

Original article**Pattern of distribution of different salivary gland tumors; a retrospective study in NICRH, Dhaka**Afroza K¹, Gulshan A², Rahman MA³**Abstract:**

Background: Salivary gland tumors are rare, generally benign and affect both major and minor salivary glands. **Objective:** To find out the pattern of distribution of different benign and malignant salivary gland epithelial tumors and their relation to age and sex in a tertiary care center in Bangladesh. **Methodology:** This is a retrospective study. Details of epithelial salivary gland tumors were obtained from department of ENT, National institute of cancer & research hospital (NICRH), Dhaka, Bangladesh, Dhaka from the period January 2009 to December 2012 (3 years). **Result:** A total number of 261 cases presenting with both benign and malignant salivary gland tumors were analyzed according to gender, age and histopathological findings. There were 130 (49.84%) males and 131 (50.19%) females with the male female ration of 1: 0.99. Age of study population ranged from 10 to 70 years with the mean age 40.78. Percentage of benign salivary gland tumors was 73.94% and malignant salivary gland tumor 26.05%. Among major salivary gland tumors no sublingual tumors were found and parotid gland tumors were the commonest. Whereas, among minor salivary gland tumors palatal minor salivary tumors were common. **Conclusion:** Parotid gland was the most common site of origin of both benign and malignant salivary gland tumors. Histopathologically, pleomorphic adenoma was the most common benign salivary gland tumor and mucoepidermoid carcinoma was the most frequent malignant neoplasm. Adenoid cystic carcinoma was common minor salivary gland tumor.

Key words: salivary gland tumors.

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Introduction:

Salivary gland neoplasms are remarkable for their histological diversity & pose a particular challenge to pathologists as well as clinicians and surgeons because of their complex classification and rarity of several varieties^{1,2}. All salivary glands tumors are

relatively rare accounting for approximately 3% to 10% of all head & neck tumors^{3,4}. More than 80% of parotid gland tumors are benign and more than 50% of submandibular and sublingual gland tumors are malignant^{4,6}. Minor salivary gland tumors mostly involve palate and 75% to 80% of them are malignant. Among minor salivary glands, adenoid cystic carcinoma is the most common.⁷ Majority of the patients presenting with salivary gland tumors remain asymptomatic. However, a number of clinical predictors suggest malignant changes such as rapid increase in size, fixity, 7th facial nerve palsy, cervical lymphadenopathy,

Table 1. Frequency of distribution of benign and malignant salivary gland tumors according to site of involvement & sex.

Site	Benign tumor (n=193)				Malignant tumor (n= 68)			
	Female (n=100)		Male (n= 93)		Female (n=31)		Male (n=37)	
	n	%	n	%	n	%	n	%
Parotid gland	61	61	64	68.8	18	58	21	56.75
Submandibular gland	36	36%	26	27.95	5	16.12	6	16.21
Sublingual gland	0	0	0	0	0	0	0	0
Minor salivary gland	3	3	3	3	8	21.62	10	27

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trismus, cutaneous ulceration or fistula tract may be present. Pleomorphic adenoma and mucoepidermoid carcinoma are the most common benign and malignant tumors respectively⁹⁻¹².

The purpose of the current study was to assess the pattern of distribution of benign and malignant epithelial salivary gland tumors in relation to age & sex of the study group presenting at NICRH, Dhaka. The clinical aspects and histopathological findings were analyzed to determine possible relations.

Methods:

This is a retrospective study in which information were gathered from every cases presenting with epithelial salivary gland tumors at department of ENT, NICRH, Dhaka during the study period January 2009 to December 2012 (3 years). Patients with recurrent, non epithelial & metastatic tumors were excluded from the study. Information were gathered regarding disease duration in years, tumor size in cm, pain (present/absent), tumor consistency (firm/hard/stony), fixity (present/absent), ulceration (present/absent), rapidity of growth (slow/rapidly growing), 7th cranial nerve involvement, presence of CLN metastasis with local and distant metastasis.

Final histological diagnosis and classification of the neoplasms were recorded according to 2005 WHO list. Study populations were divided in to 2 major groups; benign and malignant. The study was approved by ethical Committee of NICRH.

Result:

In the present study, a total number of 261 patients were diagnosed as either major or minor salivary gland tumors. Among them, 130 (49.84%) were male and 131 (50.19%) were female with male female ration of 1:0.99. The age ranged from 10 to 70 years with mean age 40.78 years. A total number of 193 benign and 68 malignant salivary gland tumors were found with the benign malignant ratio being 2.8:1. Peak incidence of benign tumor was in 4th decade (40.5 years). It was observed that both male and female were frequently affected during this age. A total number of 93 male and 100 female patients with male female ratio of 0.93:1 were detected. Benign salivary gland tumors constitute 73.94% of all tumors in our study. Pleomorphic adenoma (72%) and Warthin's tumor (10.88%) were the 1st and 2nd most common benign tumors. The commonest site of involvement was parotid gland (64.79%) followed by submandibular

Table 2. Frequency of distribution of benign salivary gland tumor according to histopathological findings

Histopathological diagnosis	Parotid gland		Sublingual gland		Submandibular gland		Minor salivary glands		All	%
	F	M	F	M	F	M	F	M		
Pleomorphic adenoma	46	44	0	0	24	23	8	0	139	72.02
Warthin's tumor	7	9	0	0	2	1	0	0	21	10.88
Hemangioma	3	2	0	0	1	0	0	0	6	3.10
Oncocytoma	0	3	0	0	3	0	0	0	6	3.10
Myoepithelioma	1	2	0	0	2	1	0	2	8	4.14
Basal cell adenoma	2	2	0	0	1	1	0	2	8	4.14
Lipoma	2	2	0	0	1	0	2	0	7	3.62
Total	125 (64.76%)		0		60 (31%)		8 (44.44%)			100%

Table 3. Frequency of distribution of malignant salivary gland tumor according to histopathological findings

Histopathological diagnosis	Parotid gland		Sublingual gland		Submandibular gland		Minor salivary glands		All	%
	F	M	F	M	F	M	F	M		
Mucoepidermoid carcinoma	18	7	8	4	0	0	2	1	40	58.82
Adenoid cystic carcinoma	5	3	3	1	0	0	4	3	19	27.82
Acinic cell carcinoma	2	0	1	1	0	0	0	1	5	7.35
Mixed parotid tumor	3	0	0	0	0	0	0	1	4	5.88
Total	39 (64.76%)		18 (26.47%)		0		11 (61.1%)		68 (26.05%)	100%

gland (31%). No sublingual gland tumors were detected in this study. Minor salivary gland tumors were 44.44%. Out of all cases, total number of malignant salivary gland tumors was 68. Among them, major salivary gland involvement was 57 cases and minor salivary gland involvement 11 cases. Male female distribution of these malignant salivary gland tumors was 1.19:1. Mucoepidermoid carcinoma (58.28%) was the most common type followed by adenoid cystic carcinoma (27.94%) of both major and minor salivary glands. Involvement of these malignant tumors was seen mostly in parotid and minor salivary glands. Palate was the most common site of involvement of minor salivary gland malignant neoplasm (61.01%).

Discussion:

Salivary gland tumors probably are the most complex human neoplasm accounting for 3-10% of all head and neck tumor¹⁻³. During the study period of 3 years (January 2009 to December 20012), informations were gathered from total number of 261 cases consisting of both major and minor salivary gland tumors presenting at department of ENT in NICRH, Dhaka. Greater involvement of tumors was in the major salivary glands and parotid gland was the most common site of involvement. Among parotid gland tumors, 72.02% were benign in nature which is consistent with other studies³⁻⁵. The current study shows, ratio between benign and malignant tumors was 2.8:1. This ratio varies in different countries from 1.1:1 in Africa to 5.6:1 in Europe⁵⁻⁷. Etiological factors for the salivary gland tumors were not clear however. Sun exposure, alcohol consumption, tobacco smoking, radiation exposure, chemotherapy, vitamin deficiency and industrial workers plays great role^{4, 5}.

In our study, benign salivary gland tumors were predominant in female (51.25%) and malignant tumors in male patients (67%). Male female ratio of benign and malignant salivary gland tumors was 0.93:1 and 1.19:1 respectively. This ratio is decreasing in recent years as smoking is a risk factor for development of this neoplasm and number of smokers among female are increased now a days. Besides, female are involved as workers in different function and smoke producing factories and chemical industries. Mean age of presentation of these tumors was 40.5 years and 49.5 years which are consistent to another study^{12, 13}. Benign tumors

among both male and female patients were more in lower age group in our study. This finding is not consistent with study in China and Sri Lanka where lower age group had more incidences of malignant tumors^{6, 9}. In the current study and also worldwide it is observed that benign salivary gland tumors are common in female where as malignant salivary gland tumors have a propensity to affect males¹².

The mode of clinical presentation in our study shows, all patients presented with swelling of the affected region of various sizes. Usually, size of benign tumors was larger than the size of malignant ones (size of tumors ranging from 2-12 cm). Majority of patients with parotid gland tumors and few cases of malignant submandibular salivary gland tumors presented with pain of prolonged duration, rapid growth in size, fixation and nerve involvement. These findings were consistent with other studies¹⁴. Majority of our study population were from lower middle and poor classes and from rural areas. Most of patients among them received treatment from local quacks or village doctors before attending specialists. As a result of which, most of the patients presented at advance stage of the disease with some complications.

Pleomorphic adenoma is the most common benign salivary gland tumor followed by Warthin's tumor. Parotid gland is the most common site of involvement of these tumors^{10-12, 14}. Among malignant tumors, mucoepidermoid carcinoma of salivary gland was the commonest followed by adenoid cystic carcinoma. These incidences were similar to other previous study in Bangladesh and Sri Lanka.⁶ But this incidence of malignant tumors was not consistent with other study in India, Africa and Brazil⁵.

Conclusion:

The current study concludes that, parotid gland is the commonest site of both benign and malignant salivary gland tumors. On the basis of histological findings pleomorphic adenoma is the most common benign and mucoepidermoid carcinoma is the most common malignant tumour of salivary glands. The peak incidence of benign tumor was in the 4th decade and that of malignant tumor was between 5th and 6th decade of life. These informations would to some extent help the clinicians, surgeons and pathologists for more accurate diagnosis and early appropriate management.

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