



CORRELATION OF SITE, GENDER, AND HISTOPATHOLOGICAL PROFILE OF ORAL CARCINOMAS IN A SOUTH INDIAN POPULATION-A RETROSPECTIVE INSTITUTIONAL STUDY

Pathology

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ABSTRACT

Background: The purpose of this study was to analyze the frequency of oral carcinomas over a period of 5 years and to correlate the distribution of OSCC with respect to the site, gender and their association with histological differentiation.

Materials and Methods: Data was obtained from the reports of patients diagnosed with Oral carcinomas between 2014 and 2018 and the following variables were analyzed: frequency of oral carcinomas, gender and site predilection of OSCC and their association with histologic differentiation.

Statistical Analysis: The data was analysed with Statistical Package for Social Sciences (SPSS) for Windows 20.0 (SPSS, Inc. Chicago, Illinois). The observed data was analyzed by Pearson's Chi square test. Confidence intervals were set at 95% and values of $p < 0.05$ were interpreted as statistically significant.

Results: In a total of 369 cases of Oral carcinomas, OSCCs were the most common accounting for 351 cases. OSCC was most common among males with the most common site being buccal mucosa followed by lateral border of tongue. Majority of OSCC cases were highly differentiated variants followed by moderate and poorly differentiated variants. The association of gender and site with histological differentiation was found to be insignificant.

Conclusion: This study provides epidemiological information on Oral carcinomas in general and OSCCs in specific at an institutional level. The relative frequency of these OSCCs can be analyzed at a global level to understand their prevalence, incidence, biological behavior and distribution.

KEYWORDS

Oral carcinomas, Oral squamous cell carcinoma, prevalence, buccal mucosa

INTRODUCTION

Oral squamous cell carcinoma (OSCC) is the most common oral malignancy, representing upto 80–90% of all malignant neoplasms of the oral cavity.¹ Although oral cancer incidence is highly variable worldwide, it is accepted that oral cavity ranges from the 6th to the 9th most common anatomical location for cancer, depending mostly on the country, specific region and gender of the patients.¹ Although the main demographic and clinicopathological information on OSCC can be similar in most studies, it is accepted that some features can be quite variable from country to country and even from different regions in the same country.² The anatomical site and histological differentiation type are two important characteristics in OSCC; the biological behaviour, treatment and prognosis could be predicted based on both the features. The differences in anatomic zone frequency are attributed to differential behaviours in risk factor exposure such as use of cigarettes, cigars, pipes or tobacco chewing.³

The biological activity of OSCC is evaluated and descriptively categorized by Broder (1920) as highly, moderately and poorly differentiated.^{4,5}

In the past, very few studies have been reported regarding the demographics of Oral carcinomas in a South Indian population. The present study is aimed at analyzing the frequency of Oral carcinomas and also to study the distribution of OSCC in relation to gender, site and to correlate their association with histological grades.

MATERIALS AND METHODS

A retrospective study was carried out by collecting data from the archives of Department of Oral and Maxillofacial Pathology, Government Dental College and Hospital, Afzalgunj, Hyderabad from January 2014 to September 2018. Previous patients' records were retrieved from biopsy registers, which included all Oral carcinomas. Details of patient's gender, location and histological grading of OSCCs were recorded. The data recorded was subjected to statistical analysis

Statistical Analysis

The data was analysed with Statistical Package for Social Sciences (SPSS) for Windows 20.0 (SPSS, Inc. Chicago, Illinois). The observed data was analyzed by Pearson's Chi square test. Confidence intervals were set at 95% and values of $p < 0.05$ were interpreted as statistically significant.

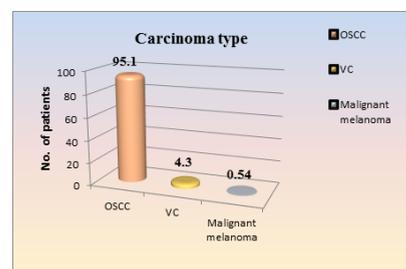
RESULTS

In our study a total of 369 cases were diagnosed as Oral carcinomas out of which 351 were OSCC, 16 were Verrucous carcinoma (VC) and 2 were malignant melanoma (MM). OSCC accounted for 95.1% of the cases and VC, MM accounted for 4.3%, and 0.54% respectively. (Table 1)(Figure 1)

Table 1:

Carcinoma type	n	%
OSCC	351	95.1
VC	16	4.3
Malignant melanoma	2	0.54
Total	369	100.0

Figure 1:



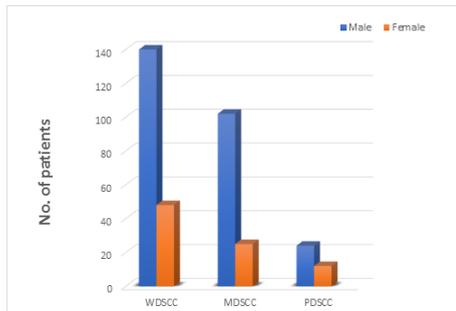
In the present study, out of 351 OSCC cases, 266 (75.78%) were males and 85 (24.22%) were females with a male to female ratio of 3.13:1

It was also observed that the most prominent histologic subtype of OSCC in males and females was well differentiated squamous cell carcinoma (WDSCC) followed by moderately differentiated squamous cell carcinoma (MDSCC) and poorly differentiated squamous cell carcinoma (PDSCC). The association at the gender and site of occurrence with histological differentiation was found to be statistically insignificant. ($P>0.05$) (Table 2) (Figure 2)

Table 2: Comparison of OSCC differentiation across males and females

Gender	Differentiation			Total	X ²	P value
	WDSCC	MDSCC	PDSCC			
Male	140	102	24	266	3.229	199
Female	48	25	12	85		
Total	188	127	36	351		

Figure 2: Comparison of OSCC differentiation across males and females



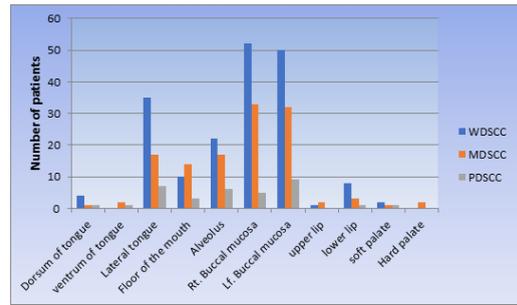
Among the OSCC cases, 188 (53.8%) were well differentiated, 127 (36.3%) were moderately differentiated, and 36 (9.9%) were poorly differentiated.

The most common location for WDSCC was buccal mucosa accounting for 55.5% of the cases followed by lateral border of the tongue and alveolus with 19% and 12% of the cases respectively. For MDSCC it was buccal mucosa followed by lateral border of the tongue and alveolus, with both sites showing the same number of cases. For PDSCC the most common site of occurrence was buccal mucosa followed by lateral border of tongue and alveolus respectively. The association between location and histological differentiation of OSCC was found to be statistically insignificant ($P<0.05$) (Table 3) (Figure 3)

Table 3: Location Vs OSCC Differentiation

Location	N	Differentiation			Total	P value
		Wdscc	Mdscc	Pdscc		
Dorsum of tongue	N	4	1	1	6	
	% within Location	66.7%	16.7%	16.7%	100.0%	
	% within Differentiation	2.2%	0.8%	2.9%	1.8%	
Ventral surface of tongue	N	0	2	1	3	
	% within Location	0.0%	66.7%	33.3%	100.0%	
	% within Differentiation	0.0%	1.6%	2.9%	0.9%	
Lateral surface of tongue	N	35	17	7	59	
	% within Location	59.3%	28.8%	11.9%	100.0%	
	% within Differentiation	19.0%	13.7%	20.6%	17.3%	
Floor of the mouth	N	10	14	3	27	
	% within Location	37.0%	51.9%	11.1%	100.0%	
	% within Differentiation	5.4%	11.3%	8.8%	7.9%	
Alveolus	N	22	17	6	45	
	% within Location	48.9%	37.8%	13.3%	100.0%	
	% within Differentiation	12.0%	13.7%	17.6%	13.2%	
Right buccal mucosa	N	52	33	5	90	0.499
	% within Location	57.8%	38.7%	5.6%	100.0%	
	% within Differentiation	28.3%	26.6%	14.7%	26.3%	
Left buccal mucosa	N	50	32	9	91	
	% within Location	54.9%	35.2%	9.9%	100.0%	
	% within Differentiation	27.2%	25.8%	26.6%	26.6%	
Upper lip	N	1	2	0	3	
	% within Location	33.3%	66.7%	0.0%	100.0%	
	% within Differentiation	0.5%	1.6%	0.0%	0.9%	
Lower lip	N	8	3	1	12	
	% within Location	66.7%	25.0%	8.3%	100.0%	
	% within Differentiation	4.3%	2.4%	2.9%	3.5%	
Soft palate	N	2	1	1	4	
	% within Location	50.0%	25.0%	25.0%	100.0%	
	% within Differentiation	1.1%	0.8%	2.9%	1.2%	
Hard palate	N	0	2	0	2	
	% within Location	0.0%	100.0%	0.0%	100.0%	
	% within Differentiation	0.0%	1.6%	0.0%	0.6%	
Total	N	188	127	36	351	
	% within Location	53.8%	36.3%	9.9%	100.0%	
	% within Differentiation	100.0%	100.0%	100.0%	100.0%	

Figure 3: Location Vs OSCC Differentiation



DISCUSSION

Several types Oral carcinomas have been reported in the literature based on the proliferating cell and the establishment of the specific appropriate histological diagnosis is essential, as distinct clinicopathological entities are managed with different treatment protocols and present variable prognosis.⁶

OSCC was diagnosed in 351 (94.1%) of the present cases and, in this specific pattern, careful evaluation and analysis of serial sections was performed, in order to confirm histopathological grading of the lesion. Verrucous carcinoma was diagnosed in 16 (4.4%) cases in the present sample. Rekha and Angadi (2010) have reported a series of 133 verrucous carcinomas, representing 16% of all SCC diagnosed. On contrary, our study showed a significant predominance of OSCC when compared to VC and this might be attributed to tobacco chewing habit in this population which is the main causative etiological factor of OSCC. Use of both inhaled and smokeless tobacco is associated with a higher incidence of mucosal verrucous carcinoma of the head and neck.⁷

Unlike OSCC, VC arose most commonly on the gingiva, followed in descending frequency by the buccal mucosa, the tongue, palate, lip, and the floor of mouth.⁸ On the contrary, in our study out of 16 cases diagnosed with VC, 14 were on buccal mucosa and only 2 were on lip. This can be attributed to the fact that tobacco chewing habit and also holding tobacco in the buccal vestibule for longer duration might be the cause for more no of cases on buccal mucosa.

Oral melanoma is rare and estimated to represent 1-2% of all oral malignancies and accounting for about 0.2-8% of all melanomas.⁹ Malignant melanoma was diagnosed in 2 cases (0.5%) in the present series and both the cases were reported in males. This is in accordance with the study given by Hashemi Pour M S.¹⁰ Sampat and Sirsats reported that 79% of patients died within 5 years.¹¹ In addition, Vairaktaris et al. showed that the 5-year survival rate of intraoral melanoma does not exceed 5-9%.¹² Thus is it important to be aware of the need for early diagnosis of melanoma and performing biopsies of any pigmented lesion.

A lot of studies have been conducted in the past suggesting a highly significant correlation between histopathologic grading of OSCC and its prognosis. Effiom, et al. (2008) have shown that 47.6% of their cases were histologically classified as PD tumors, while WD tumors represented 32.6% of their sample.¹³

Most OSCC are histologically diagnosed as MDSCC or PDSCC tumors, in contrast to the results of our study in which WDSCC was the most common histologic grade followed by MDSCC and PDSCC.¹⁴ When analyzing the present results, it was also observed that males were predominantly affected by WDSCC followed by MDSCC and PDSCC, which was the same with females although the difference was statistically insignificant.

It was also shown that histological grade can also be possibly associated with the site of the tumors, as OSCC affecting the buccal mucosa followed by lateral border of the tongue and alveolus were predominantly WDSCC, while MSSCC was seen with the same frequency on lateral border of the tongue and alveolus. These differences in grading in relation to the location was not found to be statistically significant.

CONCLUSION

OSCC age and gender profile, as well as site predilection, shows a heterogeneous pattern of distribution in different countries, in different

regions from the same country and in different ethnic groups from the same region, which can be associated with both genetic factors and cultural habits/behavior.¹⁵ Histologic grading of OSCC is also thought to significantly influence the biologic behavior and prognosis of the disease. Studies focusing on specific regions are welcome as they show the demographic and clinical profile of OSCC in restricted geographic locations, offering an enhanced comprehension of these tumors and the possibility of planning specific strategies of prevention, diagnosis and treatment

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