Dental Research Journal

Original Article

Reactive lesions of the oral cavity: A retrospective study on 2068 cases

Noushin Jalayer Naderi[1], Nosratollah Eshghyar[2], Hora Esfehanian[3]

[1]Department of Oral and Maxillofacial Pathology, [3]Faculty of Dentistry, Shahed University, [2]Department of Oral and Maxillofacial Pathology, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

ABSTRACT

Background: Reactive lesions of the oral cavity are non-neoplastic proliferations with very similar clinical appearance to benign neoplastic proliferation. This similarity is troublesome in the differential diagnosis. The aim of this study was to determine the frequency and distribution of oral cavity reactive lesions.

Materials and Methods: The study was a retrospective archive review. The medical records of 2068 patients with histopathologic diagnosis of oral cavity reactive lesions were studied. The patients' clinical data were registered and evaluated retrospectively. The obtained frequency of patients' age, gender, and anatomic location were analyzed. Descriptive statistics were used for evaluating the registered data.

Results: Peripheral giant cell granuloma was the most prevalent lesion (*n*=623, 30.12%). This was followed by pyogenic granuloma (*n*=365, 17.65%), epulis fissuratum (*n*=327, 15.81%), irritation fibroma (*n*=288, 13.93%), cemento-ossifying fibroma (*n*=277, 13.40%), inflammatory fibrous hyperplasia (*n*=177, 8.56%), and inflammatory papillary hyperplasia (*n*=11, 0.53%). The age ranged from 2 to 85 years, with a mean of 39.56 years. The lesions were more common in males (*n*=1219, 58.95%) than in females (*n*=849, 41.05%). Attached gingiva with 1331 (64.36%) cases was the most frequent place of reactive lesions.

Conclusion: Peripheral giant cell granuloma was the most prevalent reactive lesion of the oral cavity. The reactive lesions were more common in males, gingival, and the third decade. Some differences have been found between the findings of the present study and previous reports.

Key Words: Hyperplastic lesions, oral cavity, reactive lesions

Received: October 2011
Accepted: March 2012

Address for correspondence:
Dr. Nosratollah Eshghyar, Department of Oral and Maxillofacial Pathology, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran.
E-mail: eshghyar@sina.tums.ac.ir

INTRODUCTION

Reactive lesions are tumor-like hyperplasia that are produced in association with chronic local irritation or trauma.[1] These proliferations are painless pedunculated or sessile masses in different colors, from light pink to red.[2] The surface appearance is variable from non-ulcerated smooth to ulcerated mass. Lesion size varies from a few millimeters to several centimeters.[1] Reactive proliferations are fibrous tissues with another histologic component such as multinucleated giant cells, calcified material, or small vessels hyperplasia. Epulis is a traditional clinical name for gingival reactive proliferations. Irritation fibroma, peripheral giant cell granuloma, pyogenic granuloma, and cemento-ossifying fibroma are the common reactive lesions of the oral cavity.[3] Epulis fissuratum, inflammatory fibrous hyperplasia, and inflammatory papillary hyperplasia are other oral cavity reactive lesions.[1]

In different studies, the distribution data of oral reactive lesions have shown some differences in type, age, gender, and location of prevalent lesions.[4-9]

The clinical appearance of reactive lesions is very similar to that of neoplastic proliferations. This similarity is a challenging matter for differential diagnosis. Our knowledge about the distribution of

Access this article online

Website: www.drj.ir

lesions is a practical tool for better diagnosis. Studies about the distribution of oral cavity reactive lesions are not yet sufficient. The aim of this study was to determine the frequency and distribution of oral cavity reactive lesions.

MATERIALS AND METHODS

The study was retrospective archive review. The records of 2068 patients with histopathologic diagnosis of oral cavity reactive lesions were obtained from Oral and Maxillofacial Pathology Department, Faculty of Dentistry, Tehran University of Medical Sciences, from 1988 to 2005. The lesions were classified into seven groups as: peripheral giant cell granuloma, pyogenic granuloma, cemento-ossifying fibroma, epulis fissuratum, irritation fibroma, inflammatory fibrous hyperplasia, and inflammatory papillary hyperplasia. Academic oral and maxillofacial text was used for classification of reactive lesions.[1] Incomplete registered records and missed pathologic slides were the exclusion criteria. The complete medical records which had pathologic slides were included in the study. The lesions that were related to dentures were classified in epulis fissuratum group. Others with undefined clinical features were named under inflammatory fibrous hyperplasia type. Microscopic sections were examined by two pathologists. Age, gender, and anatomic location of the lesions were registered from the medical records and analyzed for each lesion. The incidences of obtained data were analyzed. The descriptive statistics were used for evaluating the registered data.

RESULTS

Peripheral giant cell granuloma was the most prevalent lesion (*n*=623, 30.12%). It was followed by pyogenic granuloma (*n*=365, 17.65%), epulis fissuratum (*n*=327, 15.81%), irritation fibroma (*n*=288, 13.93%), cemento-ossifying fibroma (*n*=277, 13.40%), inflammatory fibrous hyperplasia (*n*=177, 8.56%), and inflammatory papillary hyperplasia (*n*=11, 0.53%).

Age

The age ranged from 2 to 85 years, with a mean of 39.56 years. Peripheral giant cell granuloma, pyogenic granuloma, and cemento-ossifying fibroma were more common in the third decade (*n*=1265, 61.17%). Inflammatory fibrous hyperplasia was more frequent in the fourth decade (*n*=177, 8.56%), epulis fissuratum and irritation fibroma in the fifth decade (*n*=615, 29.74%), and inflammatory papillary hyperplasia in the sixth decade (*n*=11, 0.53%). The third decade (*n*=1265, 61.17%) comprised the most cases, followed by the fifth decade (*n*=615, 29.73%). Table 1 shows the frequency of oral cavity reactive lesions in different ages.

Gender

1219(58.95%) of cases were occurred in males and 849(41.05%) in females. Male to female ratio was 1.4:1. With the exception of peripheral giant cell granuloma, lesions were more common in males (*n* = 908, 74.48%). Table 2 shows the distribution of oral cavity reactive lesions in different genders.

Anatomic location

Gingiva with 1331 (64.36%) cases was the most frequent place of reactive lesions, followed by vestibule [327 (15.81%)] and buccal mucosa [157 (7.59%)]. Table 3 shows the frequency of oral cavity reactive lesions in different anatomic locations.

DISCUSSION

In this series of 2068 cases of oral reactive lesions, peripheral giant cell granuloma was the most common reactive lesion. The reactive lesions were more common

Table 1: Distribution of oral cavity reactive lesions in different ages

Lesions	Age (years)	
	Median	Range
Peripheral giant cell granuloma	29.72	2–75
Pyogenic granuloma	29.5	4–85
Cemento-ossifying fibroma	27.6	6–73
Epulis fissuratum	50.3	71–78
Irritation fibroma	49.6	7–79
Inflammatory fibrous hyperplasia	34.7	3–72
Inflammatory papillary hyperplasia	55.5	38–70
Total	39.56	2–85

Table 2: Distribution of oral cavity reactive lesions in males and females

Lesions	Gender	
	Males	Females
Peripheral giant cell granuloma	311 (49.92%)	312 (50.08%)
Pyogenic granuloma	237 (64.94%)	128 (35.06%)
Cemento-ossifying fibroma	165 (59.57%)	112 (40.43%)
Epulis fissuratum	232 (70.95%)	95 (29.05%)
Irritation fibroma	168 (58.33%)	120 (41.67%)
Inflammatory fibrous hyperplasia	99 (55.94%)	78 (44.06%)
Inflammatory papillary hyperplasia	7 (63.64%)	4 (36.36%)
Total	1219 (58.95%)	849 (41.05%)

in males, gingival, and the third decade. Reactive lesions are common tumor-like proliferations in the oral cavity. In spite of some clinical differences, their features are sometimes very similar to those of tumors. This resemblance is troublesome in the differential diagnosis. Our knowledge of reactive lesions distribution can be a useful tool for correct diagnosis.

Table 4 shows the distribution of oral cavity reactive lesions in different case series studies. The results show some differences in obtained data. In the 2,439, 741, 834, and 333 case series studies about oral reactive lesions, peripheral fibroma, fibrous hyperplasia, pyogenic granuloma, and fibrous epulis have been reported as prevalent types of reactive lesions, respectively.[8,10-12] Some studies concluded that pyogenic granuloma is the most reactive oral lesion.[6,7,9,13]

The differences are mainly due to different classifications and terminology of lesions and number of cases. We used academic oral and maxillofacial text for classification of reactive lesions.[1]

In this study, peripheral giant cell granuloma was the most prevalent lesion. This finding is not in agreement with the reports of Kfir *et al*.[8] and Zhang *et al*.[10] who found peripheral giant cell granuloma to be the least common type of oral reactive proliferation in their series.

In our series, peripheral giant cell granuloma comprised 30.12% of the total cases with 49.92% males and 50.08% females. This finding is not in agreement with those of Salum *et al*.[7] and Zarei *et al*.[14] who reported higher occurrence of peripheral giant cell granuloma in males. On the other hand, the results are in agreement with the reports of Katsikeris *et al*.[15] and Motamedi *et al*.[16] Their findings are compatible with the results of this study about patients' gender and ages.

The report of Zarei *et al*.[14] is from Kerman province, so it seems that race in conjunction with other oral cavity local factors may have a causative role in reactive hyperplasia growth. Racial differences are

Table 3: Distribution of oral cavity reactive lesions in different anatomic locations

Anatomic location / Lesions	PGCG	PG	COF	EP	IF	IFH	IPH	Total
Gingiva	623 (100%)	261 (71.50%)	277 (100%)	-	73 (25.34%)	97 (54.80%)	-	1331 (64.36%)
Tongue	-	18 (4.94%)	-	-	35 (12.15%)	36 (20.34%)	-	89 (4.30%)
Buccal	-	29 (7.95%)	-	-	113 (39.24%)	15 (8.48%)	-	157 (7.59%)
Palate	-	37 (10.13%)	-	-	15 (5.21%)	15 (8.48%)	11 (100%)	78 (3.77%)
Lip	-	20 (5.48%)	-	-	36 (12.5%)	14 (7.90%)	-	70 (3.39%)
Vestibule	-	-	-	327 (100%)	-	-	-	327 (15.81%)
Others	-	-	-	-	16 (5.56%)	-	-	16 (0.78%)
Total	623 (100%)	365 (100%)	277 (100%)	327 (100%)	288 (100%)	177 (100%)	11 (100%)	2068 (100%)

PGCG: Peripheral giant cell granuloma; PG: Pyogenic granuloma; COF: Cemento-ossifying fibroma; EP: Epulis fissuratum; IF: Irritation fibroma; IFH: Inflammatory fibrous hyperplasia; IPH: inflammatory papillary hyperplasia

Table 4: Distribution of oral cavity reactive lesions in different case series studies

Study	Year	No. of series	Most prevalent lesion	Prevalent age/ decade	Most prevalent gender	Most common location
Buchner *et al*.[9]	1977	302	Pyogenic granuloma	Young age	----------	Gingiva
Kfir *et al*.[8]	1980	741	Fibrous hyperplasia	----------	Females	Gingiva
Stablein and Silverglade[11]	1985	834	Pyogenic granuloma	---------	Males	Gingiva
Zain and Fei[18]	1990	204	Peripheral fibroma/ fibrous epulis	------	Females	Anterior maxilla
Layfield *et al*.[19]	1995	3859	Periodontal disease, fibrous hyperplasia	30–39 years	Females	Gingiva
Bataineh and Al-Dwairi[17]	2005	294	Fibrous lesions	------	-----	Gingiva
Ababneh[6]	2006	183	Peripheral-ossifying fibroma/pyogenic granuloma	20–30 years	--------	Gingiva
Zhang *et al*.[10]	2007	2439	Peripheral fibroma	Third to sixth decade	Females	Gingiva
Zarei *et al*.[14]	2007	172	----------	Mean 36 years	Females	Gingiva
Shamim *et al*.[5]	2008	244	Pyogenic granuloma	----------	-------	Gingiva
Awange *et al*.[12]	2009	3135	Fibrous epulis and pyogenic granuloma	20–29 years	Females	Gingiva

Table 5: Distribution of PG, PGCG, and POF in different case series studies

Study	Year	No. of series	PG	PGCG	POF
Buchner and Hansen[20]	1987	207	-------	-------	---------
Katsikeris *et al*.[15]	1988	224	------	Females 40–60 years Mandible	Females Second decade Maxilla
Zain *et al*.[21]	1995	304	Females 28.9 years Gingiva	----------	----------
Al-Khateeb[22] and Ababneh	2003	108	Females Mean 30 years Gingiva	--------	----------
Salum *et al*.[7]	2008	138	Females	Males	Females
Gordón-Núñez *et al*.[23]	2010	293	Females Second decade Gingiva	----------	----------
Present study	2011	2068	Males Second decade Gingiva	Females Second decade Gingiva	Males Second decade Gingiva

PG: Pyogenic granuloma; PGCG: Peripheral giant cell granuloma; POF: Peripheral-ossifying fibroma

an important factor that can influence the results. Multicentric studies are necessary for ruling out this possibility.

Table 5 shows the distribution of pyogenic granuloma, peripheral giant cell granuloma, and peripheral-ossifying fibroma in different case series studies in comparison with the present study**.** Pyogenic granuloma and peripheral-ossifying fibroma were more prevalent in females. This finding is not compatible with the finding in our series. Other results of age and gender were almost in agreement with this study.[7,15,20-23]

We could not find any report for other reactive lesions.

In the present study, the mean age of patients was 39.56 years and the third decade was more frequently affected (61.17%), which is comparable with the findings of other studies.[10,12] This finding reflects that the factors involved in producing reactive lesions have a high influencing effect in the third decade and applying preventive methods for oral hygiene improvement is important.

In this series, the oral reactive lesions were more frequent in males (58.95%), with a male:female ratio of 1.4:1. This finding is not in agreement with other studies which have shown the higher prevalence of reactive lesions in females than males.[8,10,12,14,19] The ethnic differences between studies could be the reason for different outcomes of the reports.

In accordance with other reports, in the present study gingiva with 64.36% of the total cases was the most frequent anatomic location for oral reactive lesions.[12,17] Periodontal ligament, periostum and connective tissue are the origin of reactive lesions.[3] So, it seema that the more prevalence of these lesions in gingival can be meaningful.

Some differences have been found between the findings of this study and the previous reports. We attribute these dissimilarities to racial differences and different selected classification method. The multicentric study is a proper method for expanding our knowledge about the existing differences.

CONCLUSION

Peripheral giant cell granuloma was the most prevalent reactive lesion. The lesions were more common in males, gingival, and the third decade. Some differences have been found between the findings of the present study and previous reports. These differences may originate from ethnic dissimilarities and histopathologic case arrangement in lesions' classification.

REFERENCES

1. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology. 3rd ed. China: Saunders; 2009. p. 510-23.
2. Regezi JA, Sciubba JJ, Jordan RCK. Oral pathology: Clinical pathologic correlations. 5th ed. China: Saunders; 2008. p. 156-60.
3. Sapp JP, Eversole LR, Wysocki GP. Contemporary oral and maxillofacial pathology. St. Louis: Mosby; 1997. p. 278-85.
4. Al-Khateeb TH. Benign oral masses in a northern jordanian population-a retrospective study. Open Dent J 2009;28:147-53.
5. Shamim T, Varghese VI, Shameena PM, Sudha S. A retrospective analysis of gingival biopsied lesions in South Indian population: 2001-2006. Med Oral Patol Oral Cir Bucal 2008;13:E414-8.

6. Ababneh KT. Biopsied gingival lesions in northern Jordanians: A retrospective analysis over 10 years. Int J Periodontics Restorative Dent 2006;26:387-93.
7. Salum FG, Yurgel LS, Cherubini K, De Figueiredo MA, Medeiros IC, Nicola FS. Pyogenic granuloma, peripheral giant cell granuloma and peripheral ossifying fibroma: Retrospective analysis of 138 cases. Minerva Stomatol 2008;57:227-32.
8. Kfir Y, Buchner A, Hansen LS. Reactive lesions of the gingiva. A clinicopathological study of 741 cases. J Periodontol 1980;51:655-61.
9. Buchner A, Calderon S, Ramon Y. Localized hyperplastic lesions of the gingiva: A clinicopathological study of 302 lesions. J Periodontol 1977;48:101-4.
10 Zhang W, Chen Y, An Z, Geng N, Bao D . Reactive gingival lesions: a retrospective study of 2,439 cases. Quintessence Int 2007;38:103-10.
11 Stablein MJ, Silverglade LB . Comparative analysis of biopsy specimens from gingiva and alveolar mucosa. J Periodontol 1985;56:671-6.
12 Awange DO, Wakoli KA, Onyango JF, Chindia ML, Dimba EO, Guthua SW. Reactive localised inflammatory hyperplasia of the oral mucosa. East Afr Med J 2009;86:79-82.
13 Anneroth G, Sigurdson A. Hyperplastic lesions of the gingiva and alveolar mucosa. A study of 175 cases. Acta Odontol Scand 1983;41:75-86.
14 Zarei MR, Chamani G, Amanpoor S. Reactive hyperplasia of the oral cavity in Kerman province, Iran: a review of 172 cases. Br J Oral Maxillofac Surg 2007;45:288-92.
15 Katsikeris N, Kakarantza-Angelopoulou E, Angelopoulos AP. Peripheral giant cell granuloma. Clinicopathologic study of 224 new cases and review of 956 reported cases. Int J Oral Maxillofac Surg 1988;17:94-9.
16 Motamedi MH, Eshghyar N, Jafari SM, Lassemi E, Navi F, Abbas FM, Khalifeh S, Eshkevari PS . Peripheral and central giant cell granulomas of the jaws: a demographic study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2007;103:e39-43.
17 Bataineh A, Al-Dwairi ZN . A survey of localized lesions of oral tissues: a clinicopathological study. J Contemp Dent Pract 2005;6:30-9.
18 Zain RB, Fei YJ. Peripheral fibroma/fibrous epulis with and without calcifications. A clinical evaluation of 204 cases in Singapore. Odontostomatol Trop 1990;13:94-6.
19 Layfield LL, Shopper TP, Weir JC. A diagnostic survey of biopsied gingival lesions. J Dent Hyg 1995;69:175-9.
20 Buchner A, Hansen LS. The histomorphologic spectrum of peripheral ossifying fibroma. Oral Surg Oral Med Oral Pathol 1987;63:452-61.
21 Zain RB, Khoo SP, Yeo JF. Oral pyogenic granuloma (excluding pregnancy tumour)-a clinical analysis of 304 cases. Singapore Dent J 1995;20:8-10.
22 Al-Khateeb T, Ababneh K. Oral pyogenic granuloma in Jordanians: a retrospective analysis of 108 cases. J Oral Maxillofac Surg 2003;61:1285-8.
23 Gordón-Núñez MA, de Vasconcelos Carvalho M, Benevenuto TG, Lopes MF, Silva LM, Galvão HC. Oral pyogenic granuloma: a retrospective analysis of 293 cases in a Brazilian population. J Oral Maxillofac Surg 2010;68:2185-8.

How to cite this article: Naderi NJ, Eshghyar N, Esfehanian H. Reactive lesions of the oral cavity: A retrospective study on 2068 cases. Dent Res J 2012;9:251-5.

Source of Support: This study was supported by Shahed University.
Conflict of Interest: This study was completed by financial support of deputy of research, Shahed University.