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CLINICO-PATHOLOGICAL PROFILE OF ORAL SQUAMOUS CELL CARCINOMA: AN OBSERVATIONAL STUDY

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ABSTRACT

Oral squamous cell carcinoma (OSCC) is the most common malignant neoplasm that affects head and neck. In India, oral cancer ranks the first among male and the third among female population which is related to the use of tobacco chewing in the form of betel quid, tobacco smoking. Present study was made to analyze the perspectives of OSCCs in the population of northern India. Total 50 patents were included in the study. Result was analyzed and clinico-pathological association and histopathological grading was evaluated.

Introduction

Oral and oropharyngeal carcinomas are the sixth most common cancers worldwide. The incidence of oral squamous cell carcinomas (OSCCs) varies in different part of the world and this difference is largely attributed to the exposure to risk factors to the specific area.[1,2] In Southeast Asia, oral cancer is the second most frequent form of cancer and second most frequent cause of death from all cancer among males.[3] In India, oral cancer ranks the first among male and the third among female population which is related to the use of tobacco chewing in the form of betel quid, tobacco smoking, alcohol consumption, low socioeconomic status, poor hygiene, poor diet, viral infection, ill fitting dentures and chronic irritation from rough and fractured teeth.[20]Male to female ratio is 2:1 and average age of diagnosis is 57.1 years in males and 52.5 years in females. [4]

OSCC usually arises from some premalignant lesions like leukoplakia, erythroplakia, actinic cheilitis, lichen planus, sideropenic dysphagia (Plummer-Vinson syndrome), submucous fibrosis, dyskeratosis congenital and discoid lupus erythematosus.[5] The tumor usually presents as an non-healing ulcer or an exophytic growth. Late stage symptoms include bleeding, loosening of teeth, difficulty in wearing denture, dysphagia, odynophagia, dysarthria and development of neck mass as a sign of lymph node metastasis.[6]

Material and method

Present study was made to analyze the perspectives of OSCCs in the population of northern India. This cross-sectional study was carried out in the department of Pathology, Hind Institute of Medical Sciences, Safedabad, Barabanki, from September 2017 to August 2018. All oral biopsies and operated specimen which were clinic-histopathologically diagnosed as OSCCs were included in the study. Carcinomas of sites other than oral cavity and normal and benign conditions of oral mucosa were excluded from the study.

Patient's particulars, antecedent illness, clinical presentation, primary site and extent of lesion and evaluation of regional metastasis were evaluated.

All oral biopsies and operated specimens received in Department of Pathology were examined and shape, colour, measurement, presence /absence of epithelium, erosion and thickness of the specimen were recorded.

Biopsy specimens were whole embeded and in operated specimen, tumor is carefully identified, and its measurement was noted and sections were taken, processed and blocks were prepared. Sections of 4-5µ thickness were cut and stained with Haematoxylin & Eosin. The slides were studied under light microscopy and the data were recorded.

For each case, histopathological grading was done according to Broder's and Anneroth's grading system.

Result was noted and statistical analysis was performed in SPSS version 17.0 (Chicago, Inc., USA).

Approval from the Institutional Ethical Committee of Hind Institute of Medical Sciences, Barabanki was obtained.

Observation and result

During the one year study period, total 50 patients of OSCCs were diagnosed. Most common age of presentation was between 41-50 years. Mean age of presentation was 45.74 years. Males significantly outnumbered females with male to female ratio being 3.1:1. Forty six out of fifty patients were tobacco chewers (92%) and 25 out of 50 patients were smokers and alcoholic.

Clinical presentation differed from patient to patient. The most common presenting symptom was ulcer (36/50), followed by exophytic growth (13/50) and white patch (1/50).

Buccal mucosa was the most common site of lesion (28%) and base of tongue was the second most common site of lesion (26%). Cheek was the third most common site of lesion (14%). Other sites were lateral border of tongue, gingivo-buccal sulcus, hard palate, jaw, lower alveolus, lower lip and soft palate.

Tumor size was evaluated in total 35 patients as 35 whole specimens were received. Twenty five cases showed tumor size of >5 cm. Less than 5 cm tumor size was present in 10 cases.

According to Broder's classification, well differentiated tumor was present in 30 out of 50 patients (60%) followed by moderately differentiated in 17 out of 50 patients (34%) and poorly differentiated in 3 out of 50 patients (6%). No anaplastic tumor was identified. [Figure 1]

High keratinisation was seen among 26 patients (52%) followed by moderate in 12 patients (44%), minimal in 09 patients (18%) and no keratinization in 03 (6%) cases (n=50).

Moderately nuclear polymorphism was seen among more 27 cases (54%) followed by abundant in 12 cases (44%), little in 09 cases

(18%) and extreme in 02 (4%) cases (n=50).

0-1 mitosis per high power field was seen among 21 (42%) cases followed by 2-3 mitosis in 20 (40%) cases, 4-5 mitosis in 06 (12%) cases and >5mitosis in 03(6%) cases (n=50).

Infiltrating solid cords bands invasion was seen among 33 cases (66%) followed by cords of infiltrating cells in 12 (24%) cases, marked and widespread cellular dissociation in 04 (8%) cases and well delineated infiltrating borders in 01 (2%) case (n=50).

Moderate lymphoplasmacytic infiltration was seen among 25 (50%) cases, followed by marked in 16 (32%) cases, slight in 08 (16%) cases and none in 01 (2%) cases (n=50).

According to Anneroth's grading, grade II was among more than one third of patients (24 out of 50) followed by Grade I (15 out of 50) and Grade III (11 out of 50).

Perineural invasion was present in 44% (22 out of 50) patients and lymphovascular emboli was present in 20%(10 out of 50) patients. Lymph node assessment was done in total 25 cases and according to that, pathological staging was performed. Most common pathologic stage was stage I (32%), followed by stage II (28%), stage III (24%) and stage IVa (16%).

Discussion:

OSCC is one of the leading causes of cancer related mortality in India. It is an aggressive epithelial neoplasm and despite early detection, intervention and treatment, the overall survival rate is only slightly improved.

In present study, more than one third of patients were between 41-50 years of age (36%). The mean age of patient was 45.74 years, ranging from 25-70 years. Majority of patients were males (76%) and Male to female ratio was 3.1:1. **Singhal et al** and **Akram et al** also documented the mean age of presentation between 45-50 years and 41-50 years respectively. They also showed the male preponderance in their studies as 82.5% males and male to female ratio as 2.84:1 respectively. [7,8] The male versus female ratio in our study reflected the male dominated society, where females remain confined to their home and are neglected; hence, such females present late to the primary health centre and most of them never come to the tertiary care hospital. In this study, majority of patients were tobacco chewers (92%). 50% patients were smokers and alcoholic. **Fabio Ramoa et al** documented that 80% were present or past tobacco users and 70% were alcohol users in their study.[9] Higher exposure to carcinogenic agents in tobacco is associated with higher incidence of OSCCs in tobacco chewers.

Majority of patients in this study presented with ulcer complaint (72%) followed by exophytic growth (28%). **Tahir et al** reported that the most common clinical presentation of OSCC was as a non-healing indurated ulcer (51.4%).[10]

Buccal mucosa was the most common site of involvement (28%) in present study and base of tongue was the second most common site of involvement (26%). The most frequent location of the tumor reported in a study by **Tahir et al** was buccal mucosa (32.4%) followed by tongue (21.6%).[10] In the study by **Gul et al** (2017), OSCC was found significantly higher on the tongue.[11] In Present study, 60% (n=25) of patients tumor size was in <5cm^2. The mean tumor size was 4.61±2.68 cm^2. **Doshi et a**l documented the greatest diameter of tumors ranged from 1 to 5.5 cm with an average of 2.9 cm in their study.[12]

In our study, 60% of the tumors were well differentiated followed by moderately differentiated (34%) and poorly differentiated (6%). **Astekar et al** documented that, out of 60 OSCC cases, 14 cases were well-differentiated, 11 were moderately-differentiated and 5 were poorly-differentiated.[13]

High keratinisation was seen among 52% cases, followed by moderate (44%), minimal (18%) and no (6%) keratinisation in our study. **Razavi et al** showed 43.8% with high keratinisation, 29% with moderate, 13% with light and 3% with no keratinisation.[14] In our study, moderate nuclear polymorphism was observed in 54% of patients followed by abundant polymorphism (44%), little (18%) and extreme polymorphism (4%). **Razavi et al** showed 24% cases with moderate nuclear polymorphism, 24% with abundant polymorphism, 19% with little and 13% with extreme polymorphism.[14]

In this study we observed 0-1 mitosis among 42% cases, followed by 2-3 (40%), 4-5 (12%) and >5 (6%). **Sudarshini et al** documented the mean mitotic count in H& E as 1.61.[15]

With regard to pattern of invasion in our study, infiltrating solid cords bands invasion was seen among 66% cases followed by cords of infiltrating cells (24%), widespread cellular dissociation (8%) and well delineated infiltrating borders (2%). **Natália et al** studied 27 patients, out of which, eleven cases (40.7%) had an infiltrative invasion pattern through solid cords, bands or strands. The second more frequent invasion pattern was through small groups of cells (25.9%), followed by dissemination and decoupling in small groups and/or individual cells (18.5%) and the compression pattern with well-defined infiltrating margins (14.8%). [16]

Moderate lymphoplasmacytic infiltration was observed among half of patients (50%) followed by marked (32%), slight (16%) and none (2%). **Razavi et al** in a study showed that out of 80 cases, 30% cases had moderate lymphoplasmacytic infiltration, 22% had light, 17% had marked and 11% cases had no lymphoplasmacytic infiltration.[14]

With regard to Anneroth grading system, Anneroth's grade II was most commonly seen (48%) followed by Grade I (30%) and Grade III (22%). A study by **Doshi et al** showed that, out of the 31 cases, 11 were Grade-I, 18 were Grade-II and 02 were Grade-III. [12]

Perineural invasion was present among 44% patients and was absent in 56% patients. **Varsha et al** showed 40.5% cases with perineural invasion.[17] Lymphovascular emboli were present among 20% patients in present study. **Nomura et al** reported 57.5% lympho-vascular invasion.[18]

Pathologic staging could be done in 25 cases. 32% showed stage I, 28% stage II, 24% stage III, and 16% stage IV. **Dilana et al** showed that out of 16 patients, 4 cases were classified as stage IV, 4 were stage III, 5 were stage II and 3 were stage I.[19]

Conclusion

Oral Squamous Cell Carcinoma (OSCC) is the sixth most common cancer worldwide and it encompasses at least 90% of all oral cavity malignancies.

Increasing mortality rates due to OSCC has been observed for at least two decades and represents a real public health issue. This fact motivates the search for factors with prognostic relevance in order to get better individual management for every OSCC patients.

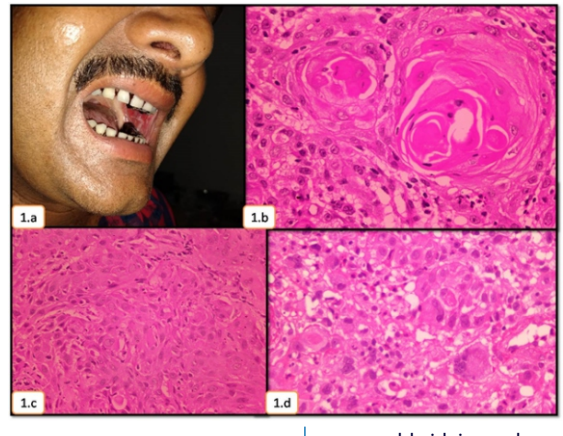

Figure 1 : Showing oral squamous cell carcinoma : Clinical image (1,a), well differentiated (1,b), moderately differentiated (1,c) and poorly differentiated (1,d).

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