Epidemiological Study of Jaw Cysts among a Part of the Belgian Population

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Patients suffering from jaw cysts treated in the department of Oral and Maxillofacial Surgery, Academic Hospital of the Free University of Brussels during the period 1982 -1997 were studied. The pathological reports of these cases were analyzed with regard to age, sex, anatomical distribution and diagnosis. About 40% of jaw cysts occurred in patients aged 20 to 49 years, and the male to female ratio was 2:1. Of the 203 cases, 121 (60%) were located in the maxilla, the remaining 82 (40%) in the mandible. Radicular cysts were by far the most common type of cysts (78%) followed by dentigerous cysts (11%), odontogenic keratocysts (7%) and fissural cysts (4%).

Key words: jaw cyst, epidemiology, Belgium

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Introduction

Cysts are pathological fluid-filled cavities lined (in most cases) by epithelium. They are the most common cause of chronic swelling of the jaws. Cysts are more common in the jaws than in any other bone because of the many epithelial remnants remaining after tooth formation. Odontogenic cysts account for almost all cysts of the jaws and are sub-classified into either inflammatory (the common radicular cyst) or developmental, particularly the dentigerous and odontogenic keratocyst(1-3). In reports on large series of cysts(4-10), a moderate degree of agreement exists as to their frequency: radicular cysts account for 65-70%, dentigerous cysts account for 15-18%, and odontogenic keratocysts account for 3-5%.

The purpose of this retrospective study is to determine the incidence of radicular, dentigerous, odontogenic keratocysts, and fissural cysts relative to one another and to compare our data with previously published reports. To the best of our knowledge this is the first study of jaw cysts in Flanders (the Dutch speaking part of Belgium) in which the frequency and distribution, according to patient age, patient gender, and location are examined. These data are important to assess possible geographical differences in the incidence of these lesions and to allow the clinician to make realistic judgments about the probability of a diagnosis.

Material and Methods

Medical records of 203 cases treated for jaw cysts at the Department of Oral and Maxillofacial Surgery, Academic Hospital of the Free University of Brussels, Belgium, during the period 1982-1997 were retrieved and analyzed for age and gender of the patient and location of the lesion. The pathology reports of these cases were obtained from the Department of Pathology of the Free University of Brussels (Vrije Universiteit Brussel, V.U.B).

All the samples were stained with Hematoxylin-Eosin-Saffranin (HES). When there was a difference between the clinical and histopathologic diagnosis, the histopathological diagnosis was taken as the final one.

When a patient suffered from two or more lesions, they were considered as separate cases.

The residual radicular cysts were included within the group of radicular cysts.

Results

Age and Gender Distribution: (Table 1, Figure 1)

In this study about 40% of cases occurred in patients aged 20 to 49 years. Sixty-eight percent of the patients were male and 31.5 % female; the male-female ratio was 2:1.

Anatomical Distribution: (Table 2)

63.6% of the radicular cysts occurred in the maxilla; of these 59% were found in the anterior portion of the maxilla. Dentigerous cysts occurred more frequently
in the mandibular third molar region (64%) followed by the maxillary canines region (22%) and the maxillary third molars region (13%). The odontogenic keratocysts were more frequent in the mandible (64%) and (59.6%) of fissural cysts were found in the maxilla.

**Histological Distribution:** (Table 1, Figure 2)

Radicular cysts are the most common and comprise 78.3% of all the cysts, followed by dentigerous cysts with 10.8% of the cases. The less frequent cysts are odontogenic keratocysts (6.8%) and the fissural cysts (3.9%).

**Discussion**

Analysis of the patients' age distribution revealed that 44.8% of jaw cysts occurred in the third and fourth decades, while radicular cysts were predominantly found in patients aged 20 to 40; these findings are similar to other studies (5-7, 9). For the dentigerous cysts, 45% of patients were between 40 and 59 years old, and these results are very different from those found in a Japanese study(6), where 57% of patients were less than 20 years old.

As mentioned before there was a male predominance; this may be explained by the fact that a radicular cyst, which is the most frequent type of cyst, develops from untreated caries, pulpitis, and/or apical granuloma before becoming a radicular cyst. Females undergo the majority of dental examinations here in Belgium (this finding is confirmed by unpublished data from a Belgian health authority) so the sequence leading to radicular cyst can be interrupted from the beginning.

This study confirms that odontogenic cysts are the most common jaw cysts. In this study they account for about 96% of all jaw cysts. Of the present cases, the radicular cyst was found to be the most frequent, representing 78.3%. This is similar to the 77.7% reported by Main and coworkers in a British study(7), and a little higher than the numbers found in a Canadian study (68.8%) (5) and American studies (65%) (3,10). It is very different, however, from the 41% found in Japan by Nakamura and co-

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**Table 1: Histological and sex distribution of jaw cysts**

<table>
<thead>
<tr>
<th>Type of cyst</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radicular cyst</td>
<td>110 (69.2%)</td>
<td>49 (30.8%)</td>
<td>159 (78.3%)</td>
</tr>
<tr>
<td>Dentigerous cyst</td>
<td>17 (77.3%)</td>
<td>5 (22.7%)</td>
<td>22 (10.8%)</td>
</tr>
<tr>
<td>Odontogenic keratocyst</td>
<td>8 (57.1%)</td>
<td>6 (42.9%)</td>
<td>14 (6.9%)</td>
</tr>
<tr>
<td>Fissural cyst</td>
<td>4 (50.0%)</td>
<td>4 (50.0%)</td>
<td>8 (3.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>139 (68.5%)</td>
<td>64 (31.5%)</td>
<td>203 (100%)</td>
</tr>
</tbody>
</table>

**Table 2: Anatomical distribution of jaw cysts**

<table>
<thead>
<tr>
<th>Type of cyst</th>
<th>Maxilla</th>
<th>Mandible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radicular cyst</td>
<td>102 (64.2%)</td>
<td>57 (35.8%)</td>
</tr>
<tr>
<td>Dentigerous cyst</td>
<td>8 (36.4%)</td>
<td>14 (63.6%)</td>
</tr>
<tr>
<td>Odontogenic keratocyst</td>
<td>5 (35.7%)</td>
<td>9 (64.3%)</td>
</tr>
<tr>
<td>Fissural cyst</td>
<td>6 (75%)</td>
<td>2 (25.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>121 (59.6%)</td>
<td>82 (40.4%)</td>
</tr>
</tbody>
</table>
worker(6) and even more from Nigerian results (21.4%) as reported by Ogunlewe(9). This may be due to the large number of poorly performed root canal treatments in Belgium, where endodontically treated teeth showed apical periodontitis in 40.4% of the cases(11). However, the prevalence of caries has also been considered. In Nigeria 79% of the population were caries free(12).

The dentigerous cyst was second in frequency (10.8%), and this is also reported in the Japanese and Canadian studies(5, 6). However, in the present population, the number of cases was lower than those reported for Canada (24.8%) (5) and Japan (21%) (6). This may be due to the common extraction of impacted teeth at early ages in Flanders.

Odontogenic keratocysts were found in 6.6% which is a little higher than in the Canadian study (4.8%) (5), similar to the American one (7%) (3, 10) and lower than in the Japanese population (9%) (6). Fissural cysts were uncommon, in accordance with the other studies(5-7, 9).

References

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