A Clinic Pathological Study of Oral Cancer in Northern India.

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ABSTRACT- Oral cancer accounts for about 45% of cancer cases in India. Carcinogenesis is influenced by a variety of risk factors. Identifying prognostic factors that may affect disease outcomes may lead to improvements in adjuvant systemic therapy and better control of the disease. A prospective observational study was conducted among 87 patients between December 2020 to December 2022. Patient demographic details, history, and addiction habits were enquired and a clinical examination is done. A biopsy was performed and the histopathological type was categorized.Male to female ratio was 5.7:1 and the mean age of presentation was 50.38 years with a maximum of 28 patients (32.18%) in the 56-65 age group. 41.38% of patients had a history of tobacco chewing alone, the primary site of the lesion in 43 (49.42%) patients was buccal mucosa followed by the tongue in 19 (21.84%) patients, and well-differentiated squamous cell carcinoma was predominated and seen in 46 (52.87%) patients.A regular oral examination is necessary, and the old age group population should be thoroughly screened if any chronic non-healing ulcers, chronic irritation, mechanical trauma, and addiction habits are concomitant.

KEYWORDS- Oral squamous cell carcinoma; Oral cavity cancer; Radiotherapy; Buccal mucosa.

I. INTRODUCTION

Oral cancer accounts for about 45% of cancer cases in India. Oral squamous cell carcinoma (OSCC) makes up over 90% of oral malignancies, is more common as people age, third most prevalent malignant neoplasm in women, and is the most common malignancy in men [1]. Carcinogenesis is influenced by a variety of risk factors, including excessive cigarette use, chewing betel nuts, alcohol usage, oral hygiene issues, occupational exposure to viruses, malnutrition, and hereditary factors [2,3]. Numerous clinical and scientific research have revealed that the oral microbiome, mucosal inflammation, oral mucosal trauma from teeth, chronic irritation from dentures, and prosthetic devices may have carcinogenic potential [4]. OSCC commonly involves the tongue, followed by the floor of the mouth, soft palate, gingiva, buccal mucosa, and hard palate. Histological features are divided into three subtypes-

1. Low grade/well-differentiated: resemble their native tissue, slower growing with later metastasis [Fig. 1].
2. Moderately differentiated: recognizable native cells, less differentiation [Fig. 2].
3. High grade or poorly differentiated: unable to distinguish from their native, epidermoid forms with little to no keratin production, rapidly growing, high propensity for early metastasis [Fig.3].

Although cancers may infiltrate contralateral or bilateral lymph nodes, ipsilateral cervical lymph nodes serve as the primary lymphatic drainage site for metastasis. Lungs, bones, and liver are the most typical organs where distant metastasis occurs [5]. Verrucous carcinoma clinical features show exophytic lesions appearing grey or white in color with a pebbly or cauliflower-like textured surface. Histological features include

epithelium hyperplasia with broad and bulbous rete pegs pushing margins into the underlying connective tissue but no basement membrane invasion. HPV subtypes 16 and 18 have been found in approximately 40% of patients. Oral verrucous carcinoma is a low-grade, well-differentiated variant of oral squamous cell carcinoma that can be locally aggressive [6].

Complete surgical excision is the first-line treatment of oral cavity carcinoma. The standard of care for oral squamous cell carcinoma is 0.5 cm to 1 cm wide margin excision with intraoperative and postoperative histopathologic margin assessment and neck dissection. The traditional surgical excision techniques include the cold blade scalpel or electrocautery excision [7]. Standard irradiation techniques for treating oral cavity malignancies are intensity-modulated radiation therapy and brachytherapy. Cisplatin, Cetuximab, Docetaxel, and Fluorouracil have emerged as promising cytotoxic agents for chemotherapy. Post-operative radiotherapy and chemoradiotherapy increase disease control in these patients with adverse anatomic and pathologic primary and nodal features. Depth of invasion and extranodal extension are important prognostic factors [8].

Although early-stage cancer is more frequently initially successful with standard care, the disease relapses still happen in about 20-30% of cases, especially local tumor or lymph node recurrence. Standard therapy has less success for patients with advanced oral carcinomas. Identifying prognostic factors that may affect disease outcomes may lead to improvements in adjuvant systemic therapy and better control of the disease [9]. Multidisciplinary treatment is acceptable whenever possible, and the standard of care should adhere to the National Comprehensive Cancer Network recommendations. Oral cancer is a very common neoplastic lesion, and early diagnosis and treatment can affect the disease process.

The present prospective observational study was done with the aim to evaluate the demographic and clinical profile of the patients presenting with oral malignant lesions and changing patterns in view of risk factors, common site, and histopathological type in northern India.

II.   MATERIALS AND METHODS

A prospective observational study was conducted among 87 patients presented to the Department of Otorhinolaryngology with malignant oral lesions from December 2020 to December 2022. Following the institutional ethical committee's approval, the study was done. Patients of more than 18 years with suspected malignant oral lesions were included in the study and previously treated patients with histopathology-confirmed malignant lesions were excluded from the study. A complete history was taken including name, age, presenting symptoms, and addiction habits, and documented over a pre-structured proforma. The right and left sides of the oral cavity, face, and neck were palpated concurrently to compare both sides and a thorough clinical examination of the oral cavity was performed. The status of the cervical lymph nodes was also recorded.

In radiological investigation, contrast-enhanced computed tomography was done and if advanced soft tissue infiltration was suspected, magnetic resonance imaging was done followed by a biopsy of all patients with malignant oral lesions. A biopsy followed by histopathological examination was done after hematoxylin and eosin staining of the section to confirm the diagnosis and grading. After microscopic examination, malignant lesions were subdivided into well-differentiated, moderately-differentiated, and poorly-differentiated squamous cell carcinoma and other histopathological types.

The case details were filled in the case proforma of patients. The entries were later made in a Microsoft Excel sheet and manually analyzed by descriptive statistics as frequency (no. of patients) and percentages (%). The results were organized into a database using the Statistical Package for the Social Sciences (SPSS) version 20.0 [IBM Corp., Armonk, NY, USA] software.

III.   RESULTS

The present study included 87 patients, 28 (32.18%) were in the 56-65 age group followed by 20 (22.99%) in the 46-55 age group, 19 (21.84%) in the 36-45 age group, 13 (14.94%) in the 26-35 age group, 7 (8.05%) in more than 65 years of age group, and the mean age was 50.38 years [Table 1]. There were 74 males (85.06%) and 13 females (14.94%) and male to female ratio was 5.7:1. Among them, 59 (67.82%) were from rural, 28 (32.18%) were from the urban region and tobacco-chewing was present in a maximum of 36 patients (41.38%) [Table 2]. The primary site of the lesion in 43 (49.42%) was buccal mucosa, followed by the tongue in 19 (21.84%) patients [Table 3].

Out of 87 malignant oral lesions, 84 (96.55%)were squamous cell carcinoma, followed by 3 (3.45%) with verrucous carcinoma. Well-differentiated squamous cell carcinoma was seen in 46 (52.87%), moderately differentiated squamous cell carcinoma was seen in 30 (34.48%), poorly differentiated squamous cell carcinoma was seen in

8 (9.20%) and, verrucous cell carcinoma was seen in 3 (3.45%) of the patients [Table 4].

IV. DISCUSSION

The sixth most frequent cancer worldwide, oral cancer has a variable prevalence. Early detection and adequate treatment can increase the survival of the patient. India has the highest rates of oral cancer in the entire world. According to studies conducted around the world, 3,000,000 cases of oral cancer occur annually. In India, the incidence rates per 100,000 persons are 12.8 for men and 7.5 for women, making it the most frequent cancer in males and the third most common cancer in women. Smoking and chewing tobacco, as well as alcohol use, are the main risk factors [10].

In our study, the maximum number of patients was found in the 56-65 age group. Zaib et al. found the maximum of cases (35.96%) in the 51 to 60 years of age group and Sakpal et al. found patients (30.67%) in the 51 to 60 years of age group comparable to our study [11,12]. According to the results of various studies, older age groups can be targeted for screening programs to help in early diagnosis, better prognosis, and survival of the patients after the treatment.

In our study, male preponderance was seen among malignant oral lesions accounting for 85.06% of cases. Durazzo et al. found 68.2% of patients were male, similar to our study [13]. Kamal et al. found 56.66% of the patients were male, which is relatively lower than our present study [14]. Harish Chandra Rai and Junaid Ahmed found 53% of patients were male, and Gupta et al. found 68.5% of patients were male which is comparable to our present study [15,16]. The higher number of cases of oral lesions among males is probably due to the higher use of tobacco and smoking as compared to females [15].

In our study, tobacco chewing was present in 41.38% of patients. Other studies by Suvernkar et al. and Sakpal et al.also found tobacco chewing in a maximum of patients with oral cavity lesions [11, 17]. The high frequency of oral malignancy in people of old age indicates that these individuals were exposed to the effects of many etiological variables like cigarettes, alcohol, pan, betel nut, poor mouth hygiene, dentures, etc., that cause oral tumors. Cell instability increases with age; therefore, a stimulus that goes unnoticed in a younger age group would in later age groups causes a change that could lead to malignancy[18].

In our study, the most common primary site of the lesion in 49.42% of patients was the buccal mucosa. Parikh S et al. also found that buccal mucosa was the most commonly affected site (39%), followed by the tongue (34.4%), which showed similar results as our present study [19]. Suvernkar et al. found the most common site for the involvement in oral cavity lesions was buccal mucosa (31.90%), followed by the tongue (22.38%), which is in accordance with our present study [17]. Whereas Jainkittivonget et al. found the alveolar ridge and gingiva (50%) as the most affected site in oral squamous cell carcinoma [20]. The most common site for oral squamous cell carcinoma is the tongue in developed countries and buccal mucosa in developing countries. Sites differ depending on the type of lesion that patients most frequently have and the region of the world where the study is being conducted since some environmental and behavioral factors are thought to increase the likelihood of developing oral lesions [21].

In our study, squamous cell carcinoma was most common and found in 96.55%, and verrucous carcinoma was found in 3.45% of the patients. Jainkittivong et al. found squamous cell carcinoma in 88% of patients and Kamal et al.found squamous cell carcinoma in 90% of patients, followed by verrucous carcinoma in 6.66%, showing similar and comparable results to our present study [12, 20]. In our study, well-differentiated squamous cell carcinoma was found in 52.87%. Sahaf et al. also reported well-differentiated squamous cell carcinoma as most common in their study at 68.4% [22].

The management of oral cavity squamous cell carcinoma (OSCC) generally includes surgical resection of the primary tumor and elective neck dissection. Pathological evidence of lymph node metastases has been linked to a poor prognosis; as a result, adjuvant therapy most frequently includes neck irradiation [23]. In their study, Soo KC et al. concluded surgery is a crucial treatment option for those with locally advanced squamous cell head and neck cancer, particularly for those who have the bulky but treatable disease. The simultaneous administration of radiotherapy and chemotherapy takes advantage of the resulting synergistic activity to enhance cell apoptosis [24]. Although concurrent chemoradiotherapy is a successful therapeutic plan, it has significant toxicities, especially in patients who have other comorbidities. Crombie et al. suggested that primary chemoradiotherapy with a curative goal works well for treating oral squamous cell carcinoma in a small number of individuals [25]. Surgery should be the mainstay of treatment

since it has a higher rate of survival as it provides better clearance of the disease, whether it includes postoperative radiotherapy or chemoradiotherapy. Patients with an incurable illness or those who are unable to undergo surgery should only receive primary chemoradiotherapy. Gore et al. found that patients who underwent surgery with adjuvant radiotherapy demonstrated higher survival and decreased recurrence when compared to those who received radiotherapy in concurrent chemoradiotherapy, which shows a similarity to our study [26]. When compared to pre-operative radiotherapy, postoperative radiotherapy is the more economical option for patients with resectable oral cavity cancers [27].

V. CONCLUSION

Most patients were found in the older age group with male preponderance, exposure to tobacco is the main risk factor, buccal mucosa is the primary site for involvement commonly and well-differentiated squamous cell carcinoma is the most common histopathological type in northern India.

It appears that cancer symptoms are frequently disregarded or misdiagnosed in people who do not receive periodic dental or medical examinations. Unfortunately, the majority of the patients were aware of the change in their oral cavity but still believed it was a normal state. A regular oral examination is necessary, and the old age group population should be thoroughly screened if any chronic non-healing ulcers, chronic irritation, mechanical trauma, and addiction habits are concomitant. The biological behavior of the tumor is a variable that may be crucial and independent in the association between delay in the diagnosis and disease stage [22]. Squamous cell carcinoma is the most prevalent oral malignant lesion and is an emerging community threat and emphasizing the need to take effective steps to raise public awareness of the risk factors and sensitize the community towards the effects of this potentially fatal condition.

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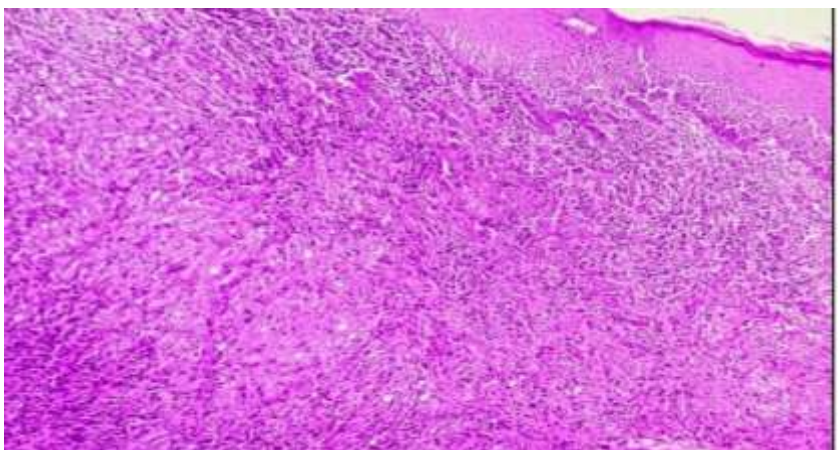
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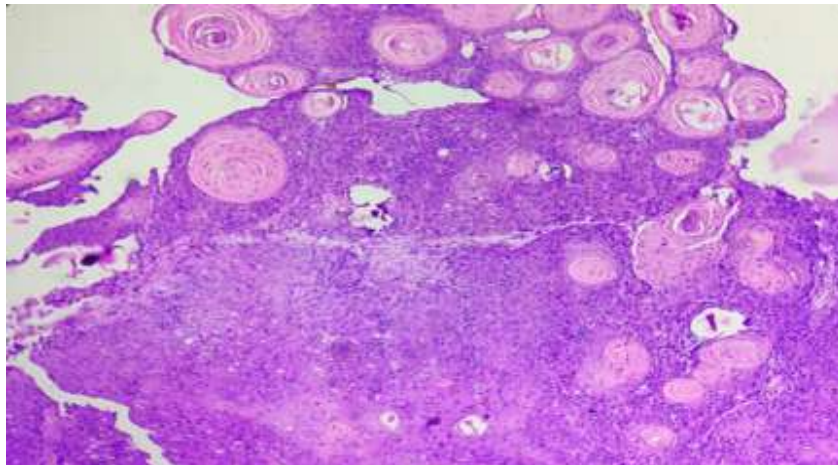
Fig. 1: Microphotograph of H & E stained section [100X] of Well-differentiated Squamous Cell Carcinoma.
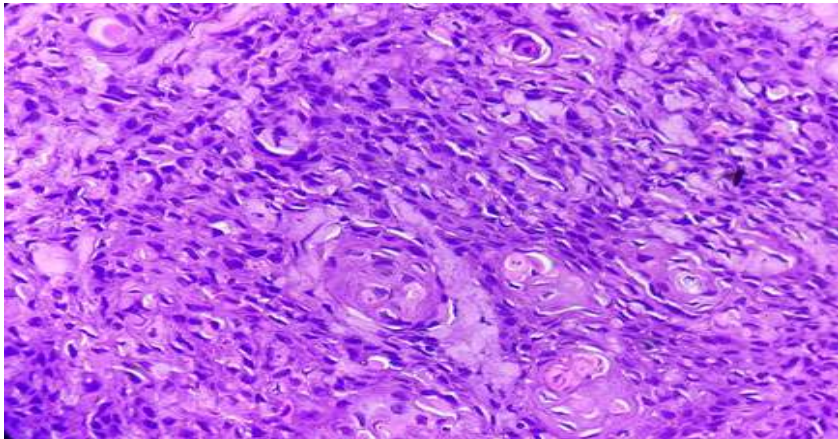
Fig. 2: Microphotograph of H & E stained section [400X] of Moderately differentiated Squamous Cell Carcinoma.

Fig. 3: Microphotograph of H & E stained section [100X] of Poorly differentiated Squamous Cell Carcinoma.

Tables

Table 1: Distribution according to the age group of presentation of oral cancer.

Age group (years)	Males	Females	Total
26-35	12	1	13 (14.94%)
36-45	15	4	19 (21.84%)
46-55	18	2	20 (22.99%)
56-65	24	4	28 (32.18%)
>65	5	2	7 (8.05%)
Total	74 (85.06%)	13 (14.94%)	87 (100%)

Table 2: Distribution of patients according to the associated risk factor.

Risk factor	No. of patients (percentage)
Tobacco chewing	36 (41.38%)
Smoking	21 (24.14%)
Beetle nut or pan	3 (3.45%)
Alcohol	2 (2.30%)
Combination of two or more (tobacco chewing, smoking, beetle nut chewing, alcohol)	25 (28.73%)
Total	87 (100%)

Table 3: Distribution of patients according to the primary site of the lesion.

Primary site of the lesion	No. of patients (percentage)
Lip and angle of mouth	4 (4.60%)
Buccal mucosa	43 (49.42%)
Tongue	19 (21.84%)
Palate	9 (10.34%)
Retromolar trigone	6 (6.90%)
Floor of mouth	1 (1.15%)
Gingiva	5 (5.75%)
Total	87 (100%)

Table 4: Distribution of patients according to histopathological type.

Histopathological type	No. of patients (percentage)
Well-differentiated squamous cell carcinoma	46 (52.87%)
Moderately differentiated squamous cell carcinoma	30 (34.48%)
Poorly differentiated squamous cell carcinoma	8 (9.20%)
Verrucous carcinoma	3 (3.45%)
Total	87 (100%)