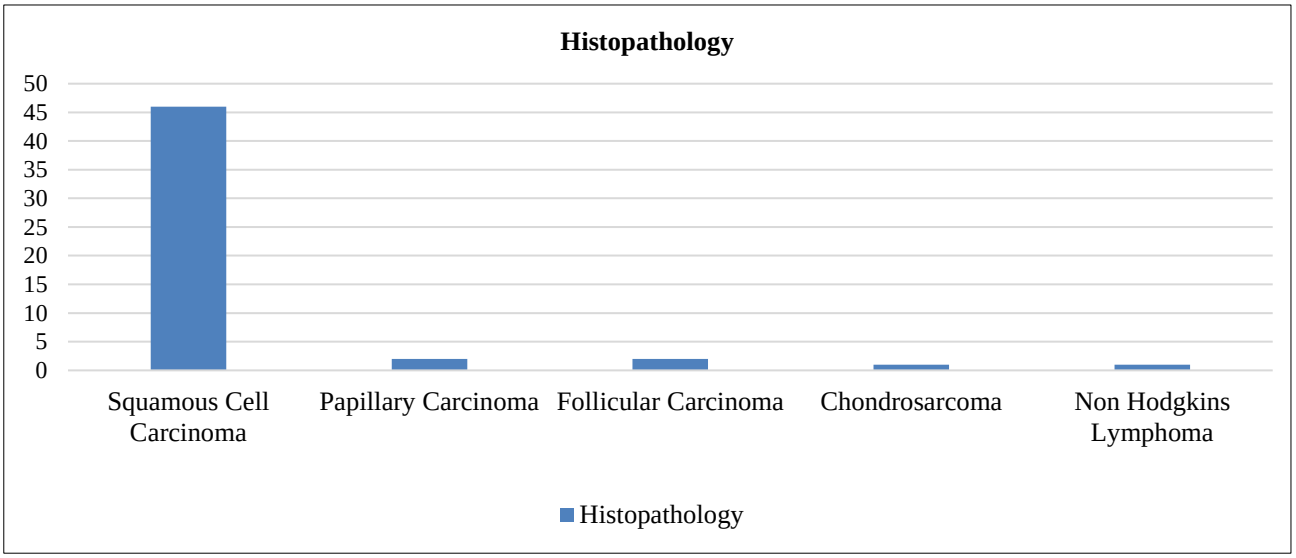

Figure 3: Histopathology of lesions in the study population.

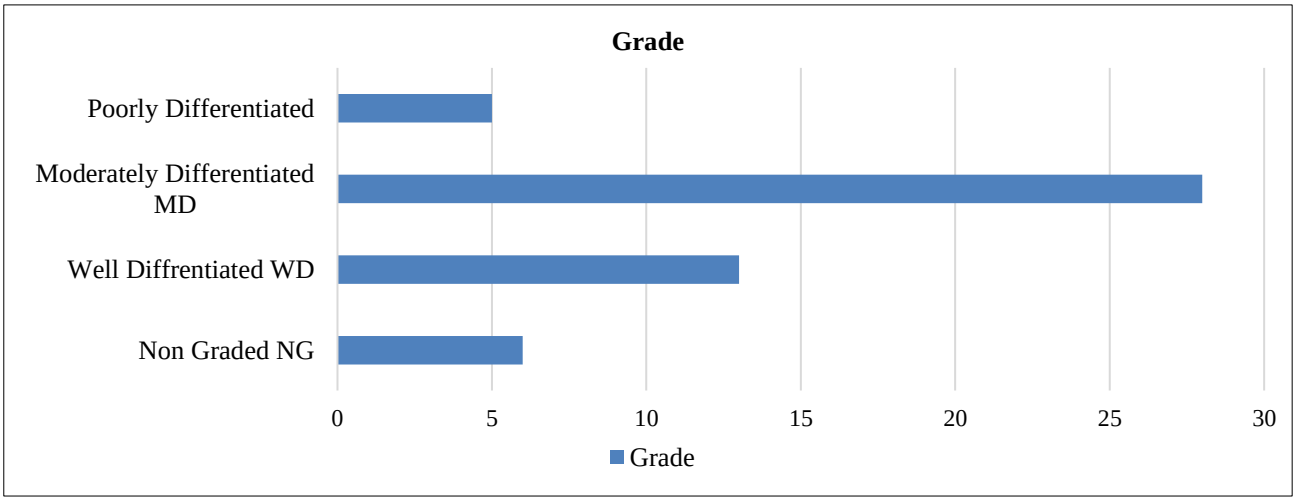

Figure 4: Grading of lesions in the study population.

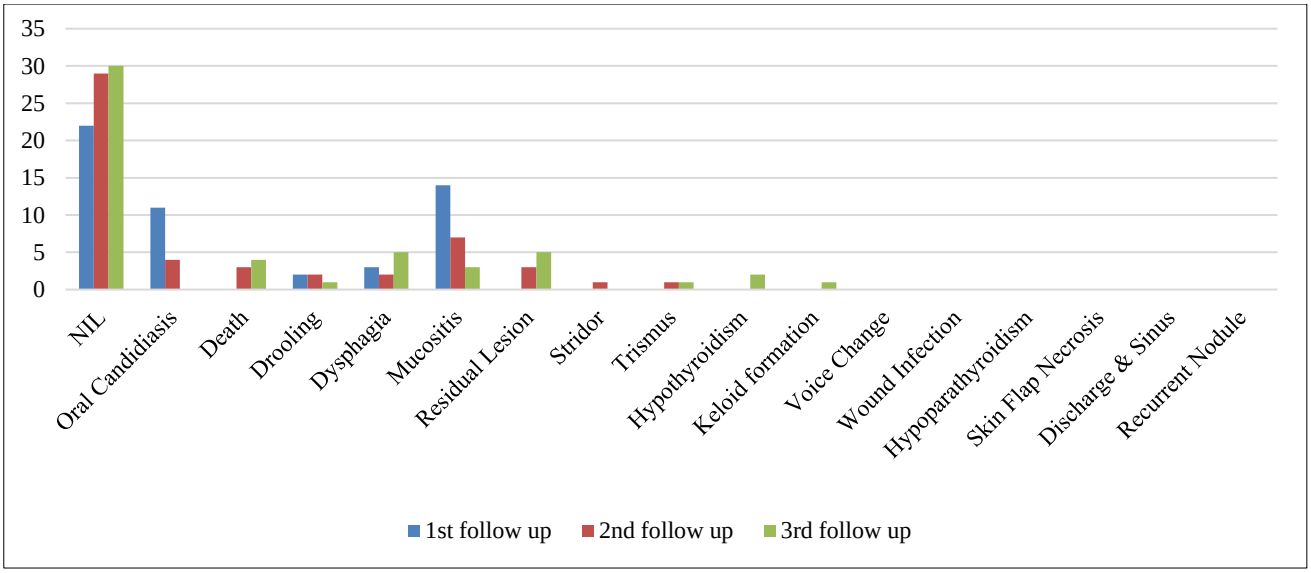

Figure 5: Symptoms on follow-up in the study population.

DISCUSSION

The study showed that head and neck cancer was most common in the age group of 61 to 70 years (48%). The results are similar to the study conducted by Miyaishi et al which showed that the peak of cancer incidence was in the 60–64 age group.[4] Gender distribution in our study showed that 75% were males and 25% were females. The male-to-female ratio is 3:1 according to our study. A study by Dasgupta et al also showed similar results with a male: female ratio of 2.7:1 with males accounting for 73.15% of cases and female patients accounting for 26.85% of patients.[5] A male preponderance seen in these studies, could be because of more males indulging in smoking, tobacco chewing and consuming alcohol which are known risk factors for head and neck cancers.

The majority of the patients presented with chief complaints of dysphagia (38.46%), followed by ulcer (23.08%) and neck swelling (17.31%). The findings are similar to a study conducted by Chauhan et al, where the most common presenting symptom was dysphagia in 63% of cases, followed by hoarseness of voice in 50.76% cases, and neck swelling in 49.23% cases.[6] 75% of the head and neck cancer patients presenting in our study had a habit of smoking, alcohol, and tobacco consumption. Among the patients in our study, 82.6% had a habit of smoking, 78% had a habit of alcohol consumption and 76% had a habit of chewing tobacco. A study by Dasgupta et al documented that a history of smoking was present in 63 (58.33%) cases, tobacco/ betel nut chewing in 41 (37.96%) cases, and consumption of alcohol in 45 (41.67%) cases.[5]

In the present study, the most common site of head and neck cancer was the oropharynx (23.08%), followed by the hypopharynx (17.31%) and larynx (17.31%). This can be compared to a study by Siddiqui et al which showed that the most common site of head and neck cancer is oropharyngeal cancer in Northeast India.[7] Among the subsites of head and neck cancer, the most common subsite was the pyriform fossa (11.54%). In the oropharynx, soft palate (9.62%) was the most common subsite and in hypopharynx, pyriform sinus (11.54%) was the most common subsite. The subsites involved have been illustrated in Table 5. The findings are in accordance with a study by Sanghvi et al where the pyriform sinus was the most common (70%) subsite involved. The study by Sanghvi et al also showed tonsil as the most common subsite in the oropharynx (46%) and glottis as the most common subsite in the larynx (52%).[8] The most common clinical appearance of the tumor ranged from ulceroproliferative (34.6%) followed by proliferative (30.8%), swelling (19.2%), and ulcer (15.4%). These findings are similar to a study conducted by Dasgupta et al, where the most common clinical appearance was ulceroproliferative (38.7%), followed by ulcer (29%), and proliferative lesions (25.8%).[5]

On histopathological examination, the majority of the tumors were squamous cell carcinoma (88.46%). This was followed by 4 cases of differentiated thyroid cancers including 2 cases of follicular carcinoma and 2 cases of papillary carcinoma. A study by Kumar et al showed the histopathology was suggestive of squamous cell carcinoma in the majority, accounting for 92-99% of the cases, whereas in thyroid malignancies, histopathology was suggestive of papillary carcinoma in 67% of the cases.[1]

On microscopy, the majority of tumors were moderately differentiated (53.85%) followed by well-differentiated tumors (25%). Poorly differentiated tumors constituted only 9.62% of the tumors. For 6 cases (11.54%), grading couldn't be done. These results are roughly similar to a study by Chidzonga et al where well-differentiated tumors formed 64.8%, moderately differentiated tumors formed 24.8%, and poorly differentiated tumors formed 10.4%.[9]

In our study, the majority of tumors (42.31%) presented with stage III lesions. This can be compared with a study by Kumar et al where the majority of the oropharyngeal, hypopharyngeal, nose and PNS malignancies presented in stage 3 accounting for 69%, 54%, and 60% respectively.[1] Most of the patients 35 (67.31%) received concurrent chemoradiation (CT-RT), and 7 patients each (13.4%) received radiotherapy alone and surgery (13.4%) alone respectively. Surgery followed by radiotherapy was given in 2 patients (3.84%). Trivedi et al in their study documented those 14 (20%) patients received chemotherapy (CT) alone, 22 (32%) received radiotherapy (RT) alone and 14 (20%) underwent surgery alone. In their study, 19 (28%) patients received multimodality treatment. The findings in their study are similar to the observations made in our study.[10]

The most common symptom in our patients on the first and second follow-up was mucositis, accounting for 26.92% and 13.46% of patients respectively. The second most common symptom on the first and second follow-ups was oral candidiasis. The most common presentation on the third follow-up was the presence of a residual lesion and dysphagia accounting for 9.61%. The findings of our study can be compared very favorably with a study by Trotti et al, where the mean overall incidence of mucositis was 80% among the patients.[11]

Male patients had more symptoms than female patients on the 1st, 2nd, and 3rd follow-ups. Our study showed that the patients who underwent concurrent chemoradiotherapy as the mode of treatment, had the most common complaint of mucositis. Patients who had surgery as the mode of treatment had only minor complaints such as keloid formation and drooling on follow-up. There was a significant difference in grades of tumor and symptoms on the second follow-up. Patients with well-differentiated tumors had fewer symptoms on follow-up whereas patients with moderately differentiated tumors and poorly differentiated tumors had more symptoms on follow-up. The results were similar in the third follow up too.

There was a significant difference in stages of tumor and symptoms on the second follow-up. Patients presenting with a higher stage of tumors such as stage 3 and stage 4, had more symptoms on second follow up than patients who presented in early stages. The findings were observed to be similar in third follow up too.

There was a significant relation between patients with alcohol consumption and tumor stage. Patients having habit of alcohol consumption for long duration presented with higher stage of tumor. Statistical analysis showed $p<0.02$. This was statistically significant.

Similarly, there was a significant relation between tobacco chewing and the stage of the tumor. Tobacco chewing was seen in 39 patients. Statistical analysis showed $p=0.046$. It was considered significant as $p<0.05$.

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 either 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.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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