HISTOPATHOLOGICAL PATTERN OF SQUAMOUS CELL CARCINOMA AT VARIOUS INTRAORAL SITES

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ABSTRACT

Objective: *The objective of this study was to determine the histopathological pattern of OSCC and to assess any significant difference exist between the histopathological grading and pattern of OSCC at different intraoral sites in patients reported to the department of dentistry, Ayub Medical College and hospital, Abbottabad.*

Materials and Methods: *This cross-sectional study was conducted in the department of dentistry, Ayub Medical College and Hospital Abbottabad. The biopsy was obtained from 50 OSCC patients of primary tumor who reported between January 2017 to June 2019. A detailed history of snuff dipping, smoking, and tobacco chewing was taken and recorded in a proforma. The detailed intraoral and extraoral examination was carried out, and informed consent was obtained from the patients. The tongue mucosa, buccal mucosa, gingival mucosa, the floor of the mouth, palate, and oropharyngeal mucosa were included in the study. The site of Incisional or excisional biopsy for OSCC was selected by clinical examination and intravital staining with toluidine blue solution.*

Results: *The mean age was 47.14 ±9.82 years. 36(72%) were male, and 14(28%) were female. 31(62%) patients had a history of snuff dipping, 9(18%) patients were having the history of tobacco smoking, 7(14%) patients had a history of tobacco chewing, snuff dipping and smoking simultaneously, 3(6%) patients were having no history of smoking or snuff dipping.14(28%) Cases were well-differentiated, 27(54%) cases were moderately differentiated, and 9(18%) cases were poorly differentiated OSCC. 19(38%) cases occur on the lateral ventral surface of the tongue followed by 13(26%) buccal mucosa, 08(16%) floor of the mouth, 05(10%) palatal mucosa, 03(06%) gingival mucosa, and 02(04%) oropharynx.*

Conclusion: *OSCC was diagnosed between the 5th and sixth decade of life, and snuff dipping appeared to be a significant cause. Common in men and the tongue is the most common site. Poorly differentiated OSCC seen in people with a habit of snuff dipping and smoking. Several sections of the malignant tissue should be taken to exclude the possibility of any other variant of OSCC.*

Keywords: *Pattern, Squamous Cell Carcinoma, Intraoral site, Abbottabad*

INTRODUCTION

Oral squamous cell carcinoma (OSCC) arises in the lip and oral cavity, representing one of the 10th most commonly diagnosed cancer globally.[1] Countries with a higher incidence of 0SCC are India, Pakistan, and Srilanka. In these countries, OSCC is the most common cancer in men and the third most common in women.[2]

Several causative factors have been implicat-

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ed in the development of OSCC. These include tobacco, alcohol consumption, nutritional deficiencies, pre-existing disease, and chronic irradiation.[3] However, recent research shows that Squamous cell carcinoma occurs when sufficient gene alteration irreversibly affects the normal regeneration of cell division and apoptosis. This results in a rapidly growing tissue that results in tumor formation and ultimately invasion and metastasis.[4]

OSCC has several different clinical presentations. At an early stage, it appears as leukoplakia and erythroplakia. The more advance lesion appears as a painless ulcer, a tumor mass, or verrucous (papillary) growth. Oral cancer incidence increases with age, and the majority of cases (greater than two-third) are diagnosed after the age of 40 years.[5] The incidence of Squamous cell carcinoma differs between the anatomical sites. Some anatomical sites are relatively resistant, whereas others are particularly susceptible.[3] Oral cancers have a relatively high mortality rate and in UK 2100 per year which is about six people every day.[6]

Nodal metastasis greatly influences the prognosis of a patient with oral cancer and significantly affect loco-regional control and survival.[7] The overall 5 years survival rate of the patient with oral cancer in approximately 50%.[3] Five year survival rates are reportedly as low as 9% for some parts of the oral cavity, largely due to late stage of diagnosis when the tumor metastasis has occurred, i.e. TNM stage IV. [8] Survival significantly increases to 66% to 85% when OSCC is detected and treated before lymph node infiltration.[9] Early detection also improves morbidity accompanying the treatment of OSCC, with late-stage diagnosis associated with poor quality of life outcome.[10]

Histopathology has long been used not only as a diagnostic tool but also for its predictive value for precursor epithelial disorders. The diagnosis of Squamous cell carcinoma is almost always made with routine microscopy with an H&E stain. Special studies that monoclonal antibodies directed against cytokeratin may, however, be needed to distinguish high grade or poorly differentiated OSCC from the other malignancies.[11] Although some different factors such as anatomic structure and lymphatic drainage pattern influence the biologic behavior of a tumor, the degree of the differentiation appears to be a most crucial factor in determining the growth rate and ultimately its tendency to metastasize.[3]

The primary aim of this study was to determine the histopathological pattern of OSCC at different intraoral sites in our community. The secondary aim was to identify whether there is any significant difference between the histopathological grading/ pattern of OSCC at different intraoral sites.

MATERIALS AND METHODS

This was a cross-sectional study conducted between January 2017 to June 2019, the biopsy from primary tumors was obtained from 50 OSCC patients who reported at the Department of Dentistry, Ayub Teaching Hospital Abbottabad. A detailed history was taken regarding the Snuff dipping, Smoking and Tobacco chewing and was recorded on a proforma. The type of tobacco consumed and the duration of tobacco use were also recorded. This was followed by the detailed intraoral and extraoral examination. Informed consent was obtained from the patients.

Anatomical locations were categorized as the tongue mucosa, buccal mucosa, the gingiva, the floor of the mouth, the palate, and the oropharyngeal mucosa. The external lip was excluded in the study because the majority of cancers occurring in this anatomical location are associated with a high level of ultraviolet light exposure.

Incisional or excisional biopsy was carried out under strict aseptic conditions. The site of biopsy for OSCC was selected by clinical examination and intravital staining with toluidine blue solution and was followed by immediate fixation in 10% of formalin. The specimens were carried out to the pathology department, where a team of the pathologist conducted the histopathological study.

The pathological staining, histological diagnoses, and grading of each tumor were performed while using the criteria established by the American joint committee on cancer (AJCC 2010), for the oral cavity cancer. 02 pathologists finally reported the microscopic slides with advanced training in oral maxillofacial pathology.

The data were extracted and analyzed using SPSS 16.0 and presented in tables and descriptive form.

RESULTS

This study included 50 cases of primary OSCC from various intraoral sites. The mean age of the patients was 47.14 ±9.82 years ranging between 27 to 70 years. Among the 50 OSCC patients, 36(72%) were male, and 14(28%) were female. Of the total, 31(62%) patients had a history of snuff dipping, and 9(18%) patients were having a history of tobacco smoking for a minimum of 10 years, with the frequency of snuff dipping or smoking ranging 5-10 times/day. 7(14%) had a history of tobacco chewing, snuff dipping, and smoking simultaneously, while 3(6%) cases were having no history of smoking or snuff dipping. (Table-I)

Histologically OSCC in 14 cases was well-differentiated, 27 were moderately differentiated, and 9 cases were poorly differentiated OSCC. The tongue, followed by the buccal mucosa was the most common area for the development of OSCC. The external lip was not included in the study because of different aetiological factors, and it is not an intraoral site. (Table II)

Out of 50 OSCC cases, the tongue was involved in 19 cases. Majority 11 (57.8%) of OSCC involving tongue were moderately differentiated. The floor of the mouth was involved in 8 cases, and similarly, most of the cases, 5 (62.5%) had moderately differentiated OSCC. Buccal mucosa was involved in 13 cases, where most of the cases (47%) were well differentiated. (Table III)

The palate was involved in 5 cases, in which four were moderately differentiated. Gingiva and Alveolar Musoca showed 2 cases with well-differentiated and one case with moderately differentiated histology, while both cases of oropharynx were poorly differentiated.

Table I: Risk factors

Risk Factor	Number	Percentage
Snuff Dipping	31	62
Smoking	9	18
Snuff dipping + smoking	7	14
None	3	6

Table II: Tumor differentiation.

Well	**14**	**28**
Moderate	27	54
Poor	09	18

Table III: Site and Histopathology.

Sites	cases	Well Differentiated	Moderately Differentiated	Poorly Differentiated
Lateral / Ventral tongue	19(38%)	5 (26.3%)	11 (57.8)	3 (15.7%)
Buccul mocosa	13(26%)	6 (46.15%)	4 (30.7%)	3 (23%)
Floor of mouth	08 (16%)	0 (0%)	7 (87.5%)	1 (12.5%)
Palatal mucosa	05 (10%)	1 (20%)	4 (80%)	0 (0%)
Gingival / Alveolar mean	03(06%)	2 (66.6%)	1 (33.3%)	0 (0%)
Oropharynx	02(04%)	0(0%)	0(0%)	2 (100%)

DISCUSSION

The burden of Head & Neck cancer remains a global public health problem despite the advance in diagnostics technology and therapeutic management.[12] The poor survival in patients with oral cancer is often due to late presentation in patients with advanced-stage disease. The early detection and identification of the patient at risk are thus essential for preventive management.[13]

Our results are compatible with previous reports showing that in our country, the leading cause of oral cancer is tobacco, and the tongue is the most common site in the intraoral site.[12] The mean age and male to female ratio for our population is consistent with previous studies.[14] However, in our country due to late diagnoses of oral cancer, most of the cases were reported in the advanced stages (stage III or IV) and hence had a worse prognosis.

Carcinoma of the tongue is especially the site of involvement in young patients and is the site of the orally congenital oral Squamous cell carcinoma reported.[11] The same was found in our study, where the tongue was involved in 19 cases (38%) — most

of the lesions of the tongue, where moderately differentiated squamous cell carcinoma.

The buccal mucosa was the second most common site for the development of primary OSSC accounting for 13 cases (26%). However, this is infrequently the site of squamous cell carcinoma in the western population, accounting for approximately 1-2% of intraoral carcinoma.[3] These lesions usually occur as ulcers along the occlusal plane. Most cases of buccal mucosa presented with verrucous carcinoma. It is usually associated with the use of smokeless tobacco. It is slow-growing and very well differentiated .[14]

Carcinoma on the Floor of the mouth represents 22 % of all intraoral cancer and appears to be in increasing frequency among females. It occurs a decade early in a female than male.[11] Gingival and alveolar carcinoma is usually painless and usually mimic benign inflammatory and reactive lesion like pyogenic granuloma.[14] The same was the finding in our study, where the common presenting sign was great tooth mobility and early loss of the tooth without advancement periodontal disease and the socket that fails to heal after tooth extraction.

Palatal carcinoma shows the difference between carcinoma of the hard and soft palate. In a hard palate, squamous cell carcinoma is relatively rare. In soft palate and contiguous facial tissue, squamous cell carcinoma is fairly common, accounting for 10-20% of intraoral lesions.[14] Our research also included 05 cases of palatal carcinoma, most of which were moderately differentiated. Both the cases of oropharyngeal carcinoma were poorly differentiated. Both of these patients were heavy smokers

Three cases of the floor of the mouth and two cases of the tongue showed atypical carcinoma in the form of spindle cells, mucous cells, and basaloid cells in addition to the neoplastic epithelial cells. These histological variants of invasive Squamous cell carcinoma, including spindle cell carcinoma, papillary carcinoma, basaloid squamous cell carcinoma, and Adeno Squamous cell carcinoma, are well documented and have prognostic significance.[15] These lesions are reported to have poor prognosis than conventional SCC at the same site.[5] On detail examination, it was observed that these patients were using snuff and cigarette simultaneously for more than ten years. So the aggressiveness of these histological variants may be attributed to the various etiological factors that are a question that reminds to be answered in the future.

CONCLUSION

OSCC was diagnosed most commonly in the fifth and sixth decades of life. Snuff dipping was the leading cause of OSSC in our population. It was much more common in men than women due to smoking and snuff dipping habit. Tongue, followed by the buccal mucosa was the most common site for oral cancer involvement. People with a habit of snuff dipping and smoking had a higher frequency of poorly differentiated tumors as compared to others, which can lead to a poor outcome. Several sections of the malignant tissue should always be performed to exclude the possibility of any other variant of OSCC.

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