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Evaluation of consistency rate between clinical and histopathological diagnosis of oral soft tissue lesions

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Original Article

Abstract

BACKGROUND: Some of the oral lesions including malignant tumors of mesenchymal and epithelial origin have same clinical features. Most of them are white or red patches with undermined edge. Also, in some cases, the microscopic view of histopathologic examination is not diagnostic. So, the integration of clinical and pathological information leads to the correct diagnosis. The aim of this study was the evaluation of consistency rate between clinical and histopathological diagnosis of oral malignant tumors of mesenchymal and epithelial origin.

METHODS: This cross-sectional retrospective study was performed in four centers of oral pathology of Hamadan University of Medical Sciences, Hamadan, Iran, during January to June, 2016. The data were collected using the archived files of patients. Collected data from the files included age, sex, lesion location, lesion type, and first and second clinical and histopathologic diagnosis. Finally, histopathological findings were compared with the first and second clinical diagnosis. Data were analyzed using SPSS software.

RESULTS: Ninety-one and seventy-nine of studied files were related to men and women, respectively. Most frequent malignant lesion was related to squamous cell carcinoma (SCC) (52.9%), followed by melanoma (29.4%). The consistency rate of first and second clinical and histopathologic diagnosis was 68.2% and 15.2%, respectively. Higher consistency rate was observed in melanoma, SCC, and fibrosarcoma lesions.

CONCLUSION: High inconsistency rate between clinical and histopathological diagnosis was found in some cases which may have originated from low diagnostic knowledge of clinicians or their misconception from misdiagnosis. Therefore, the improvement of knowledge and awareness of clinicians by conducting retraining courses is necessary.

KEYWORDS: Clinical Laboratory Techniques, Histopathology, Oral Soft Tissue Lesions

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Introduction

Mucosal lesions of the mouth include a wide range of benign, malignant, and pre-cancerous lesions.[1] Oral malignancies include epithelial or mesenchymal lesions.[2] Based on epidemiologic studies, the epithelial lesions could lead to most malignancies.[2] When epithelial cells gain mesenchymal phenotype, they acquire motility and metastasis potential. This process is named epithelial-mesenchymal transition (EMT).[2] Oral cancer accounts for about 3% of malignancies and is the eighth and fifteenth most common cancer in men and women, respectively in the United States and the United Kingdom.[3] Also,

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oral cancer is a common malignancy among Iranian population.[4] In a study at the Cancer Institute in Iran, 2.9% of the cases were related to oral lesions.[5] Oral lesions have multiple complications and their early diagnosis has a significant role in reducing complications, successful treatment, and good prognosis.[6-8] Clinical diagnosis principles of oral diseases include medical history and patient main complaints evaluation and physical examinations.[9,10] Physical examinations of the oral cavity are performed using a set of principles such as inspection, palpation, percussion, and auscultation. In oral lesions, histopathologic examinations of biopsy specimens confirm the final results of clinical diagnosis.[4] An important issue for many clinicians is diagnosis of lesions with similar clinical features and those without known characteristics. Most of the oral lesions are white or red patches on the gums having a undermined edge, and pain is the most frequent presentation.[11]

So, clinical evidence alone is not sufficient for the final diagnosis. Microscopic view of lesions is often diagnostic, but in some cases the histopathologic criteria are not pathognomonic and the pathologist needs clinical evidence for ultimate diagnosis.[4] Therefore, proper collaboration between clinician and pathologist is a necessity for accurate diagnosis.[4]

Clinical findings establish the primary diagnosis and the final diagnosis is given by pathologic report.[12] Sometimes, the differences in primary (clinical) and final diagnosis (histopathological) lead to re-surgery or losing surgery chance. The relationship between clinical and histopathologic diagnosis has been a long-time favorite of physicians and dentists.[13] By assessing the relationship between clinical and histopathologic findings, a solution can be found to resolve inconsistency cases. So, the aim of this study was the evaluation of consistency rate between clinical and histopathologic diagnosis of oral malignant tumors.

Materials and Methods

This cross-sectional multi-central retrospective study was performed in Department of Oral Pathology, School of Dentistry, Shahid Beheshti, Farshchian, and Besat Hospitals of Hamadan University of Medical Sciences, Hamadan, Iran, from January to June, 2016. The data were collected through archived files. Sampling was done by census method and all files (from 1996 to 2016) in the archives of oral pathology department of dentistry school and listed hospitals were investigated. Since this study was conducted on existing data, patient information was collected and maintained confidentially. Patients with clinical and microscopic diagnosis of oral soft tissue lesions, epithelial or mesenchymal, verified by maxillofacial pathologist, were included in study. Files with incomplete or inadequate information were excluded from the study. Data collected from the files included age, sex, lesion location, lesion type, and first and second clinical and histopathologic diagnosis. The lesions were divided into various types of squamous cell carcinoma (SCC), melanoma, fibrosarcoma, rhabdomyosarcoma (RMS), liposarcoma, and leiomyosarcoma (LMS). Finally, histopathological findings were compared with the first and second clinical diagnosis. The expertise of physicians who performed the first and second clinical diagnosis and took biopsy was also extracted from the files. Patient information was available only for the researcher and such information was confidentially collected by patient's identification number (ID) without name.

After data collection completion, they were analyzed via SPSS software (version 20, IBM Corporation, Armonk, NY, USA). Qualitative values were expressed as frequency and percentage. Statistical analyses were performed using chi-square test and Cohen's kappa coefficient (κ). $P < 0.050$ was considered

as a significant level.

Results

In this study, 170 patients including 91 men (53.53%) and 79 women (46.47%) with age range of 27-90 years were evaluated. Table 1 shows the frequency distribution of various lesions types that most abundant lesion (90 lesions) was related to SCC (52.9%).

Table 1. Frequency distribution of various malignant types of oral lesions

Lesion type	n (%)
SCC	90 (52.9)
Melanoma	50 (29.4)
Fibrosarcoma	11 (6.5)
RMS	9 (5.3)
LMS	6 (3.5)
Liposarcoma	4 (2.4)
Total	170 (100)

SCC: Squamous cell carcinoma; RMS: Rhabdomyosarcoma; LMS: Leiomyosarcoma

Sixty-seven lesions (39.4%) were related to dentistry school and 38 (22.4%), 36 (21.2%), and 29 (17.0%) lesions were related to Farshchian, Besat, and Shahid Beheshti Hospitals, respectively. Table 2 shows the distribution of lesions in terms of anatomical position and table 3 shows the age distribution of lesions.

Table 2. Anatomical distribution of malignant oral lesions

Anatomical position	n (%)
Lower lip	35 (20.6)
Palate	32 (18.8)
Buccal mucosa	26 (15.3)
Tongue	19 (11.2)
Upper ridge	14 (8.2)
Lower ridge	11 (6.5)
Gums	11 (6.5)
Upper lip	10 (5.9)
Tongue and palate	5 (3.0)
Lower lip and upper lips	4 (2.3)
Tongue and gums	3 (1.7)
Total	170 (100)

Table 3. Age distribution of malignant oral lesions

Age groups (year)	n (%)
27-34	9 (5.3)
35-42	10 (5.9)
43-50	12 (7.1)
51-58	28 (16.5)
59-66	34 (20.0)
67-74	48 (28.2)
75-82	25 (14.7)
83-90	4 (2.3)
Total	170 (100)

Table 4 shows that distribution of different lesions between men and women was not statistically significant (P = 0.733).

Table 4. Distribution of different lesions between men and women

Lesion type	Sex Frequency (%)		P
	Male	Female	
SCC	51	39	0.733
RMS	5	4	
Fibrosarcoma	7	4	
Liposarcoma	1	3	
LMS	3	3	
Melanoma	24	26	
Total	91	79	

SCC: Squamous cell carcinoma; RMS: Rhabdomyosarcoma; LMS: Leiomyosarcoma

The present study findings showed that oral lesions frequency generally increased with age (except for the age group of 75 to 90 years). SCC in age group of 59-74 years (48.88%), RMS and fibrosarcoma in 27-42 years age group (88.88% and 90.90%, respectively), liposarcoma and LMS in 51-58 years age group (50.00% and 33.33%, respectively) and melanoma in 67-74 years age group (48.00%) were the most frequent lesions. The results of the statistical test showed that the distribution of different lesions in the age groups was significant (P = 0.001).

Anatomically, the most lesions were in the lower lip (20.6%), palate (18.8%), and buccal mucosa (15.3%), respectively. The findings also showed that SCC lesions in the lower lip (33.33%), RMS and LMS in upper ridge (33.33% and 66.66%, respectively), fibrosarcoma and melanoma in palate (45.45%

Table 5. Consistency rate of first clinical and histopathologic diagnosis

Pathology center	Consistency rate*	κ	P
Dentistry school**	92.5	0.645	0.001
Besat hospital£	55.6	0.401	< 0.001
Shahid Beheshti hospital£	48.3	0.341	< 0.001
Farshchian hospital£	52.6	0.351	< 0.001

* Consistency rate = the number of same diagnosis/total number; ** Clinical diagnosis done by endodontist and periodontist; £ Clinical diagnosis done by oral maxillofacial surgeon

and 34.00%, respectively) and liposarcoma in the tongue (50.00%) were the most frequent lesions. The distribution of different lesions in terms of anatomical position showed a statistically significant difference (P = 0.003).

The first clinical diagnosis had 68.2% consistency with histopathology report. All cases of clinical agreement with pathology report were related to melanoma (90.0%) and SCC (78.9%). The consistency of histopathologic diagnosis with first clinical diagnosis of melanoma and SCC lesions was statistically significant (κ = 0.531, P < 0.001). Table 5 shows that highest consistency rate between the first clinical and histopathologic diagnosis was related to dentistry school.

In the second clinical diagnosis, 15.2% of cases had agreement with pathology report. All cases of clinical diagnosis agreement with pathology report were related to fibrosarcoma (70.0%) and SCC (11.8%). The consistency of histopathologic diagnosis with first clinical diagnosis of fibrosarcoma and SCC lesions was statistically significant (κ = 0.235, P < 0.001). Table 6 shows that highest consistency rate between second clinical and histopathologic diagnosis was observed in Shahid Beheshti Hospital.

Discussion

The accurate diagnosis is the key of successful treatment.[8] Accurate diagnosis depends on good consistency between clinical and histopathologic diagnosis.[14] The aim of this study was the evaluation of consistency rate between clinical and histopathologic diagnosis of oral malignant tumors.

Based on our findings, SCC, RMS, and fibrosarcoma were more common in men compared to women. On the other hand, melanoma, LMS, and liposarcoma were more common in women compared to men. Along with our study, Lopez-Graniel et al. reported higher incidence of malignant melanoma in women[15] and Hollows et al. reported a higher incidence of SCC in men.[16] In contrast to the present study, Nascimento et al. reported a higher incidence of liposarcoma in men[17] and Yan et al. reported the incidence of primary oral LMS in men.[18]

In the present study, the most common place of SCC, RMS, fibrosarcoma, liposarcoma, LMS, and melanoma was lower lip, upper ridge, palate, tongue, upper ridge, and palate, respectively.

Table 6. Consistency rate of second clinical and histopathologic diagnosis

Pathology center	Consistency rate*	κ	P
Dentistry school**	5.7	-0.129	0.081
Besat hospital£	15.4	0.176	0.010
Shahid Beheshti hospital£	28.6	0.298	< 0.001
Farshchian hospital£	23.8	0.268	< 0.001

* Consistency rate = the number of same diagnosis/total number; ** Clinical diagnosis done by endodontist and periodontist; £ Clinical diagnosis done by oral maxillofacial surgeon

According to Lopez-Graniel et al.[15] study, hard palate was the most commonly occurring place for intraoral melanoma, which is consistent with our study results.

In contrast to our study, Fowler et al. reported frequent incidence of fibrosarcoma in buccal and tongue mucus.[19] The most common place for RMS occurrence in Peters et al.[20] study was upper alveolar ridge and maxillary sinus, in Nascimento et al.[17] study was tongue, and in Yan et al.[18] study was maxilla and mandible. These studies were consistent with our study.

The highest incidence age (90 years) was related to SCC and the lowest incidence age (27 years) was related to fibrosarcoma lesions. According to Neville et al. study, fibrosarcoma is more common in young adults and children, but SCC and melanoma are seen in the elderly.[21]

In our study, the highest consistency rate of the first clinical and histopathologic diagnosis was related to melanoma and SCC, and physicians were unable to diagnose other lesions, because of difficult detection and rare nature of these lesions. The high correct diagnosis of melanoma lesions may be due to the typical appearance of this lesion, usually as a brown to black-colored macula with irregular edges.[21,22] In addition, four out of five oral melanoma cases are found on the hard palate and maxillary alveolus,[21] which can help physicians and dentists to diagnose this lesion more accurately and quickly.

The highest consistency rate between second clinical and histopathologic diagnosis was related to fibrosarcoma and SCC. These lesions are often in the form of tumors that grow slowly and sometimes reach to a significant size even before pain.[16] Such symptoms make it easier for physicians and surgeons to recognize this lesion compared to other lesions.[21] Musavi et al. showed that the agreement between the clinical and histopathologic diagnosis in all lesions other than peripheral ossifying fibroma (POF) and pemphigus was more than 70%.[12]

In Saghravanian et al. study, the overall consistency rate between clinical diagnosis and histopathology report in oral cavity lesions was 69.3%.[9] This measure in Hashemipoor et al. study was 65%[23] and in the other similar study by Deyhimi and Ferdowsi was 57%.[24] In our study, there was 21.1% inconsistency (78.9% consistency) between the first clinical diagnosis and histopathology report of SCC that the most common cause of this inconsistency was the diagnosis of verrucous carcinoma (VC) instead of SCC. In some cases, the VC lesion was transformed into SCC due to the late referral of the patient after clinical diagnosis. VC usually is observed in men over 50 years old and is a low-grade type of SCC. But in areas where women are the main consumers of chewing tobacco, the incidence of VC in older women may be higher.[4]

In this study, we performed a multi-central research. An important study limitation was the incomplete recording of some patients' information. According to our findings, more information, accuracy, education, and careful physical examination are necessary. Physicians must be stimulated to cautiously explore oral lesions to decrease inconsistency rates between clinical and histopathologic diagnosis.

Conclusion

In this study, a high rate of inconsistency was found between clinical and histopathologic diagnosis in cases of fibrosarcoma, RMS, LMS, and liposarcoma lesions. These results indicate two important points: 1) the lack of adequate clinical diagnostic information in clinicians and 2) inadequate understanding of clinicians about the importance of clinical findings. Therefore, it is necessary to raise the awareness of doctors and dentists about the consequences of misdiagnosis. Conducting courses for retraining also can be helpful in raising diagnostic knowledge of clinicians.

Conflict of Interests

Authors have no conflict of interests.

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