Original Article

Histopathological Study of Malignant Oral Tumours: A Five-Year Study

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Abstract

Introduction: Oral tumors are one of the most challenging tumors regarding their good prognosis if diagnosed early and very difficult to control in advancing stages.

Objectives: To study the prevalence, histopathological types and clinical presentation of various malignant oral tumors and their precursor lesions.

Materials and Methods: This study includes the analysis of oral tumors received in the histopathology section of Department of Pathology, Government Medical College, Miraj, Maharashtra, over a period of 5-year that is from August 2008 to June 2013. Data - such as age, sex, site of lesion, clinical presentation, histopathological type of tumor, and personal habits such as tobacco chewing, and smoking - were collected and analyzed.

Results: A total of 642 cases were analyzed during the study period. Malignant lesions were the most common oral lesions accounting to about 51.40%. The most common site was buccal mucosa 49.39%, followed by tongue 20.60%. Males were more commonly affected than females 70.9%. Out of 330 cases, 92.74% were conventional squamous cell carcinoma; other malignant lesions noted in our study were verrucous carcinoma 4.55%, spindle cell carcinoma 0.60%, papillary carcinoma 0.60%, basaloid carcinoma 1.21%, and one case of metastatic adenocarcinoma 0.30%. Tobacco chewing was the most common associated risk factor among all cases 82.89%. Mild dysplasia was the most common epithelial precursor lesion 53.34%.

Conclusion: Histopathological examination of all oral lesions is necessary for confirmation and early diagnosis in oral malignancy as it has a major influence on the prognosis in such cases.

Key words: Oral lesions, Squamous cell carcinoma, Tobacco chewing

INTRODUCTION

Oral cancer is a major health problem in certain parts of the world.[1] It is usually preceded by specific lesions and conditions called as precancerous lesions. Among these, the most common precursor lesions are leukoplakia, erythroplakia, erythroleukoplakia, oral submucous fibrosis, Lichen planus, etc.[2]

Some of the oral lesions may exhibit similar clinical features thus rendering the diagnosis more challenging. For example, the differential diagnosis between nonneoplastic proliferative disorders and benign mesenchymal tumors and between leukoplakia and squamous cell carcinoma (SCC), often poses challenging situation, requiring prior knowledge of demographic characteristics associated with the occurrence of lesion to establish a clinical diagnosis. Biopsy and histopathological examination are important complementary diagnostic tools that are strongly influenced by the clinical data.[3]

There is a wide variation in the incidence and mortality rates of oral cancer in different regions around the world. The highest rates are reported in south Asian countries such as India and Srilanka. The death rate associated with oral cancer is high as most of the times it is diagnosed in late stages and is often discovered when it has metastasized to another location most likely lymphnodes of the neck. Oral cancer is particularly dangerous because in its early stages it may not be noticed by the patient, so it prospers

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without producing any pain or symptoms. Furhermore, it has a high risk of producing second, primary tumors. This means the patient who survives a first encounter with the disease, has up to 20 times higher risk of developing second cancer. The heightened risk factor can last for 5-10 years after the first occurrence.[4]

Leading states with a high incidence of oral malignancies in India include Delhi, Bhopal, and Ahmadabad. In Maharashtra, Nagpur has the highest number of oral malignancies cases. Other cities are Aurangabad, Mumbai, Pune, and Barshi.[5] This high incidence may be related to risk factors such as tobacco chewing, smoking among people in this region. Our study has highlighted the high incidence of oral malignancy even in the western region of Maharashtra.

MATERIALS AND METHODS

This study was conducted in the Pathology Department of Government Medical College, Miraj, Maharashtra, from August 2008 to June 2013. It was a 5 years study, 1 year retrospective and 4 years prospective and is a cross-sectional study. A total of 642 oral lesions were studied. The material comprised biopsies and excision specimens.

Inclusion Criteria
Oral tumors, specimens which are adequate and representative of the lesion, resected surgical specimens such as hemiglossectomy, hemimandibulectomy, wide local excision, modified radical neck dissection (MRND), punch biopsies, wedge biopsies, etc.

Exclusion Criteria
Inadequately preserved specimens, neoplasms of nasopharynx and oropharynx, neoplasms of odontogenic origin, bone tumors of mandible and maxilla.

The formalin-fixed specimens were subjected to detailed gross examination. The lesions were diagnosed after studying the gross and microscopic features. The tumors were classified according to the recent WHO classification.

RESULTS

Table 1 shows distribution of tumours and tumourlike lesions of oral cavity in total oral biopsies.

Table 2 shows agewise distribution of malignant and epithelial precursor lesions of oral cavity.

Table 2: Age wise distribution of malignant and epithelial precursor lesions of oral cavity

Age in years	N (%)	
	Malignant tumors	Epithelial precursor lesions
1-10	00 (0)	00 (0)
11-20	00 (0)	00 (0)
21-30	07 (2.12)	02 (6.67)
31-40	49 (14.85)	03 (10)
41-50	72 (21.82)	15 (50)
51-60	106 (32.12)	05 (16.66)
61-70	51 (15.45)	03 (10)
71-80	37 (11.22)	02 (6.67)
81-90	08 (2.42)	00 (0)
Total	330 (100)	30 (100)

Table 3 shows genderwise distribution of malignant and precursor lesions of oralcavity.

Table 3: Gender wise distribution of malignant and precursor lesions of oral cavity

Gender	N (%)	
	Malignant	Epithelial precursor lesions
Male	234 (70.9)	19 (63.34)
Female	96 (29.1)	11 (36.66)
Total	330 (100.00)	30 (100.00)

Table 4 shows distribution of various clinical features of malignant and precursor lesions of oral cavity.

Table 4: Distribution of various clinical features of malignant and precursor lesions of oral cavity

Symptoms	Malignant tumors	Epithelial precursor lesions
Swelling	20	-
Ulceroproliferative growth	280	-
White patch	23	09
Mucosal irregularities	14	21
Pain	45	04
Difficulty in chewing	35	03
Excessive salivation	09	04

Table 5 shows sitewise distribution of malignant and precursor lesions.

Table 6 shows histological types of malignant and precursor lesions of oral cavity.

Table 1: Distribution of tumors and tumor like lesions of oral cavity in total oral biopsies

Total number of oral biopsies (%)	Number of tumors (%)			Tumor like lesions (%)	Inflammatory lesions (%)
	Benign	Malignant	Epithelial precursor lesions		
642 (100)	70 (10.90)	330 (51.40)	30 (4.67)	95 (14.79)	117 (18.24)

Table 5: Site wise distribution of malignant and precursor lesions

Site	N (%)	
	Malignant tumors	Epithelial precursor lesions
Buccal mucosa	163 (49.39)	14 (46.67)
Tongue	68 (20.60)	07 (23.35)
Hard palate	16 (4.84)	02 (6.66)
Soft palate	04 (1.21)	00 (00)
Gingiva	30 (9.09)	03 (10)
Floor of mouth	-	-
Upper lip	11 (3.37)	02 (6.66)
Lower lip	22 (6.66)	01 (3.33)
Trigone	16 (4.84)	01 (3.33)
Total	330 (100)	30 (100)

Table 6: Histological types of malignant and precursor lesions of oral cavity

Malignant lesions	N (%)	Epithelial precursor lesions	N (%)
SCC-conventional	306 (92.74)	Mild dysplasia	16 (53.34)
Verrucous carcinoma	15 (4.55)	Moderate dysplasia	05 (16.66)
Papillary carcinoma	02 (0.60)	Severe dysplasia	05 (16.66)
Basaloid SCC	04 (1.21)	Leukoplakia	02 (6.66)
Spindle cell SCC	02 (0.60)	Submucous fibrosis	02 (6.66)
Metastatic adenocarcinoma	01 (0.30)	-	

SCC: Squamous cell carcinoma

Table 7 shows distribution of SCC of oral cavity based on histological grade and site.

Table 7: Distribution of SCC of oral cavity based on histological grade and site

Site	Grade I	Grade II	Grade III	Total (%)
Buccal mucosa	96	44	23	163 (49.40)
Tongue	35	21	12	68 (20.60)
Palate	15	03	02	20 (6.06)
Gingiva	20	09	01	30 (9.09)
Lip	23	08	02	33 (10)
Trigone	07	09	00	16 (4.85)
Total (%)	196 (59.39)	94 (28.48)	40 (12.12)	330 (100)

SCC: Squamous cell carcinoma

DISCUSSIONS

The orofacial region including the oral cavity and related tissues can be the site of a multitude of neoplastic lesions. These lesions can be malignant, benign or tumor-like lesions.[6] Oral cancer is a major health problem in certain parts of the world. It is the 6th most common cancer in the World 1. Globally, there are around 2,70,000 new cases annually and 1,45,000 deaths, of which two-thirds occur in developing countries. The Indian subcontinent accounts for one-third of the world burden. Oral cancer is the most common form of cancer and accounts for much cancer-related deaths among men in India. The detection of small, early stage oral cancer has been shown to lead to significantly reduced mortality and morbidity.

In this study, malignant and epithelial precursor lesions comprised 51.40% and 4.7%, respectively, among all oral biopsies. The observed epithelial precursor lesions in our study were categorized as mild dysplasia, moderate dysplasia, severe dysplasia, leukoplakia, and submucous fibrosis. All cases usually presented as mucosal irregularities and white patch in the case of leukoplakia and submucous fibrosis. The most common site for these lesions was buccal mucosa followed by tongue. The most common age group for epithelial precursor lesions was 5th decade, followed by males were more commonly affected than females 63.34%, and this can be attributed to unhygienic oral habits such as chewing of tobacco and pan by males. All these findings are comparable to the findings of study done by Muhsen and Al Raheem[2] and also with the previous literatures, which recorded a prevalence ranging from 0.2% to 20.4%.[7-9] Buccal mucosa was the most common site for these lesions in study done by Waldron and Shaffer,[10] but Muhsen and Al Raheem reported tongue as the most common site. It was interesting to note that the peak age incidence for epithelial precursor lesions was 5th decade, whereas for the malignant tumors it was 6th decade.

Among the malignant lesions, the observed SCC prevalence in our study was about 98% which is comparable with studies done by Neville et al., Sapp et al.[11,12] However, the study was done by Riaz and Warriach showed much lower prevalence of 69%.[6] The most common histopathological type of malignant tumor was SCC conventional type accounting to about 92.74%, as reported by all literature.[13-16] Other histopathological types seen were verrucous carcinoma (4.55%), spindle cell carcinoma (0.60%), basaloid carcinoma (1.21%), papillary carcinoma (0.60%), and one case of metastatic papillary adenocarcinoma (0.30%). Riaz and Warriach reported 69% of SCC along with other types of malignant tumors such as salivary gland tumors and sarcomas and ameloblastoma. The majority of the SCC were noted in the 6th Decade. The youngest patient with SCC in our study was 27-year-old male and oldest patient was 91 years. However, the peak incidence of malignancy varies in different population groups. In western countries, the peak incidence occurs at 60-70 years while in Asia it appears generally earlier at about 50-60 years. These results are mostly related to the race and habits of these population groups. Our results are comparable with studies done by Krishna et al., and Khandekar et al.[17,18]

It was observed that malignant lesions were more common in males than in females 2.4:1, which was comparable with

Hussein, Lumukana and King.[19] However, a very high ratio of 5:1 was noted by Varshney *et al.*[20] This difference is again attributed to tobacco chewing and smoking habits among males.

The most common site for malignant lesions in our study was buccal mucosa 49.39%, followed by tongue 20.60%, which is comparable with study done by Haribhakti and Mehta, Wahid *et al.*[21,22] The study done by Moore and Catlin shows buccal mucosa as the most common site of oral malignancy because of keeping tobacco quid in buccal mucosa for a longer duration.[23] Other sites reported were gingiva, palate, floor of mouth, which are again related to the different chewing habits in the population sample screened.[7,24]

Ulceroproliferative growth was the most common clinical presentation (84.9%) by the patients which is in comparison with study reported by Krishna *et al.*,[18] while Varshney[20] reported difficulty in chewing as the main presenting symptom and swelling was the main symptom in studies reported by Muhsen and Al Raheem, Rasheed.[2,24] The difference in these clinical presentations may be related to the late presentation of the patients and also the histopathological type of the tumor in various studies.

Among SCC, well differentiated SCC (Grade I) contributed to about 59.39% of all SCC which has good prognosis and is comparable with the findings of Ahluwalia *et al.*,[25] the number of PDSCC was much more in study done by Khandekar *et al.*, (18.75%)[18] when compared to our study (12.12%).

Metastatic tumors to oral cavity: Metastatic tumors in the oral cavity are very rare accounting for about 1% of all malignant oral tumors. Review of literature revealed only 63 cases of gingival soft tissue metastasis.[26,27] In our study, one rare case of metastatic adenocarcinoma from gingival epithelium (GE) junction to gingiva in a 60-year-old male patient was encountered. He was a known case of GE junction adenocarcinoma on chemotherapy, who presented with a globular soft tissue gingival swelling. The clinical and radiological diagnosis was Fibroma, but only on histopathological examination, it was reported as metastatic adenocarcinoma. Other studies have also reported metastatic malignancies to the oral cavity. A case of metastatic prostatic adenocarcinoma to mandible was reported by Riaz and Warriach.[6]

Lymphnode Metastasis in MRND Specimens
In our study, out of 46 MRND specimens, the majority of them belonged to lip carcinoma (%). 38.88% of cases showed positive lymph node metastasis and in all these cases the tumor depth of invasion was >5 mm. The maximum depth of invasion noted in our study was 2 cm, which was seen in the case of buccal mucosa carcinoma. Depth of invasion is the most significant predictor for cervical nodal metastasis in early SCC of the oral cavity. Patients with a tumor depth of ≥5 mm are at increased risk of harboring node metastasis and hence should be taken up for elective node dissection. Cervical metastasis is a known indicator of poor prognosis in the oral cavity. Five cases of granulomatous lymphadenitis were also noted in our study. Three cases showed evidence of extranodal extension. Extranodal extension is a predictor of regional relapse and criteria for post-operative radiotherapy.[28]

CONCLUSIONS

Histopathological examination of all oral lesions is important for typing and to rule out malignancy. In this small study, we have demonstrated that malignant lesions are the most commonly encountered lesions and development of these tumors have a strong correlation with lifestyle habits such as tobacco chewing and smoking. The oral cavity is accessible for visual examination, and oral cancers and premalignant lesions have well clinical diagnostic features. The early detection has better curing rates and it will also reduce the cost for the treatment. People who are habitual tobacco quid chewers, smokers, and alcoholics must undergo screening regularly so that oral cancer can be identified as early as possible as it belongs to one of the preventable cancers.

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