Profile Of Pleomorphic Adenoma In A Tertiary Care Teaching Hospital In Sub-himalayan Valley

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Abstract

Introduction: Salivary glands are divided into major and minor ones. Salivary gland tumors comprise only 3% of all neoplasms of head and neck region and show diverse histology. Pleomorphic adenoma (PA), also known as benign mixed tumor, is the most common salivary gland neoplasm accounting for 60% of all benign salivary gland tumors. The aim of the study is to analyze all the records of cases reported as PA.

Materials and methods: This study is a hospital based retrospective study carried out in the Department of Pathology, Manipal Teaching Hospital. All the records and slides of cases reported as PA on histopathology in the time period from Jan 2003 to Dec 2012 were retrieved and analyzed. Descriptive statistics and testing of hypothesis were used for the data analysis.

Results: A total of 82 PA were reported in the study period. 74 cases were from major salivary glands and parotid (54 cases) was the commonest site. Left side was marginally more involved than right side. The mean size of tumor was 4.5 cm and all intra-oral lesions (14 cases) were smaller than 2 cm. The commonest age group was 31-40 years (22, 26.8%) followed by 21-30 years (20, 24.4%) and 41-50 years (14, 17%). Females were affected more in a ratio of 1:1.6. On histology, all cases showed a mixture of epithelial and myoepithelial components. Among different types of epithelial cells, plasmacytoid cells were the most common type. Most of the patients presented with painless swelling and 3 cases presented with dull ache. Cases in nasal cavity and orbit presented with nasal stuffiness and unilateral exophthalmos. All the cases were treated by surgical excision and were followed up for a period of 8 months to 2 years. None of the patients showed any recurrence.

Conclusion: Most of the findings in our series were similar to other previously published international literature. However involvement of younger patients, left side and minor salivary glands were found to be more in the current study.

Introduction

Salivary glands are classified into the major glands namely parotid, submandibular and sublingual glands and the minor ones which are present in the lips, gingiva, floor of the mouth, cheek, palate, tongue and oropharynx. Salivary glands may give rise to various inflammatory and neoplastic conditions more than 30 different types of neoplastic entities have been reported despite of its relatively simple histology. Salivary gland tumors are rare comprising less than 3% of all neoplasms of head and neck region and are known by their diverse histological features. Pleomorphic adenoma (PA), also known as benign mixed tumor, is the most common salivary gland neoplasm accounting for 60% of all benign salivary gland tumors. It represents 60 to 73% of parotid gland tumors, 12% to 60% of submandibular gland tumors and 14% to 70% of minor salivary gland tumors. It is composed of epithelial and myoepithelial components arranged in varied microscopic patterns as well as areas of mesenchymal differentiation. The aim of the current study was to review and analyze the records of patients diagnosed with PA on histopathology in a single institution.

Materials and methods

Design: This study is a hospital based retrospective study carried out in the Department of Pathology, Manipal Teaching Hospital. All the records and slides of cases reported as PA on histopathology in the time period from Jan 2003 to Dec 2012 were retrieved and analyzed.

Outcome Variable: Main outcome variable was Pleomorphic adenoma (PA).

Explanatory Variable: Age (5) were the explanatory variables at individual level.

Sample size calculation: For 95% confidence interval and, significance level $\alpha = 5\%$, $P = 85\%$, $Q = 15\%$, allowable error $= 10\%$, required sample size was 68. $P = $ percentage of PA. $Q = 100-P$. In the pilot study done prior to the original study with 20
Ethical committee approval: Prior to the study, approval was taken from the institutional ethical committee. The study was conducted in accordance to latest version of the Declaration of Helsinki.

Data management and statistical analysis: The data collected was analyzed using Excel 2003, R 2.8.0 Statistical Package for the Social Sciences (SPSS) for Windows Version 16.0 (SPSS Inc; Chicago, IL, USA) and EPI Info 3.5.1 Windows Version.

The Z test was used to observe the difference between different variables and chi-square test was used to find out the relationship between two variables. \( p < 0.05 \) was considered as statistically significant.

Results

We had a total of 124 cases of salivary gland neoplasm reported in the mentioned study period, of which 82 cases were diagnosed as PA. The sites, frequency, percentage, side or laterality, size of the tumor and gender distribution are shown in Table 1, while Table 2 summarizes the age distribution of all cases as well as its correlation with gender and the sites involved.

Major salivary glands were involved in 74 cases while the rest 8 cases were from minor salivary glands and other sites. Parotid was the commonest site with 54 cases (65.9%) followed by submandibular (12, 14.6%), sublingual (8, 9.8%), palate (3, 3.6%), cheek (2, 2.4%) and lip (1, 1.2%). We also reported one case each from nasal cavity and from lacrimal gland in orbit.

Side

Overall, left side was more common than right side in our data. Among only the cases of the major salivary glands, 40 cases were on the left side compared to 34 cases on the right side. Parotid, submandibular and sublingual glands had 28, 7 and 5 cases on left side compared to 26, 5 and 3 cases on right side respectively.

Size

The size range was from 1 cm to 7 cm with a mean of 4.5 cm. We had classified the tumors in 3 categories viz. 5 cm. Thirty nine cases were in the >5 cm group followed by 27 cases in 2-5 cm group and 16 cases in <2 cm.

Age

The age range was from 7 years to 68 years with a mean of 36.2 years. The commonest affected age group was 31-40 years (22, 26.8%) followed by 21-30 years (20, 24.4%) and 41-50 years (14, 17%).

Sex

Females were affected more in our series. We had a total of 32 cases in males and 52 cases in females with a male female ratio of 1:1.6. Among the cases involving the three major salivary glands, 30 were males while 44 were females (1:1.5).

Table 1: Distribution of site, number, size and gender of pleomorphic adenoma

<table>
<thead>
<tr>
<th>Site</th>
<th>Number/ Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parotid</td>
<td>54</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>Submandibular</td>
<td>12</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Sublingual</td>
<td>8</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Palate</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cheek</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nasal</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>43</td>
<td>39</td>
</tr>
</tbody>
</table>

Table 2: Age distribution of pleomorphic adenoma

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Number</th>
<th>Parotid</th>
<th>Submandibular</th>
<th>Sublingual</th>
<th>Palate</th>
<th>Cheek</th>
<th>Nasal</th>
<th>Total</th>
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<tr>
<td>11-12</td>
<td>12</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>0</td>
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<td>7</td>
<td>5</td>
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<td>13</td>
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<tr>
<td>19-20</td>
<td>15</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>21-25</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>11</td>
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<tr>
<td>26-30</td>
<td>31</td>
<td>10</td>
<td>14</td>
<td>5</td>
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<td>0</td>
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<td>TOTAL</td>
<td>82</td>
<td>42</td>
<td>23</td>
<td>11</td>
<td>4</td>
<td></td>
<td></td>
<td>82</td>
</tr>
</tbody>
</table>

P-value > 0.05
Pathology

All cases in our study showed a well demarcated tumor with gelatinous cut surface on gross (Fig 1) and a mixture of epithelial and myoepithelial cells on microscopy. All cases showed presence of plasmacytoid and spindle cells as well as chondromyxoid stroma (Fig 2,3). In general, nuclear features were bland with absent or inconspicuous nucleoli and mitosis are mostly not seen.

Clinical feature

Most of the patients presented with painless swelling in the affected area with a variable duration of 5 months to 7 years (mean 13 months). 3 patients complained of dull ache along with swelling. All patients with PA in oral cavity presented earlier compared to those with PA in major salivary glands. The two cases with involvement of nasal cavity and orbit presented with nasal stuffiness and unilateral exophthalmos.

Discussion

Site

PA is a slow growing tumor affecting most commonly the parotid gland. In a series by Subhashraj et al, out of 363 cases of PA, 56% were in parotid followed by 20% in submandibular gland. Everson JW et al also, in an analysis of 1408 PA, found parotid to be the commonest site followed by submandibular gland. Similarly in our study, parotid was involved in majority of cases (65.9%), followed by submandibular gland (14.6%) and sublingual gland (9.8%). In separate studies by Ito FA, Friedrich RE and Chidzonga MM, minor salivary gland was found to be the second commonest site next to parotid gland. Ito FA and Friedrich RE did not report any case in sublingual glands and Friedrich RE had 16% of cases in palate. In contrast, we had 8 cases (9.8%) in sublingual gland and had only 3 cases (3.7%) in palate.

Side

In the studies by Al-Khtoum N and Friedrich RE, laterality of the tumors were conspicuous– especially in parotid gland. Both studies showed more involvement of right side (65.8%, 72.5% respectively) in contrast to our study which showed marginally more cases on left side (52.4%).

Size

Majority of cases (63/66) in parotid and submandibular glands presented with tumors larger than 2 cm while majority of intra-oral cases (13/14) presented with tumor smaller than 2 cm. This was perhaps because intra-oral lesions gave rise to early discomfort and
were noticed early.

Age & Sex

Female patients are known to be more affected than males. The peak incidence occurs in 4th and 5th decades. In the present study, females were more affected in a ratio of 1:1.6. However in minor salivary glands the sex ratio was insignificant. In a study among Jordanian patients no gender predilection could be elicited. The maximum number of cases we reported were in third and fourth decades, which is younger compared to other literatures.

Pathology

Though microscopically PA may show great variations, the main diagnostic feature is the presence of both epithelial and mesenchymal like tissues. Their proportion has been used to subclassify PA, however no therapeutic or prognostic significance could be found. The different types of cells seen include plasmacytoid, spindle, cuboidal, basaloid, squamous, clear, mucous and oncocytic cells. The commonest cell type in our study was plasmacytoid as in other study. The epithelial component may form trabeculae, ducts, cysts, or predominantly solid areas. Mesenchymal component classically show chondromyxoid stroma with or without areas of calcifications and hyalinization.

Clinical feature & Follow up

All the cases were treated by complete surgical excision which is the treatment of choice. PA can show local recurrence and give rise to carcinoma both in minor and major salivary glands especially in long standing and recurrent cases. However in our study all the cases were followed up for a variable period of 8 months to 2 years and none of them showed any recurrence.

Conclusion

Most of the findings in our series were similar to other previously published international literature. However involvement of younger patients, left side and minor salivary glands were found to be more in the current study.

References

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