

## Compatibility Rate of Clinical and Histopathologic Diagnosis of Oral Lesions in Zahedan Dental School during 1999-2015

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### Abstract

**Introduction:** Different oral lesions have clinical characteristics which in some cases are similar. Therefore, in these cases histopathological examination for correct diagnosis is necessary. The aim of this study was to evaluate the compatibility rate of clinical and histopathological diagnosis of oral lesions in Zahedan School of dentistry. **Methods:** In this retrospective study, determination of the compatibility of clinical and histopathological diagnosis was done using 631 available records in department of pathology, Zahedan School of dentistry, during 1999- 2015. Type of the lesions (neoplastic and non-neoplastic), and demographic data including age, gender, location of lesions (intraosseous or soft tissue), and clinician's specialty was extracted from patients records and data were analyzed using SPSS (V.21) software and Chi-Square test. **Results:** Total compatibility rate between clinical and histopathological diagnosis was 70.1%. The most accurate clinical diagnosis was related to lichenoid lesions (100%) and leukoplakia (100%) and verrucous carcinoma had the least diagnostic compatibility (20%). There was no significant relationship between compatibility of histopathological and clinical diagnosis with age range, gender, location, and clinician's specialty. Also non-neoplastic lesions with compatible histopathological and clinical diagnoses were three times more than neoplastic lesions. (P=0.03). **Conclusion:** Although there was a great compatibility between clinical and histopathological diagnosis, many records had no clinical diagnosis and the inconsistency was also significant. Therefore, more attention to clinical signs and effective cooperation between the clinician and

pathologist for correct and more accurate diagnosis and treatment is recommended.

**Key words:** Clinical Diagnosis, Histopathologic Diagnosis, Oral Manifestations

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### Introduction

A correct diagnosis is the first and most important step in treating any disease (1-3). Different oral lesions have distinct clinical features leading to their more rapid and accurate diagnosis(4); however, in some cases, the lesion cannot be definitively diagnosed based on the information obtained from patients and clinical findings due to variation among and similarity between clinical characteristics(5-7). To minimize misdiagnoses and achieve more accurate ones, which require knowledge and experience, all experts involved in the diagnosis of these lesions pose differential diagnosis, based on priorities. Therefore, differential diagnosis is employed for lesions with similar clinical features, their final diagnosis must be based on pathology results, and no treatment should be performed without histopathological assessments (8). Thus, clinical examination is an effective and important step for pathology results confirmation. In other words, clinical diagnosis alone cannot detect an intraoral lesion and matching of diagnostic features, and sometimes it is even necessary to perform paraclinical tests, take the patient's medical/dental history, ask about patient's

chief complaint, and carry out physical examination of the oral cavity in order to make the final diagnosis(2, 7, 9). Although the majority of lesions are detected and treated based on pathological diagnosis, and microscopic features are viewed as the gold standard in oral pathological diagnosis for confirming clinical diagnosis(10), in some cases the pathologic diagnosis cannot be used as the basis of treatment without considering the clinical diagnosis. Moreover, histopathological findings are sometimes vague and conform to different lesions. Therefore, diagnostic limitations and disagreements among oral pathologists concerning microscopic diagnosis of lesions emphasize the necessity of cooperation of clinicians and pathologists (1,2,4,5).

Definite and early diagnosis of lesions is an important step in correct treatment, reduction of pain and other complications, and prevention of disease progression(11). The physician's initial clinical diagnosis must be accurate and no malignant or premalignant lesion should be missed. Therefore, it is necessary to evaluate the compatibility of histopathological and clinical diagnoses of oral lesions (10).

To identify the existing shortcomings, various studies investigated the compatibility of clinical and pathologic diagnoses. The degrees of the reported compatibility were 57 and 81% in the studies conducted by Deihimi and Ferdowsi and Jaafari-Ashkavandi et al., respectively(5, 9). Fattahi et al. reported the highest compatibility rate for lichen planus (100%) and inflammatory fibrous hyperplasia (94.3%) lesions and the lowest for pyogenic granuloma (78.3%) lesions(6), while Jaafari-Ashkavandi et al. found the highest compatibility for mucoceles (96.6%) and reactive soft tissue lesions (89.7%) and the lowest number of correct diagnoses for benign non-odontogenic tumors (50%)(5).

Given the discrepancy in the consistency rates between clinical and histopathological features reported in numerous studies carried out in various places, the present study aimed at investigating the compatibility rate between clinical and histopathological features of oral lesions in the pathology archive of the Zahedan School of Dentistry.

## Materials and Methods

In this cross-sectional retrospective study, all archival records related to patients whose oral biopsy specimens were sent to the Department of Oral Pathology in the Zahedan School of Dentistry from April 1999 to September 2015 were examined. Patient-related information, including age, gender, sites, (Table 3). Sixty seven point five percent of the lesions were in soft tissues and the rest in the bones,

intraosseous or soft tissue lesions, clinician's specialty, and clinical diagnosis based on the first, second, and third priorities and histopathological diagnosis were extracted from the patients' files and recorded in an information form developed for this purpose. Patients with incomplete files were excluded from the study. The lesions were divided into the two groups of neoplastic and non-neoplastic lesions.

All information obtained from patients' records was coded and analyzed by SPSS version 21(Chicago, IL, USA) in the form of descriptive statistical indices and through employing the chi-square test.

## Results

In this study, 631 files totally were investigated of which 268 (42.5%) included definitive histopathological diagnoses in addition to clinical diagnoses and 363 (57.5%) had no clinical diagnosis that excluded from our study. The overall mean age of the 268 patients was  $35.5 \pm 19.3$  years (5-82 years), 135 were male with the mean age  $35.4 \pm 21.3$  years and 133 women with the mean age of  $35.7 \pm 17.2$  years. One hundred and ninety nine of the lesions were pyogenic granuloma (PG), squamous cell carcinoma (SCC), radicular cyst, peripheral giant cell granuloma, odontogenic keratocyst (OKC), irritation fibroma, mucocele, dentigerous cyst, peripheral ossifying fibroma, lichenoid lesions, verrucous carcinoma, leukoplakia and central giant cell granuloma in the order of their prevalence. Based on type of lesions, PG and SCC had the highest prevalence among non-neoplastic and neoplastic lesions, respectively.

Histopathological and clinical diagnoses were compatible in 188 files (70.1%) (87.2% of the first, 10.6% of the second, and 2.1% of the third clinical diagnoses were compatible with the related histopathological diagnoses). There was compatibility in all cases of lichenoid and leukoplakia lesions between the clinical diagnoses and pathology reports, after that the highest compatibility rate was observed in OKC (94.5%), dentigerous cyst (90.9%) and SCC (90.3%) and the lowest in verrucous carcinoma with 20% (Table 1).

Most subjects with compatible clinical and histopathological diagnoses were in their second and third decades of life; however, there was no statistically significant relationship between compatibility of clinical and histopathological diagnoses and the patients' age (Chi-square Test,  $P=0.54$ ) (Table2).

There was no significant relationship between compatibility or incompatibility of the diagnoses and gender of the subjects (Chi-Square Test,  $P=0.21$ )

but no statistically significant relationship existed between the compatibility of clinical and

histopathological diagnoses and the location of lesions (Chi-Square Test, P=0.16) (Table3). The lesions were located in mandibular bone (18.6%), mandibular mucosa (17.9%), buccal mucosa (17.1%), maxillary mucosa (16.8%), maxillary bone (12.5%), labial mucosa (7.1%), palate (3.2%), floor of the mouth (3.2%), tongue (1.4%) and other areas (2.1%). Highest compatibility rate between histopathological and clinical diagnoses was observed in tongue and lowest of it observed in floor of the mouth (Table 4). Seventy three point nine percent of the lesions were non-neoplastic, and in 73.7% of them, there was compatibility between histopathological and clinical diagnoses. Thus, there was a statistically significant relationship between compatibility rate of the

histopathological and clinical diagnoses and the type of lesions (neoplastic or non-neoplastic) (Chi-Square Test, P=0.03): lesions with compatible histopathological and clinical diagnoses were mostly non-neoplastic (three folds) (Table 3). Seventy two point four percent, 13.4%, 6.7%, and 7.5% of the specimens were sent for histopathological examinations by oral and maxillofacial surgeons, oral medicine specialists, periodontics, and by others such as general dentists, endodontics... respectively. There was no relationship between compatibility rate of clinical and histopathological diagnoses and the type of specialists treating the patients (Chi-square Test, P=0.56) (Table3).

**Table 1:** Compatibility rate of clinical and histopathologic diagnosis in different oral lesions

Oral lesions	Compatibility of clinical and histopathologic diagnosis		Number
	Yes (%)	No (%)	
Leukoplakia	5 (100)	0 (0)	5
Lichenoid lesions	7 (100)	0 (0)	7
Odontogenic keratocyst	17 (94.5)	1 (5.5)	18
Dentigerous cyst	10 (90.9)	1 (9.1)	11
Squamous cell carcinoma	28 (90.3)	3 (9.7)	31
Radicular cyst	22 (88)	3 (12)	25
Pyogenic granuloma	29 (80.5)	7 (19.5)	36
Mucocele	9 (75)	3 (25)	12
Irritation fibroma	12 (66.6)	6 (33.4)	18
Central giant cell granuloma	2 (66.6)	1 (33.4)	3
Peripheral giant cell granuloma	13 (65)	7 (35)	20
Peripheral ossifying fibroma	3 (37.5)	5 (62.5)	8
Verrucous carcinoma	1 (20)	4 (80)	5
Other lesions	30 (43.5)	39 (56.5)	69
Total	188 (70.1)	80 (29.9)	268

**Table 2:** Compatibility rate of clinical and histopathologic diagnosis based on age ranges

Age ranges	Compatibility of clinical and histopathologic diagnosis	
	Yes (%)	No (%)
0-9	11 (73.3)	4 (26.7)
10-19	35 (72.9)	13 (27.1)
20-29	41 (70.7)	17 (29.3)
30-39	24 (57.1)	18 (42.9)
40-49	25 (78.1)	7 (21.9)
50-59	21 (77.8)	6 (22.2)
60-69	22 (64.7)	12 (35.3)
Over the 70	9 (75)	3 (25)

**Table3:** Compatibility rate of clinical and histopathologic diagnosis based on gender, location, type of lesions, and Clinician Specialty

		Compatibility of clinical and histopathologic diagnosis	
		Yes (%)	No (%)
Gender	Male	90 (66.7)	45 (33.3)
	Female	98 (73.7)	35 (26.3)
Location	Bone	66 (75.9)	21 (24.1)
	Soft tissue	122 (67.4)	59 (32.6)
Type of lesion	Neoplastic	42 (60)	28 (40)
	Non-neoplastic	146 (73.7)	52 (26.3)
Clinician Specialty	Oral surgeon	140 (72.2)	54 (27.8)
	Oral Medicine	25 (69.4)	11 (30.6)
	Periodontics	11 (61.1)	7 (38.9)
	Other	12 (60)	8 (40)

Table 4: Compatibility rate of clinical and histopathologic diagnosis based on different sites of the mouth

Different sites of the mouth	Compatibility of clinical and histopathologic diagnosis	
	Yes (%)	No (%)
Mandibular bone	39 (75)	13 (25)
Mandibular mucosa	35 (70)	15 (30)
Buccal mucosa	28(66.7)	14 (33.3)
Maxillary mucosa	33 (70.2)	14 (29.8)
Maxillary bone	27 (77.1)	8 (22.9)
Labial mucosa	10 (66.7)	5 (33.3)
Palate	5 (55.6)	4 (44.4)
Floor of the mouth	4 (50)	4 (50)
Tongue	4 (100)	0(0)
Other areas	3 (50)	3 (50)

### Discussion

Microscopic evaluation of lesions is required for a proper diagnosis because many lesions have similar clinical features making diagnosis difficult for the physician. This reveals the importance of accuracy of diagnostic and clinical information in reaching a definitive diagnosis and planning a correct treatment(1). In the present study, of the 631 available files, 363 (57.5%) had no clinical diagnosis indicating the inattention of treating physicians to the importance of clinical diagnosis. Also, the overall compatibility rate in the 268 files was 70.1%, which was similar to Macan et al. in Zagreb and was higher than the rate found in the studies conducted by Seifi et al. (66.6%) and Hashemipour et al. (64.9%)(7, 12, 13). In a study by Saghravani et al. who investigated clinical and histopathological diagnoses of 450 salivary gland lesions, 1253 odontogenic cysts and tumors in

Mashhad since 30 years ago, the overall compatibility rate of the diagnoses was 60.5%(14). The compatibility rate in our study was lower than that reported by Czerninski et al. (78%), Fattahi et al. (80.7%), Jaafari-Ashkavandi et al. (81%), and Hoseinpour Jajarm and Mohtasham (81.2%) in 136, 311, 470, and 170 cases, respectively(3, 5, 6, 15). These differences could be due to various reasons such as the skills of the surgeon and the pathologist, the accuracy of biopsy, conditions under which the specimens were transferred to the laboratory, and quality of cooperation between the surgeons and the pathologists(6). The results of this study showed that the highest compatibility rate was observed in the second and third decades of life, the reason could be attributed to the large number of patients in this age group. However, there was no statistically significant relationship between the compatibility between clinical and histopathological

diagnoses and the age by decade. In the study by Foroughi et al., the highest compatibility rate in 662 specimens was seen in the third decade of life, which was almost consistent with the findings in the present study(2). However, Jaafari-Ashkavandi et al. and Hashemipour et al. reported the highest rate of correct diagnosis in the eighth decade of life(5, 7). In the studies of Fattahi et al. and Deihimi and Ferdowsi, the highest compatibility rate was observed in the seventh decade of life (6, 9). The reason for the greater compatibility rate between clinical and pathological diagnoses in this high age group is the loss of teeth with aging, and hence the reduction in the number of odontogenic lesions and in the irritation associated with them. Moreover, there is a slight increase in specific lesions such as denture-related lesions and other prevalent lesions, which makes correct diagnosis of lesions easier(5, 9).

Similar to the study by Deihimi and Ferdowsi and Foroughi et al., no difference was observed in the present study between the compatibility of the diagnoses and gender(2, 9), but the number of male patients was higher than the female patients. Although the prevalence of oral lesions was higher in women in some studies(13, 16), it is still not clear whether women have more oral lesions, or they pay more attention to their health and visit health centers more often(16).

In this study, the compatibility rate in diagnoses of intraosseous lesions (75.9%) was higher than that of soft tissue lesions (67.4%), but the difference was not statistically significant. This is consistent with the study by Seifi et al. in 232 cases, and shows that the location of lesion by itself is not a determinant(13), and even intraosseous lesion which their detection requires expertise in interpreting radiographic features, is as detectable as soft tissue and peripheral lesion(1). However, contrary to our study, peripheral lesions were diagnosed correctly more often compared to central lesions in the studies by Deihimi and Ferdowsi, Foroughi et al., and Hashemipour et al(2, 7, 9).

Foroughi et al. and Hashemipour et al. reported most compatibility rate of clinical and histopathological diagnoses in gingiva while Jaafari-Ashkavandi et al. and Deihimi and Ferdowsi reported it in vestibular mucosa and lip, respectively(2, 5, 7, 9). In current study, highest compatibility rate between histopathological and clinical diagnoses was observed in tongue and lowest compatibility observed in floor of the mouth. Similarly, Hashemipour et al. in 666 specimens revealed least compatibility rate in floor of the mouth whereas Jaafari-Ashkavandi et al. and Deihimi and Ferdowsi reported it in the palate(5, 7, 9).

Given that most specimens were sent for histopathological examination by oral and

maxillofacial surgeons, the highest compatibility rate of diagnoses was also obtained by oral and maxillofacial surgeons. However, there was no relationship between compatibility of clinical and histopathological diagnoses and clinician's specialty, while in the study by Foroughi et al. the highest compatibility rate between clinical and pathological diagnoses was achieved by oral disease specialists (98%)(2). There was not much difference in some studies between the two groups of specialists and general dentists in terms of the compatibility rate between clinical and histopathological diagnoses(16), while the number of referrals by general dentists was very small in the present study. This is probably due to the inadequate knowledge about oral lesions and their unwillingness to perform surgery(1). In this study, the highest degree of diagnostic compatibility was related to non-neoplastic lesions (73.7%), which is in line with the results Seifi et al. found in their research(13).

In our study, lichenoid lesions that included lichen planus and lichenoid reaction had the highest degree of compatibility (100%), which could be because of the typical clinical feature and, especially, due to the presence of Wickham's striae of lichen planus. In the studies by Fattahi et al. and Hoseinpour Jajarm and Mohtasham the highest compatibility rate were also seen in lichen planus(3, 6), while mucocele had the highest compatibility in the study by Jaafari-Ashkavandi et al. and Seifi et al(5, 13). Clinical and histopathological diagnoses of pemphigoid and white sponge nevus were completely compatible in the study by ZareMahmoodabadi et al. who investigated the compatibility rate in 334 mucocutaneous lesions(11).

Sometimes dramatic discrepancies exist in various studies between the compatibility rate of lichen planus and lichenoid reaction as in the study conducted by Hoseinpour Jajarm and Mohtasham in which they were 93.1% and 50%, respectively(3). There was more difference in the study by ZareMahmoodabadi; *i.e.*, the degrees of compatibility were 90.9% for lichen planus and 15% for lichenoid reaction (11).

Results of this study showed that verrucous carcinoma with 20% had the lowest compatibility rate between clinical and histopathological diagnoses, which is consistent with result of the study by Sarabadani et al. in 73 cases(17). Furthermore, verrucous carcinoma had incorrect clinical diagnoses totally in the study by Hoseinpour Jajarm and Mohtasham(3). However, in the study carried out by Tatli et al., Ghasemi Moridani et al. and Seifi et al. the lowest compatibility rate were those of odontogenic cysts, infectious lesions, and lymphoproliferative lesions, respectively(1, 10, 13).

Pyogenic granuloma had the highest frequency among the lesions in this study, which is consistent

with the results of the study by Seifi et al. and Musavi et al(4, 13). Among the non-neoplastic lesions, the rate of correct diagnosis of pyogenic granuloma was 80.55% in this study, which was higher than that found by Seifi et al.(66.6%) and lower than that observed by Hashemipour et al (90.5%)(7, 13).

In the neoplastic lesions group, squamous cell carcinoma had the maximum compatibility rate of 90.3%. In contrast, in the study by Sarabadani et al. squamous cell carcinoma was among lesions with the lowest compatibility rate(17). Moreover, in the study by Seifi et al. also the compatibility rate of this lesion was only 36.3%, the reason for which was the different clinical appearance of the tumor and the low experience in dentists who observe fewer cases of this cancer(13).

### Conclsion

Although a high percentage of compatibility was observed between clinical and pathological diagnoses, the incompatibility rate is not negligible. Given that a large number of files lacked clinical diagnosis, it is important to make physicians treating patients aware of the consequences of this negligence. To prevent the complications of lesions resulting from this incompatibility, greater attention must be paid to the necessity of clinical and paraclinical assessments and more extensive training of dentistry students.

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