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

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.\(^3\)

In different studies, the distribution data of oral reactive lesions have shown some differences in type, age, gender, and location of prevalent lesions.\(^4\) 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
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. 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 reactive lesion. The reactive lesions were more common
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 \textit{et al.}\[6\] and Zhang \textit{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 \textit{et al.}\[7\] and Zarei \textit{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 \textit{et al.}\[15\] and Motamedi \textit{et al.}\[16\]. Their findings are compatible with the results of this study about patients’ gender and ages.

The report of Zarei \textit{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>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>No. of series</th>
<th>Most prevalent lesion</th>
<th>Prevalent age/decade</th>
<th>Most prevalent gender</th>
<th>Most common location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buchner \textit{et al.}[8]</td>
<td>1977</td>
<td>302</td>
<td>Pyogenic granuloma</td>
<td>Young age</td>
<td>--------</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Kfir \textit{et al.}[8]</td>
<td>1980</td>
<td>741</td>
<td>Fibrous hyperplasia</td>
<td>--------</td>
<td>Females</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Stablein and Silverglade[11]</td>
<td>1985</td>
<td>834</td>
<td>Pyogenic granuloma</td>
<td>--------</td>
<td>Males</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Zain and Fei[16]</td>
<td>1990</td>
<td>204</td>
<td>Peripheral fibroma/fibrous epulis</td>
<td>30–39 years</td>
<td>Females</td>
<td>Anterior maxilla</td>
</tr>
<tr>
<td>Layfield \textit{et al.}[19]</td>
<td>1995</td>
<td>3859</td>
<td>Periodontal disease, fibrous hyperplasia</td>
<td>30–39 years</td>
<td>Females</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Bataineh and Al-Dwairi[17]</td>
<td>2005</td>
<td>294</td>
<td>Fibrous lesions</td>
<td>-----</td>
<td>-----</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Ababneh[6]</td>
<td>2006</td>
<td>183</td>
<td>Peripheral-ossifying fibroma/pyogenic granuloma</td>
<td>20–30 years</td>
<td>-----</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Zhang \textit{et al.}[10]</td>
<td>2007</td>
<td>2439</td>
<td>Peripheral fibroma</td>
<td>Third to sixth decade</td>
<td>Females</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Zarei \textit{et al.}[14]</td>
<td>2007</td>
<td>172</td>
<td>Pyogenic granuloma</td>
<td>Mean 36 years</td>
<td>Females</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Shamim \textit{et al.}[5]</td>
<td>2008</td>
<td>244</td>
<td>Pyogenic granuloma</td>
<td>--------</td>
<td>-----</td>
<td>Gingiva</td>
</tr>
<tr>
<td>Awange \textit{et al.}[12]</td>
<td>2009</td>
<td>3135</td>
<td>Fibrous epulis and pyogenic granuloma</td>
<td>20–29 years</td>
<td>Females</td>
<td>Gingiva</td>
</tr>
</tbody>
</table>
Periodontal ligament, periostum and connective tissue are the origin of reactive lesions.\(^3\) So, it seems 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**


