


Compatibility of Clinical and Histopathological Diagnosis of Oral Lesions in Iranian Patients

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Abstract

Objective: To determine compatibility between clinical diagnosis and the pathological reports of biopsies from oral lesions. **Material and Methods:** In this descriptive study, 1146 clinical files of patients referring to Tabriz Faculty of Dentistry from 2004 to 2016 were retrieved and evaluated. The kappa coefficient was calculated for each file for compatibility of clinical and pathological diagnosis. **Results:** In relation to clinical (40.2%) and pathological (39.2%) diagnosis, irritational lesions of soft tissues exhibited the highest frequency. In 72.3% of cases, the clinical and pathological diagnosis were compatible and in 27.7% of cases these diagnosis were not compatible. The highest compatibility rates were detected for irritational lesions of soft tissues (81.5%) and mucocutaneous lesions (76.9%). There was no compatibility for osseous malignant tumors, inflammatory tissues, granulation tissues, metastatic lesions and hematologic disorders. **Conclusion:** Approximately one-third of clinical and histopathological diagnosis were not compatible. Therefore, to reach a correct diagnosis, the clinical, radiographic and histopathological views should be evaluated simultaneously.

Keywords: Diagnosis, Oral; Mouth Neoplasms; Clinical Laboratory Techniques.

Introduction

Clinicians commonly encounter oral mucosal lesions in their clinical practice. A study in the United States showed that they occurred in almost 27.9% of patients aged ≥ 17 and in 10.3% of children and adolescents 2-17 years of age [1,2]. Each oral lesion has characteristics and clinical features that help clinicians diagnose them; however, similarities in clinical manifestations, lack of accurate definition of these characteristics, incompatibility of the signs and symptoms in different patients and the presence of different manifestations for a lesion leads to errors in clinical diagnosis [3,4].

In order to diagnose oral lesions, it is necessary to take into account the patients' chief complaints, medical and dental histories, clinical manifestations, and various tests, including paraclinical tests such as biopsies with microscopic evaluations and blood tests [4]. Microscopic evaluation of biopsies taken from the lesions is the most accurate technique compared to other paraclinical diagnostic techniques; however, in some cases pathologists face ambiguities during histopathological evaluation of lesions because some lesions have similar microscopic views. In such cases, clinical diagnosis will be very helpful. Therefore, close cooperation is necessary between the clinician and the pathologist to reach a definitive and correct diagnosis. Wrong diagnosis, for example mistaking an inflammatory lesion such as a radicular cyst for a tumor or an aggressive odontogenic tumor, with subsequent inappropriate treatments, will lead to irreparable damage to patients [4-6].

Previous studies have reported compatibility rates of 50-81.2% for clinical and histopathological diagnosis [3-7]. Therefore, it is necessary to evaluate the rate of inconsistency between clinical and histopathological diagnosis and the factors responsible for such discrepancy so that it would be possible to present proper solutions to such inconsistency and reach more definite diagnosis.

Since a rate of incompatibility has been reported in previous studies between clinical and histopathological diagnosis and since no similar studies have been undertaken in the north-west of Iran, the present study was designed to determine the rate of incompatibility between clinical and histopathological diagnosis of patients referring to Tabriz Faculty of Dentistry in the hope that the results would help improve diagnostic results and the outcome of treatments.

Material and Methods

Study Design

In the present descriptive study, the clinical files of all the patients with oral lesions, who had referred to Tabriz Faculty of Dentistry, from April 2004 to March 2016, were evaluated.

Data Collection

In the patients' files the following data had been recorded: demographic data, including age and gender, and location of the lesion, the biologic course of the lesion (malignant or benign), the flat

or raised surface of the lesion (in the case of superficial lesions), the surface characteristics of peripheral lesions, the intraosseous or soft tissue nature of the lesion, and finally the clinical and pathological diagnosis of the lesion. The data above were extracted and recorded in datasheets specially designed for the purpose. The files were reviewed by one oral pathologist.

The lesions were generally categorized into neoplastic, irritational, odontogenic, non-odontogenic, mucocutaneous, pigmented and developmental categories and further divided into irritational soft tissue, epithelial tumor-like, fibro-osseous, benign osseous, malignant osseous, inflammatory osseous, developmental odontogenic cyst, inflammatory odontogenic cyst, odontogenic tumor, benign soft tissue, malignant soft tissue, pigmented, mucocutaneous, epithelial premalignant, epithelial malignant, irritational salivary gland, malignant salivary gland, benign salivary gland, non-odontogenic cyst, inflammatory tissue, granulation tissue, normal variation, metastatic, hematologic and developmental groups.

The inclusion criteria consisted of an initial diagnosis based on the results of biopsy (including single and multiple biopsies), complete patient clinical and pathological file. The patient files with indefinite clinical or pathological diagnosis were excluded from the study. Finally, compatibility of clinical and pathological diagnosis was evaluated. Samples with a similar diagnosis with both techniques were recorded as compatibility of clinical and pathological diagnosis.

Data Analysis

Data were analyzed with IBM SPSS Statistics for Windows Software, version 17 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to calculate the absolute and relative frequencies of different lesions. Then kappa coefficient was calculated to determine compatibility of clinical and pathological diagnosis.

Ethical Aspects

The protocol of the study was approved by the Ethics Committee of Tabriz University of Medical Sciences.

Results

A total of 1146 clinical files were evaluated. The majority of the lesions (71.9%) were soft tissue and soft tissue irritational lesions (39.2%). The minimum frequency was related to metastatic lesions (0.1%). There was no report of malignant osseous tumors (Table 1).

Table 1. Distribution of lesions according to location and diagnosis.

Variables	N	%
Location of the Lesion		
Intraosseous	320	27.9
Soft Tissue	824	71.9
Unspecified	2	0.2

Diagnosis	Clinical		Pathological	
	N	%	N	%
Soft Tissue (Irritational)	461	40.2	449	39.2
Epithelial Tumor-Like	33	2.9	11	1.0
Fibro-Osseous Lesions	15	1.3	22	1.9
Benign Osseous Tumors	7	0.6	5	0.4
Malignant Osseous Tumors	2	0.2	0	0.0
Inflammatory Osseous	3	0.3	1	0.1
Developmental Odontogenic Cysts	95	8.3	72	6.3
Inflammatory Odontogenic Cysts	136	11.9	155	13.5
Odontogenic Tumors	43	3.8	33	2.9
Benign Soft Tissue Tumors	22	1.9	16	1.4
Malignant Soft Tissue Tumors	2	0.2	4	0.3
Pigmented	29	2.5	33	2.9
Mucocutaneous	154	13.4	146	12.7
Premalignant Epithelial Lesions	34	3.0	29	2.5
Malignant Epithelial Lesions	30	2.6	37	3.2
Irritational Salivary Gland Lesions	28	2.4	21	1.8
Malignant Salivary Gland Tumors	5	0.4	6	0.5
Benign Salivary Gland Tumors	8	0.7	10	0.9
Non-Odontogenic Cysts	13	1.1	19	1.7
Inflammatory Tissue	7	0.6	18	1.6
Granulation Tissue	3	0.3	5	0.4
Normal Variation	11	1.0	49	4.3
Metastatic Lesions	0	0.0	1	0.1
Hematologic Disorders	2	0.2	2	0.2

In 72.3% of cases, the clinical and pathological diagnosis were compatible. The compatibility of clinical and pathological diagnosis was evaluated again by excluding patients with irritational soft tissue lesions. The rate of compatibility in such a situation was 56.9% and the rate of incompatibility was 43.1%. Table 2 presents the rate of compatibility between clinical and pathological diagnosis separately for each diagnosis. The highest rate of compatibility was related to irritational soft tissue lesions (81.5%), followed by mucocutaneous lesions (76.9%). The minimum rate of compatibility was related to malignant osseous lesions, granulation tissue, soft tissue lesions, metastatic lesions and hematologic lesions (0%, i.e. no compatibility).

Table 2. The compatibility rate of clinical and pathological diagnosis.

Type of Lesion	% Compatibility	% Incompatibility
Soft Tissue (Irritational)	81.5	18.5
Mucocutaneous	76.9	23.1
Salivary Gland Irritational Lesions	72.4	27.6
Inflammatory Odontogenic Cysts	62.6	37.4
Pigmented Lesions	59.0	41.0
Epithelial Malignancies	51.1	48.9
Premalignant Epithelial Lesions	39.1	60.9
Developmental Odontogenic Cysts	36.9	63.1
Inflammatory Osseous Lesions	33.3	66.7
Malignant Salivary Gland Tumors	33.3	66.7
Non-Odontogenic Cysts	33.3	66.7
Tumor-Like Epithelial Lesions	29.4	70.6

Benign Salivary Gland Tumors	28.6	71.4
Benign Osseous Tumors	20.0	80.0
Malignant Soft Tissue Tumors	20.0	80.0
Benign Soft Tissue Tumors	14.7	85.3
Normal Variations	9.1	90.9
Fibro-Osseous Lesions	8.8	91.2
Odontogenic Tumors	8.7	91.3
Malignant Osseous Tumors	0.0	100.0
Inflammatory Tissue	0.0	100.0
Granulation Tissue	0.0	100.0
Metastatic Lesions	0.0	100.0
Hematologic Disorders	0.0	100.0

Discussion

In terms of clinical diagnosis, irritational soft tissue lesions exhibited the highest frequency. There was no clinical diagnosis of metastatic lesions. In relation to pathological diagnosis, irritational soft tissue lesions exhibited the highest frequency and metastatic lesions exhibited the lowest frequency (1 case, 0.1%). There was no pathological diagnosis of malignant osseous tumors. The agreement between clinical and pathological examination was high. This is consistent with previous studies, which have reported consistency rates of 50.0-81.2% [3-7].

The highest compatibility separately for each lesion was related to irritational soft tissue lesions, followed by mucocutaneous lesions that are usually prominent and can be felt; this might be attributed to their appearance and location. The lowest compatibility was related to malignant osseous tumors, inflammatory tissues, granulation tissues, metastatic lesions and hematologic lesions.

Some authors evaluated the compatibility of clinical and pathological diagnosis of 2745 oral hard tissue lesions and reported that in 57% of cases the pathological diagnosis was compatible with the first clinical diagnosis, and in 5.7% of cases it was compatible with the second clinical diagnosis. The developmental cysts exhibited the highest rate of compatibility and hematological disorders had the lowest rate of diagnostic compatibility [8].

The results of a previous study showed that in 242 cases (88.9%) the results of biopsy and the final results of pathological resection were compatible with clinical diagnosis. In histological evaluation, 60% of incompatibility was attributed to errors during sampling, 23.3% to pathological reasons and 13.3% to the inadequacy of the biopsy specimen [9].

In a study developed in the United States, 976 patients referring to the Department of Pathology (Virginia Faculty of Dentistry) were evaluated and the presumptive clinical diagnosis and the final histopathological diagnosis for each subject were recorded. The results showed that 43% of these diagnosis were wrong. The highest rate of wrong diagnosis was related to hyperkeratosis (16%), followed by focal inflammatory fibrotic hyperplasia (10%), fibroma (8%), periapical granuloma (7%) and radicular cyst (6%). The rate of wrong diagnosis of cancerous lesions was 5.6%. The

authors conclude that due to the high proportion of wrong clinical diagnosis, all the lesions that are removed should be evaluated histopathologically, too [3].

In another study on 206 subjects in Mashhad, Iran, the clinical diagnosis were compatible with histopathological diagnosis in 77.1% of cases. The rates of correct clinical diagnosis in malignant and benign lesions were 75% and 72.7%, respectively. Central lesions exhibited a higher rate of compatibility compared to peripheral lesions (81.1%). Of all the central lesions, the highest compatibility rate was related to radicular cyst (92%), and in periapical lesions, the highest compatibility rates were related to smooth lesions (68.3%) and gingival lesions (68.5%) [10].

The compatibility rates in studies developed in Poland [11] and Iran [12,13] were 89%, 81.2% and 81%, respectively. As discussed above, several studies on the compatibility of clinical and pathological diagnosis have yielded different compatibility rates. However, a common conclusion can be drawn from the results of these studies. The overall rate of incompatibility between clinical and histopathological diagnosis is 20-50%. In this context, wrong diagnosis might lead to irreparable injuries to patients. For example, a wrong diagnosis of an invasive odontogenic tumor or cyst for an inflammatory lesion such as a radicular cyst, leading to inappropriate and aggressive treatments, will inflict complicated surgeries, severe morbidity and loss of a part of a jaw or the whole jaw of the patient. Conversely, inadequate treatment of malignant lesions with clinical views resembling benign lesions might lead to severe consequences, which might be life threatening for the patient.

Since correct clinical or pathological diagnosis of lesions has a close relationship with knowledge and the quality of education of physicians and dentists, it is necessary to completely revise the educational programs of students and promote the quality and quantity of continuous education programs. Also, it is necessary for surgeons to take patients' complete histories and transfer them to the pathologist, apart from achieving a correct attitude toward the treatment of patients and also observe correct rules during taking biopsies, in order to minimize diagnostic errors. Additionally, by considering a minimum of 20% of incompatibility of clinical and histopathological diagnosis reported by previous studies, it is suggested that all the removed or biopsied lesions be evaluated by a pathologist for their real nature and clinicians not be satisfied with clinical diagnosis only. Furthermore, it is suggested that before determination of the real nature of lesions, the biopsy specimen be evaluated by another pathologist to make sure of the nature of the lesion, especially before undertaking aggressive treatments.

Conclusion

A high percentage of cases did not show diagnostic compatibility. The lowest compatibility was related to malignant osseous lesions, granulation tissues, inflammatory tissues, metastatic lesions and hematologic disorders. Therefore, to reach a correct diagnosis, it is necessary to evaluate clinical, radiographic and histopathological views of the lesion. In particular, in lesions with unspecific clinical views, correct diagnosis is difficult only based on clinical data and it will be useful to simultaneously consider the clinical and microscopic views for correct diagnosis of lesions.

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