Retrospective analysis of the clinical features of 530 cases of reactive lesions of oral cavity

Santosh Hunasgi¹, Anila Koneru², M. Vanishree², Vardendra Manvikar², Ashwini M. Patil³, Hamsini Gottipati⁴

¹Oral and Maxillofacial Pathology Consultant, Raichur, Karnataka, India, ²Department of Oral and Maxillofacial Pathology, Navodaya Dental College, Raichur, Karnataka, India, ³Department of Conservative and Endodontics, Navodaya Dental College, Raichur, Karnataka, India, ⁴General Dentist, Raichur, Karnataka, India

Abstract

**Background:** Most common localized reactive lesions of oral cavity are focal fibrous hyperplasia, pyogenic granuloma (PG), irritational fibroma, peripheral giant cell granuloma (PGCG), peripheral ossifying fibroma (POF), fibro-epithelial hyperplasia/polyp, inflammatory fibrous hyperplasia and inflammatory gingival hyperplasia. Clinically, these reactive lesions often present diagnostic challenges because they mimic different groups of pathologic processes. The aim of this paper is to document the occurrence, distribution of clinical features of reactive lesions of oral cavity in 15 years of clinical practice in Raichur, Karnataka.

**Materials and Methods:** This study is a retrospective archival review of 530 cases of focal reactive lesions of the oral cavity. The cases for inclusion in this study were PG, PGCG, POF, irritational fibroma, fibro-epithelial hyperplasia/polyp, inflammatory fibrous hyperplasia and inflammatory gingival hyperplasia. Clinical data of each patient such as age, gender, location, and treatment were retrieved from the records.

**Results:** Inflammatory gingival hyperplasia was the most prevalent lesion and followed by PG. The age ranged from 7 to 63 years, with a mean age of 40.5 years. 261 cases were males and 269 cases were females. Male to female ratio being 1:1. With the exception of PG and inflammatory gingival hyperplasia, all reactive lesions were more common in males. Gingiva with 470 cases was the most frequent site of reactive lesions, followed by buccal mucosa and palate.

**Conclusion:** Reported results on the age, gender, and location of the individual types of lesions are not consistent in different studies. Some of the differences may be attributed to the geographic or ethnic factors. Nevertheless, there is need for more epidemiological studies to establish a better and adequate program to educate general population. In addition an early diagnosis and elimination of such lesions may minimize possible dento-alveolar complications.
also appear to be etiologically interrelated to systemic factors such as hormonal changes.\(^4\)

Clinically, oral reactive lesions frequently present diagnostic challenges since they mimic some pathologic processes.\(^5\) The duration of these lesions is often weeks to months due to the slow growth and mild symptoms. They are rarely painful, but often interfere with adequate plaque control. While their duration is extensive, it is not atypical to see ulceration to the epithelial surface from trauma.\(^5\) All reactive lesions of oral cavity can clinically be similar but possess diverse histopathological features.\(^1\) This similarity is a complex matter for differential diagnosis. Thus the purpose of this paper is to document the occurrence, distribution of clinical features of reactive lesions of oral cavity in 15 years of clinical practice in Raichur, Karnataka.

**Materials and Methods**

The study was a retrospective archival review of focal reactive lesions of the oral cavity acquired from 15 years of clinical practice in Raichur, Karnataka, India. The cases included in the present study were PG, PGCG, POF, irritational fibroma, fibro-epithelial hyperplasia/polyp, inflammatory fibrous hyperplasia and inflammatory gingival hyperplasia.

Haematoxylin and eosin stained slides of all the above mentioned lesions were retrieved to verify the specific diagnosis. Clinical data of each patient such as age, gender, location, and treatment were retrieved from the records. Unfinished records and missed pathologic slides were expelled from the study. Data was analyzed using the SPSS for Windows (version 12) statistical software package and data was placed in descriptive and tabular forms.

**Results**

Inflammatory gingival hyperplasia was the most prevailing lesion \(n = 268, 51\%\), which was followed by PG \(n = 127, 24\%\), Fibro-epithelial hyperplasia/polyp \(n = 47, 9\%\), irritation fibroma \(n = 44, 8\%\), inflammatory fibrous hyperplasia \(n = 24, 5\%\), POF \(n = 18, 2.7\%\) and PGCG \(n = 2, 0.3\%\).

**Age**

The age ranged from 7 to 63 years, with a mean of 40.5 years. PG, Irritational fibroma, Fibro-epithelial hyperplasia/polyp, inflammatory fibrous hyperplasia and inflammatory gingival hyperplasia were more frequent in the fourth decade, whereas PGCG and POF were more common in the third decade. Table 1 shows the incidence of focal reactive lesions of oral cavity in different ages.

**Gender**

In the present study 261 cases \(49.24\%\) occurred in males and 269 cases \(50.76\%\) in females. Male to female ratio for reactive lesions of oral cavity was 1:1. With the exclusion of PG and inflammatory gingival hyperplasia, all reactive lesions were more common in males. Table 2 shows the distribution of focal reactive lesions of oral cavity in different genders.

**Anatomic location**

Gingiva with 470 \(88.67\%\) cases was the most frequent site of reactive lesions, followed by buccal mucosa \(33\% \text{ (6.22\%)\) and palatal mucosa \(15 \text{ (2.83\%)\). Table 3 shows the occurrence of oral reactive lesions in different anatomic locations.**

**Discussion**

Reactive lesions of the oral cavity are tumor-like non-neoplastic proliferations produced in involvement through chronic irritation or trauma. These proliferations are pedunculated or sessile masses and painless with different colors ranging from light pink to red. The surface is also variable, with a non-ulcerated smooth appearance to an ulcerated mass. The size of lesion ranges from a few millimeters to more than a few centimeters.\(^6\)

Intraoral reactive lesions are comparatively common lesions of the oral cavity in biopsies performed by pathological departments. Reactive lesions are comprised 6.4\% of 20,228 biopsies in a study from Canada, 5\% of 30,056 biopsies in a study from the United States and 3.6\% of 66,957 biopsies in the study from China.\(^7\)

**Table 1:** Distribution of reactive lesions of oral cavity by different ages

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Mean Age (years)</th>
<th>Range (years)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyogenic granuloma</td>
<td>33.3</td>
<td>8-60</td>
<td>127 (24)</td>
</tr>
<tr>
<td>Irritational fibroma</td>
<td>37.3</td>
<td>9-85</td>
<td>44 (8)</td>
</tr>
<tr>
<td>Fibro-epithelial hyperplasia/polyp</td>
<td>34.5</td>
<td>15-62</td>
<td>47 (9)</td>
</tr>
<tr>
<td>Inflammatory fibrous hyperplasia</td>
<td>35.7</td>
<td>7-58</td>
<td>24 (5)</td>
</tr>
<tr>
<td>Inflammatory gingival hyperplasia</td>
<td>34.5</td>
<td>10-63</td>
<td>268 (51)</td>
</tr>
<tr>
<td>Peripheral ossifying fibroma</td>
<td>21.8</td>
<td>15-48</td>
<td>18 (2.7)</td>
</tr>
<tr>
<td>Peripheral giant cell granuloma</td>
<td>30</td>
<td>20-40</td>
<td>2 (0.3)</td>
</tr>
<tr>
<td>Total</td>
<td>40.5</td>
<td>7-63</td>
<td>530</td>
</tr>
</tbody>
</table>

**Table 2:** Distribution of reactive lesions of oral cavity by gender

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyogenic granuloma</td>
<td>51</td>
<td>76</td>
</tr>
<tr>
<td>Irritational fibroma</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>Fibro-epithelial hyperplasia/polyp</td>
<td>28</td>
<td>19</td>
</tr>
<tr>
<td>Inflammatory fibrous hyperplasia</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Inflammatory gingival hyperplasia</td>
<td>128</td>
<td>140</td>
</tr>
<tr>
<td>Peripheral ossifying fibroma</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Peripheral giant cell granuloma</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total (%)</td>
<td>261 (49.24)</td>
<td>269 (50.76)</td>
</tr>
</tbody>
</table>
In the present study of 650 cases of reactive lesions, inflammatory gingival hyperplasia was the most common reactive lesion, followed by PG, which is in accordance with the study done by Peralles et al.\textsuperscript{(6)} and Seyedmajidi et al.\textsuperscript{(7)} However, Kashyap et al.\textsuperscript{(8)} and Effiom et al.\textsuperscript{(3)} in their study found that PG was the most common lesion. Further Reddy et al.\textsuperscript{(1)} and Ezirganl\textsuperscript{(11)} in their study found that focal fibrous hyperplasia as a common lesion and Amirchaghmaghi et al.\textsuperscript{(12)} showed traumatic fibroma as the most common lesion. Naderi et al.\textsuperscript{(6)} found PGCG as the most prevalent lesion.

In the present study, adults in the fourth decade are most frequently affected, especially common in females, also in accordance with previous reports. Most frequent site for reactive lesions was gingiva. Other oral sites in the descending order of occurrence are buccal mucosa, palatal mucosa, labial mucosa and tongue.

**Inflammatory gingival hyperplasia**

Enlargements of gingiva may be inflammatory, non-inflammatory, or a combination of the two types.\textsuperscript{(13)} Usually, the hyperplasia occurs primarily because of local irritations such as buildup of dental plaque or calculus and mouth breathing leading to poor oral hygiene. A histological examination of gingival overgrowth is when inflammatory cell infiltration, vascular engorgement and edema predominate; such type of gingival enlargement is referred to as inflammatory gingival hyperplasia. When major component is represented by dense fibrous tissue, the lesion is referred to as fibrotic gingival hyperplasia.\textsuperscript{(14)} In our study the most frequent histopathologically described gingival enlargement was inflammatory gingival hyperplasia (51%). The average age of occurrence was 34.5 with range being 10-63 years. Females are frequently affected than males. The most common site affected was gingiva [Figure 1].

**PG**

The PG is mainly an increased tissue response to local irritation or trauma. The young lesions are extremely vascular, reddish purple, frequently elevated, ulcerated, and bleed easily. The PG can often exhibit rapid growth, appearing on the gingiva in 75% of reported cases with a female predilection.\textsuperscript{(5)} In our study PG presented 24% of all the reactive lesions with average age of occurrence being 33.3 and in the range of 8-60 years. Females are frequently affected than males and most common site affected was gingiva followed by buccal mucosa [Figure 2].

**Irritational fibroma**

Focal fibrous hyperplasia is also known as irritational fibroma or oral fibroma. It is a connective tumor and most common benign soft tissue neoplasm occurring in the oral cavity.

Most fibromas correspond to reactive focal fibrous hyperplasia which is always due to trauma or local irritation. A fibroma may arise in any site of oral cavity, but usually seen on buccal mucosa along the plane of occlusion. Other frequent sites are gingiva, labial mucosa, buccal mucosa, palatal mucosa and tongue. It is nearly always a well-defined lesion slowly growing lesion that occurs at any age but it is most familiar in third, fourth and fifth decade. Females are affected twice as frequently as males.\textsuperscript{(15)} In the present study the prevalence of irritational fibroma was 8% of all reactive lesions. Irritational fibroma is common in third decade and in males with most common location being buccal mucosa [Figure 3].

Table 3: Distribution of reactive lesions of oral cavity by location

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Gingiva</th>
<th>Tongue</th>
<th>Buccal mucosa</th>
<th>Palate</th>
<th>Lip</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyogenic granuloma</td>
<td>104</td>
<td>0</td>
<td>13</td>
<td>10</td>
<td>0</td>
<td>127</td>
</tr>
<tr>
<td>Irritational fibroma</td>
<td>14</td>
<td>1</td>
<td>20</td>
<td>5</td>
<td>4</td>
<td>44</td>
</tr>
<tr>
<td>Fibro-epithelial hyperplasia/polyp</td>
<td>47</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Inflammatory fibrous hyperplasia</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Inflammatory gingival hyperplasia</td>
<td>268</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>268</td>
</tr>
<tr>
<td>Peripheral ossifying fibroma</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Peripheral giant cell granuloma</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>470 (88.67)</td>
<td>5 (0.94)</td>
<td>33 (6.26)</td>
<td>15 (2.83)</td>
<td>7 (1.3)</td>
<td>530</td>
</tr>
</tbody>
</table>

Figure 1: Inflammatory gingival hyperplasia located in maxillary and mandibular anterior gingiva
Inflammatory fibrous hyperplasia and fibro-epithelial hyperplasia

The words “inflammatory hyperplasia” is used to describe a huge range of commonly occurring nodular growths of the oral mucosa that histopathologically stand for inflamed epithelium, fibrous or granulation tissues. The size of these reactive hyperplastic masses can be lesser or greater, depending on the severity to which the components of the inflammatory reaction and healing response are exaggerated in the particular lesion. A few are predominantly fibromatous overgrowths with only thin epithelial covering and inflammation called as inflammatory fibrous hyperplasia; others showing hyperplasia of both epithelium and connective-tissue stroma called fibro-epithelial hyperplasia.\[16\]

In the present study inflammatory fibrous hyperplasia and fibro-epithelial hyperplasia constituted about 9% and 5% respectively of all the total reactive lesions. Both these are more common in third decade and in males [Figures 4 and 5].

POF

The POF is a frequent reactive gingival lesion displaying variable degrees of mineralization, and it could arise from the periodontal ligament or periosteum. The mineralization is found within a non-encapsulated proliferation of fibroblasts. Most lesions are located in the interdental papilla. Most of the lesions are sessile or pedunculated, and can have an ulcerated surface. The POF tends to be more widespread in females than males, and radiographic evidence of erosion of underlying bone can be seen.\[5,17\] In present study, POF constituted 2.7% of all the reactive lesions with average of 21 years. Males are more affected and gingiva being most commonly involved [Figure 6].
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PGCG

The PGCG is less frequently seen of all the reactive lesions of the gingiva and reported in only 5% of the biopsy reports according to the published literature. It originates from the periosteum or periodontal ligament as a result of local irritation or chronic trauma. The PGCG is a sessile or pedunculated mass seen more commonly in the mandible. The lesion can develop at any age, but is most commonly reported in the fourth to sixth decade of life. Similarly in the present study PGCG constitutes only 0.3% of all reactive lesions. PGCG is seen in third decade and more prevalent in gingiva.[16]

The most common differential diagnosis of these reactive lesions of oral cavity is papilloma, giant cell fibroma, neurofibroma, mucocele, benign and malignant salivary gland tumor and peripheral odontogenic fibromas.

Even though reactive lesions of oral cavity are benign in nature they do have a tendency towards recurrence with incomplete elimination of the lesion or incomplete removal of local irritants.

The treatment in each case was surgical excision; however, diverse treatment modalities may offer better outcomes with less incidence of recurrence.[5]

Conclusion

The lesions affecting the oral cavity constitute a diverse group of pathologies. Of all the oral biopsies reported, reactive lesions were the most commonly reported pathologies. Records on the age distribution, gender, and location of the individual types of lesions are not consistent in different studies. Some of the differences may be attributed to the geographic or ethnic factors. Nevertheless, there is need for more epidemiological studies to establish a better and adequate program to educate general population. In-addition an early diagnosis and elimination of such lesions may minimize possible dento-alveolar complications.

References
