Study of histopathological patterns of salivary gland lesion

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Abstract:

Objective: To to examine the histological range of salivary gland lesions and determine their distribution pattern. **Methodology:** This study examines cases of salivary gland tumours (neoplasms of both major and small salivary glands) at the pathology department of a tertiary care teaching hospital. Study included salivary gland biopsies / tissue following surgical resection, submitted, processed routinely and stained with H & E stain, histo-pathologically diagnosed salivary gland lesions in the department of pathology. Histopathological study was carried out as records available of previous 5 years. **Results:** Proportion of patients with poor oral hygiene (n=71, 76.3%) were morethan good oral hygiene (n=22, 23.7%). Frequency of benign lesion (n=68, 73.1%) were higher than malignant lesion (n=25, 26.9%). The proportions of parotid gland lesions (n=61, 65.6%) were more common than the sub-mandibular gland lesions (n=24, 25.8%). Pleomorphic salivery gland adenoma (n=54, 58.1%) was the most prevalent morphological spectrum of lesions followed by mucoepidermoid carcinoma (n=12, 12.9%) and warthin's tumor (n=6, 6.5%). **Conclusion:** Salivary gland tumours are rare and have a wide histological spectrum with overlap in their morphology. Salivary gland tumours are more common in men than in women. Salivary gland tumours, whether benign or malignant, typically arise in the parotid gland.To determine the exact prevalence, large scale studies are warranted.

Keywords: salivary glands, histopathology, pattern, gender

Introduction:

Salivary gland tumours (SGT) are uncommon; they make up between 3% and 10% of head and neck neoplasms1 and have a yearly incidence of just 1/100,000 people.[1,2] These tumours have a yearly incidence of 0.4-13.5 per 100,000 people worldwide.[3] The salivary glands contain a wide spectrum of benign and malignant neoplasms that are challenging to diagnose since they are both uncommon tumours and have a large variety of morphological features and varying clinical outcomes. Salivary gland tumours are of major relevance to pathologists and head and neck surgeons because of the associated morbidity and mortality, and more especially because important head and neck structures such as the facial nerve cross these glands.[4]

From discomfort to malignancy, salivary gland lesions can range. Salivary glands typically contribute to a number of pathologic conditions, including cystic, inflammatory, tumour-like, and neoplastic lesions. These tumours present a unique challenge for histopathologists and surgeons alike because of their vast spectrum of biologic behaviour and diverse histologic characteristics. Tumours that are malignant and benign share similarities both macroscopically and aesthetically. Additionally, some benign tumours, such pleomorphic adenoma, exhibit recurrence and recurrent surgical failures.[5] There are differences in these tumours' characteristics between different countries, and it seems that racial and geographic factors may have an effect on their clinicopathologic characteristics. Clinical data including patient age and gender, location of

involvement, and relative occurrence are necessary for accurate care.[6]

Patients can be challenging to diagnose because of their varied and complex histopathology findings. The diagnosis of these neoplasms heavily relies on histopathological analysis. This study was conducted to examine the histological range of salivary gland lesions and determine their distribution pattern.

Methodology:

This study examines cases of salivary gland tumours (neoplasms of both major and small salivary glands) that were seen between 2017 and 2020 at the pathology department of a tertiary care teaching hospital in the Andaman and Nicobar Islands. The histopathological requisition forms were used to gather pertinent information, such as the patient's age and sex as well as the location of the tumour.

Following surgical excision, salivary gland samples or tissue were submitted, processed regularly, stained with H&E stain, and histo-pathologically identified as salivary gland lesions at the department of pathology. A histopathological analysis was done.

The previous year's record of salivary gland diagnosed as salivary gland lesions, in the Department of Pathology and All the salivary gland tissue specimen submitted, diagnosed as salivary gland lesions irrespective of age and sex, were included in this study. Autolysed/necrosed tissue specimen and inadequate biopsy were excluded.

Clinical information was gathered from the patient's hospital record and the request form that was filed with the tissue sample that was received in the pathology department. Sections was made from paraffin blocks. H&E stain was used to stain the sections. When necessary, special stains were carried out. Samples collected from qualified study populations were inspected under a microscope.

All data were gathered and recorded into an excel file. Qualitative data were expressed as frequency and percentage, whereas quantitative data were expressed as mean and standard deviation (SD). In order to compare two means (quantitative data), an independent sample t test of significance was performed. The proportions between qualitative factors were compared using the Chi-square test of significance. The margin of error was accepted as 5%, and the confidence interval was set to 95%.

Results:

Male subjects (n=52, 55.9%) were more than femalesubjects (n=41, 44.1%). Mean age in males were 35.46±17.3 years and mean age of female were 41.2±12.7. Proportion of patients with poor oral hygiene (n=71, 76.3%) were more than good oral hygiene(n=22, 23.7%). (Table 1)

Table 1. Socio-demography of study subjects(n=93)

Gender	Number	Percentage
Male	52	55.9
Female	41	44.1
Oral hygiene		
Poor	71	76.3
Good	22	23.7
Residence		
Rural	51	54.8
Urban	42	45.2

The proportions of parotid gland lesions (n=61, 65.6%) were more common than the sub-mandibular gland lesions (n=24, 25.8%). Pleomorphic salivery gland adenoma (n=54, 58.1%) was the most prevalent morphological spectrum of lesions followed by mucoepidermoid carcinoma(n=12, 12.9%) and warthin's tumor(n=6, 6.5%).(Table 2)

Table 2.Morphological spectrum of salivary gland tumours

Tumours	Parotid Gland	Submandibular Gland	Minorsalivary gland	Total
Pleomorphic adenoma	33	17	4	54
Mucoepidermoid carcinoma	6	5	1	12
Warthin tumour	6	-	-	6
Acinic cell carcinoma	3	1	1	5
Epidermal cyst	5	-	-	5
Adenoid cystic carcinoma	2	1	1	4
Oncocytoma	4	-	-	4
Basal cell adenoma	-	-	1	1
Lymphoepithelial cyst	1	-	-	1
Carcinoma ex pleomorphic adenoma	1	-	-	1
TB lymphadenitis	61	24	8	93

Frequency of benign lesion(n=68, 73.1%) were higher than malignant lesion (n=25, 26.9%). Regarding gender wise distribution of salivary gland tumours, distribution of lesions between male and female was found to be statistically non-significant. ($p < 0.05$) (Table 3)

Table 3. Gender wise distribution of salivary gland tumours

Type of salivary gland tumours	Male		Female		Test of significance
	Number	Percentage	Number	Percentage	
Benign	40	43.1	28	30.1	$\chi 2=0.8687$, df=1, $p<0.05$
Malignant	12	12.9	13	13.9	

Majority of parotid gland (n=46, 49.5%) and sub-mandible gland (n=17, 18.3%) lesion are benign in nature.This difference was found to be statistically non-significant. ($p < 0.05$) (Table 4)

Table 4 Distribution of salivary gland tumours as per nature of tissue and type

Nature of tissue	Benign		Malignant		Test of significance
	Number	Percentage	Number	Percentage	
Parotid	46	49.5	15	16.1	$\chi 2$=0.6856,
Sub-mandibular	17	18.3	7	7.5	df=2,
Minor salivary gland	5	5.3	3	3.2	p <0.05

Discussion:

In our study, more male patients than female individuals participated in our study. Our data strongly agrees with the findings of Ansari et al.[7], who found that 40% of men and 60% of women had lesions, respectively.

In this study, mean age in males were 35.46±17.3 years and mean age of female were 41.2±12.7. Difference of mean age between both genders are not statistically significant. This is almost similar to the observation of others.[8]

In this study, in comparison to sub-mandibular gland lesions (n=24, 25.8%), parotid gland lesions were more prevalent (n=61, 65.6%). This observation is quite similar to those made in studies by Nepal et al.[9], Naeem et al.[10], and Moghadam SA et al.[11], which found that benign tumours predominated over malignant ones.

Pleomorphic salivery gland adenoma (n=54, 58.1%), mucoepidermoid carcinoma (n=12, 12.9%), and warthin's tumour (n=6, 6.5%) were the most common morphological spectrum of lesions in this study. This is almost identical to what other people have observed.[12,13] Similar to what Vedula B et al.[14] from Andhra Pradesh described, all six cases of Warthin tumour involved just the parotid gland.

Another study from Manipur[15] indicated that the parotid gland (58.65%) and submandibular gland (31.73%) were the two salivary glands where the bulk of lesions were detected (91.34%). The parotid gland (66.07%) and submandibular gland (28.57%) were the most frequently affected glands among benign tumours. Again, the parotid gland (59.09%) was most commonly involved with malignant tumours, followed by the submandibular gland (27.27%) and the minor salivary gland (13.64%). Olu-Eddo AN. et al.[8] revealed that the benign-malignancy ratios for the parotid, minor salivary gland, and submandibular tumours were, respectively, 1.3:1, 1.9:1, and 4.6:1.

A malignant neoplasm called carcinoma ex pleomorphic adenoma (Ca ex PA) develops from a benign pleomorphic adenoma. A recurring pleomorphic adenoma may also cause it. It accounts for 11.7% (range, 2.8%-42.4%) of salivary malignancies and 3.6% (range, 0.9%-14%) of all salivary neoplasms.[16] In this investigation, there was only one instance of carcinoma ex pleomorphic adenoma.

The distribution of lesions between male and female in this study was found to be statistically non-significant with regard to the gender-based distribution of salivary gland tumours. The authors were unable to find relevant literature to contrast or compare this finding with our study.

Conclusion:

Salivary gland tumours are rare and have a wide histological spectrum with overlap in their morphology. Salivary gland tumours are more common in men than in women. Salivary gland tumours, whether benign or malignant, typically arise in the parotid gland. Benign lesions were more common than malignant lesions. The most common type of disease in terms of morphology was a salivary gland adenoma. To determine the exact prevalence, large scale studies are warranted.

Authors' contribution:

All the authors contributed equally.

Conflict of interest:

The authors declare no conflicts of interest.

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