A Clinicopathological study of salivary gland neoplasms in a tertiary care hospital: A three year study

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Abstract

Background: The tumors of the salivary glands are uncommon head and neck neoplasms. The aim of this study was to observe the clinical occurrence of salivary gland neoplasms and to study the various histo-morphological features of salivary gland tumours, their frequency, age and sex distribution.

Materials and Methods: The cases which have arrived to the Dental OP at Drs Sudha and Nageswara Rao Sidhartha Institute of Dental Sciences with swellings in the head and neck region were identified and sent to pathology department from June 2013 to May 2016 and cases which were diagnosed as salivary gland neoplasms (96 cases) were taken into consideration and Histopathological examination was done.

Results: Out of 96 cases, 51 (53.1 %) were benign and 45(46.9 %) were malignant with M:F ratio of 1.74:1. Age range of patients was from 10 to 80 years. Pleomorphic adenoma was found to be the commonest benign tumour (74.5 %), followed by Warthin’s tumor (19.6%), monomorphic adenoma (3.9 %) and basal cell adenoma (3.9 %). The mucoepidermoid carcinoma was the most common malignant tumor (48.8%) followed by adenoid cystic carcinoma (33.3%), acinic cell carcinoma (13.3%), adenocarcinoma NOS (2.2%) polymorphous adenocarcinoma (2.2%)

Conclusion: Males were more affected than females and pleomorphic adenoma was the most frequent lesion followed by warthin’s tumor among benign neoplasms. Mucoepidermoid carcinoma is the most common malignant neoplasm followed by adenoid cystic carcinoma.

Keywords: monomorphic adenoma, pleomorphic adenoma, adenocarcinoma

Introduction

Salivary glands are exocrine organs that secrete saliva widely distributed throughout the mouth and oropharynx. There are three pairs of salivary glands-parotid, submandibular and sublingual glands [1]. Salivary gland tumours are rare, comprising approximately 3% to 10% of the neoplasm of the head and neck region [2, 3]. The global incidence of these tumours is 0.4–1.35 per 100,000 persons. Approximately 80% of the salivary gland tumours are found in the parotid gland and 10 to 15% in the submandibular gland [4]. Around 80% parotid tumours and 50% of submandibular tumours are benign. Salivary gland tumours were observed in all ages but the highest incidence is observed in 3th and 4th decades for benign tumours and 4th and 5th decades for malignant tumours. The aim of this study was to observe the clinical occurrence of salivary gland neoplasms and to study the various histo-morphological features of salivary gland tumours, their frequency, age and sex distribution.

Materials and Methods: The cases which have arrived to the Dental OP with swellings in the head and neck region were identified and sent to pathology department from June 2013 to May 2016 and cases which were diagnosed as salivary gland neoplasms were taken into consideration. Information regarding age, gender, frequencies of different benign and malignant salivary tumors in both major and minor glands were identified. All the biopsy specimens were fixed in 10% formalin, then processed into paraffin embedded sections and stained with haematoxylin and eosin (H&E).
Results

<table>
<thead>
<tr>
<th>Age distribution</th>
<th>Benign tumors</th>
<th>Malignant tumors</th>
<th>Total Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>21-30</td>
<td>10</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>31-40</td>
<td>20</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>41-50</td>
<td>8</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>51-60</td>
<td>5</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>61-70</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>70-80</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 1:** Age wise distribution of salivary gland neoplasms

<table>
<thead>
<tr>
<th>Sex</th>
<th>Total (Male)</th>
<th>Benign (Male)</th>
<th>Malignant (Male)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61(63.5%)</td>
<td>30 (49.1%)</td>
<td>31 (50.9%)</td>
</tr>
<tr>
<td>Female</td>
<td>35(36.5%)</td>
<td>21 (60%)</td>
<td>14 (40%)</td>
</tr>
</tbody>
</table>

**Table 2:** Distribution of benign and malignant tumors according to sex

<table>
<thead>
<tr>
<th>S. No</th>
<th>Benign</th>
<th>Number of cases</th>
<th>Malignant</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pleomorphic Adenoma</td>
<td>38</td>
<td>Mucoepidermoid Carcinoma</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>Warthin’s tumor</td>
<td>10</td>
<td>Adenoid Cystic Carcinoma</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Basal cell Adenoma</td>
<td>2</td>
<td>Acinic Cell Carcinoma</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Monomorphic Adenoma</td>
<td>1</td>
<td>Adenocarcinoma NOS</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Polymorphous low grade adenocarcinoma</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3:** Distribution of various benign and malignant salivary gland tumors

Out of 148 biopsies taken from head and neck swellings in Drs Sudha and Nageswara Rao Siddhartha Institute of Dental Sciences Hospital during the study period, 96 cases were related to salivary gland tumors and they were included in our study of the 96 cases, 51(53.1%) were benign and 45(46.9%) were malignant (Table 3), representing a ratio of 1:1 respectively. Male were more affected by both benign and malignant tumors, Male to Female ratio for salivary gland neoplasms is 1.74:1 (Table 2). The highest incidence for benign tumors was in the 2nd and 3rd decade, whereas for malignant tumor it was the 4th and 5th decade of life (Table 1). Distribution of benign salivary gland tumors are shown in Table 3. Among the benign salivary gland tumors, pleomorphic adenoma (fig.1) was the most common histologic type followed by warthin’s tumor (fig.2). Distribution of malignant tumors in salivary glands is shown in Table 3. Mucoepidermoid carcinoma (48.8%) was most common among the malignant salivary gland tumors followed by Adenoid cystic carcinoma (33.3%) (Table 3)

**Discussion**

In the present study of 96 cases of salivary gland tumors, 51 (53.1%) were benign and 45 (46.9%) were malignant (Table 3). This was in concordance with other studies where there is predominance of benign tumors over the malignant ones [5, 6]. Benign salivary gland tumors were more common in age group of 31 to 40 years and the peak age incidence observed for malignant salivary gland tumors was 41 to 50 years. Chatterjee et al. observed large number of benign cases in third decade followed by fourth decade [7]. Malignancy reported in his study was predominant in the 5th decade. In the present study a male preponderance was noted with a male: female ratio of 1.7:1. This is in agreement with series reported by Potdar GG et al. 8 Spiro et al. [9]. However; this was in contrast to the series reported by Dandapat et al. [10] and Rewsuwan et al. [11] who reported a female predominance in their study. Pleomorphic adenoma was the most common benign salivary gland tumor encountered in parotid, submandibular and minor salivary glands12-14 Similar findings were observed in the present study where pleomorphic adenoma was the most common benign salivary gland tumor at all locations. Out of total 38(74.5%) pleomorphic adenomas in our study, majority occurred in the parotid gland.

**Histopathological Pattern of Salivary Gland Tumors**

![Fig 1: Pleomorphic Adenoma showing both epithelial and mesenchymal components (H&E stain X 200).](http://www.oraljournal.com)

![Fig 2: Warthin’s tumour. The papillary projection showing oncocytic lining cells and an underlying lymphoid stroma (H&E stain, X 200).](http://www.oraljournal.com)
Salivary gland tumors are rare. Males were the most affected than females and pleomorphic adenoma was the most frequent lesion followed by warthins tumor among benign neoplasms. Mucoepidermoid carcinoma is the most common malignant neoplasm followed by adenoid cystic carcinoma.

References
1. Robbins and Cotran Pathologic basis of disease volume 2 540–80