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SPECTRUM OF SALIVARY GLAND LESIONS AND FREQUENCY OF ADENOID CYSTIC CARCINOMA IN SALIVARY GLANDS AND EXTRA SALIVARY SITES

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ABSTRACT

OBJECTIVES: *(1) To see the morphological patterns of non neoplastic and neoplastic lesions of salivary glands.*
(2) To see the frequency of Adenoid Cystic carcinoma in salivary gland and Extra salivary sites.
STUDY DESIGN: *Retrospective and prospective data collection of all the cases of Salivary gland lesions including the cases of Adenoid Cystic Carcinoma at extra salivary sites over a 4- year period (2005-2008).*
Heamotoxylin and eosin (H & E) stained sections were studied in all cases. Special stains performed in selected cases included PAS, Reticulin & Trichrome.
SETTING: *Pathology department, Basic Medical Sciences Institute, JPMC Karachi*
RESULTS: *Total of 43 cases were retrieved and evaluated. Out of 43 cases only 2 cases (4.6 %) were non-neoplastic. i.e acute and Chronic Sialadenitis. Among the neoplastic lesions, most common benign tumour was pleomorphic adenoma counting 32 cases (74.4%) and one case (2.3%) of monomorphic adenoma. In the malignant tumours there were 3 cases (6.9%) of Adenoid Cystic Carcinoma, 3 cases (6.9%) of mucoepidermoid carcinoma and 1 case (2.3%) each of Squamous cell carcinoma & Acinic cell carcinoma. Total cases of Adenoid Cystic Carcinoma were 6 (14.6%). 3 of them originated from the salivary glands and 3 were seen at extra salivary sites including one case each in lacrimal gland, Vagina and Nasal cavity.*
CONCLUSION: *Benign tumours comprise 76.7% of all salivary gland lesions. Adenoid Cystic Carcinoma was the most common malignant tumour, also found at extra salivary sites; therefore it should not be overlooked at extra salivary sites.*

KEY WORDS: Salivary Gland Lesions, Pleomorphic Adenoma, Adenoid Cystic Carcinoma.

INTRODUCTION:

Salivary glands include major salivary glands parotid, submandibuler and sublingual salivary glands as well as innumerable minor glands distributed in oral musoca.

Salivary gland lesions as a diverse group can be classified as infectious, inflammatory or neoplastic. Non neoplastic salivary gland lesions include calculus disease, acute or chronic inflammatory lesions, neoplasms and vascular lesions. Numerous pathologies involve the salivary glands and may clinically present as facial or neck lump, diffuse swelling and pain. The inflammation of salivary gland (sialadenitis) may be due to trauma, viral and bacterial infections or autoimmune origin. Mucoceles are the most common inflammatory salivary gland lesion.

According to WHO classification, neoplastic lesions are divided into 5 groups, i.e. Benign & malignant epithelial tumours, soft tissue tumours, Hemato lymphoid tumours and secondary tumours.

Salivary gland tumours account for 3% of all tumours and 5% of head and neck tumours. Approximately 70-80% of salivary gland tumours originate in the parotid glands 10% in submandibular gland and 22% in minor salivary glands.

Benign tumours are more common than the malignant tumours. Most tumours in the parotid and submandibular glands are benign i.e. 80% and 60% respectively. Females show a predilection for parotid tumours whereas at other salivary gland sites, gender distribution is equal. Pleomorphic adenomas are the most common benign tumours

comprising 85% of all salivary gland tumours.

Mucoepidermoid carcinoma is the most common salivary gland malignancy in both adults and children. Mean patient age is 45 years. Adenoid cystic carcinoma (ACC) is an uncommon and usually indolent cancer arising within glands and occurring mainly in the head and neck but also in the breast, trachea, lacrimal glands, skin and vulva.

Although ACC accounts for less than 1% of all head and neck malignancies and 10% of all salivary neoplasm, this is the most common malignancy of minor salivary glands. The peak incidence of ACC is between 50 and 60 years of age. It seldom occurs before the age of 20 years. There is slight male predilection.

The purpose of this study is to see the morphological pattern of non neoplastic and neoplastic lesions of salivary glands, and to share our experience of Adenoid Cystic carcinoma in salivary gland and Extra salivary sites.

MATERIALS AND METHODS:

This study was carried out in the department of pathology, Basic Medical Sciences Institute, Jinnah Post Graduate Medical Centre Karachi.

It was a retrospective as well as prospective study. All the cases of major and minor salivary gland lesions, received at department of Pathology from 01-01-2005 to 31-12-2008 were included.

During the period, all the cases of Adenoid Cystic carcinoma, both in salivary glands and extra salivary gland sites were also included in the study.

Heamotoxylin and Eosin (H & E) stained sections were studied in all cases. Special stains performed in selected cases included PAS, reticulin and Masson Trichrome.

RESULTS:

43 cases of Salivary gland lesions were retrieved and evaluated. Of these, only 2 cases (4.6%) were non neoplastic i.e. one each case of acute and chronic sialadenitis. Among the neoplastic lesions, most common was pleomorphic adenoma, accounting for 32 cases (74.4%), followed by 3 cases of adenoid Cystic carcinoma (6.9%), 3 cases of Mucoepidermoid carcinoma (6.9%) and 1 each case of Monomorphic Adenoma, Squamous cell carcinoma and acinic cell carcinoma.

Out of 43, 22 cases were female and 21 were male, with female to male ratio as 1.04:1.

Benign tumours were equally represented in both sexes in our study, i.e. 17 cases in males and 16 in females, whereas malignant

TABLE.1
SPECTRUM OF SALIVARY GLAND LESIONS.

Type of Lesion		Diagnosis	No (%)	Total (%)
Non Neoplastic		1.Acute Sial adenitis	1 **(2.3%)**	2 (4.6%)
		2.Chronic Sial adenitis	1 **(2.3%)**	
Neoplastic	Benign	1.Pleomorphic Adenoma	32 **(74.4%)**	
		2.Monomorphic Adenoma	1 **(2.3%)**	33 (76.7%)
	Malignant	1.Adenoid Cystic Ca	3 **(6.9%)**	
		2.Mucopidermoid Ca	3 **(6.9%)**	
		3.Acinic Cell Ca	1 **(2.3%)**	
		4.Squamous Cell Ca	1 **(2.3%)**	8 (18.6%)
	Total			43

FIGURE.1:
SPECTRUM OF SALIVARY GLAND LESIONS.

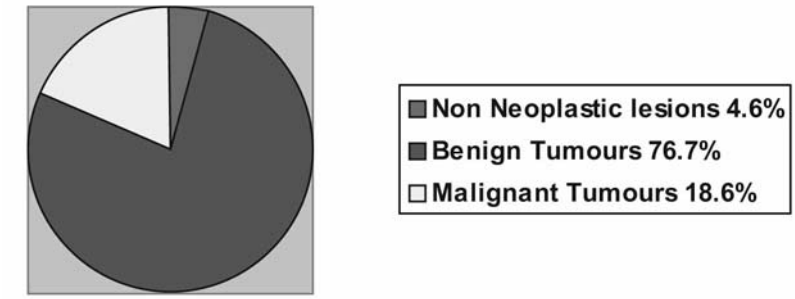
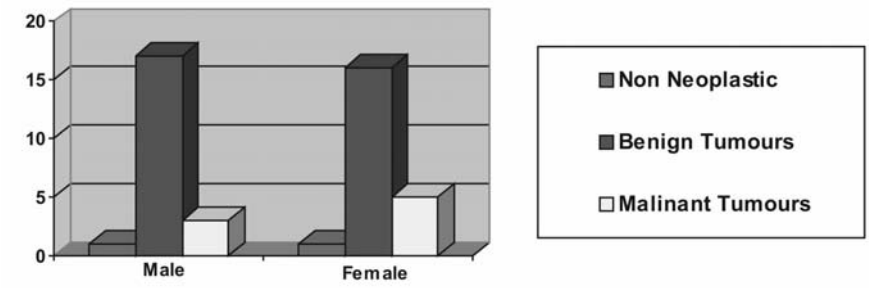


TABLE.2
GENDER DISTRIBUTION IN SALIVARY GLAND LESIONS.

Sex	Non Neoplastic	Benign Tumours	Malignant Tumours	Total (%)
Male	1 (2.3%)	17 (39.5%)	3 (6.9%)	21 (48.8%)
Female	1 (2.3%)	16 (37.2%)	5 (11.6%)	22 (51.1%)

FIGURE.2:
FREQUENCY OF SALIVARY GLAND LESIONS.



tumours were more common in female patients, 5 cases compared to 3 in males. Mean age of benign tumour was 34 years, range between 9-70 years.

Mean age of malignant tumour was 46.8 years, range between 17-60 years.

Most common benign tumour in our study was Pleomorphic adenoma, including 32 cases which constituted 74.4% of all lesions and of 96.6% all benign tumours.

Amongst the malignant tumours in salivary glands, most common were Mucoepidermoid carcinoma and Adenoid Cystic Carcinoma. i.e. 3 cases each, comprising 37.5% of malignant tumours and 7.3% of all tumours.

Total cases of ACC were 6, comprising 54.4% of malignant and 14.6% of all tumours.

Out of these 3 cases originated from the salivary glands while equal number i.e. 3 were seen at extra salivary sites including one case each in lacrimal gland, Vagina and Nasal cavity.

Males were affected more than females. Mean age was 45 years in the age-range between 30- 60 years.

TABLE.3
AGE DISTRIBUTION IN SALIVARY GLAND LESIONS.

Age of Patient. Years	Non.Neoplastic Lesions	Benign Tumours	Malignant Tumours	Total
< 10	-	1	-	1
10-20	-	1	1	2
21-30	-	14	1	15
31-40	1	9	2	12
41-50	1	5	2	8
51-60	-	1	2	3
61-70	-	2	-	2

TABLE.4
ADENOID CYSTIC CARCINOMA AT SALIVARY / EXTRA SALIVARY SITES

	Sites	Age years	Sex	Mean age year
Salivay Glands	Parolid	55	M	45
	Submandibular	45	M	
	Labial	45	M	
Extra Salivary Sites	Lacrimal gland	60	F	
	Nasal Cavity	30	M	
	Vagina	40	F	

DISCUSSION:

Our study basically revealed the distribution of salivary gland lesions according to the age and gender, and a review to compare and contrast the single institution based experience of Adenoid Cystic Carcinoma with previously published studies.

In our series, benign lesions were more common, including 76.6% of all cases. This is identical to all published studies where benign tumours predominate the malignant tumours, incidence ranging between 67-88% (Ito et al, 2006). Females, in our study were found to be slightly more affected by the tumours, 51.1% and the males were 48.8%, with female to male ratio 1.04:1. This is similar to study by Lima et al (2005) where female to male ratio was 1.6:1, but in contrast to study by Malik (2007) which described high male to female ratio. Mean age of benign tumours, in our series was 34 years, while it was 46.8 years for malignant ones which is in conformity with the study by Obaid and Yousuf, 2004, while it was higher i.e. 40 years for benign and 54.8 years for malignant in the study by Vargas et al, 2002.

In our study, pleomorphic adenoma was the most common benign tumour accounting for 96.9% of benign and 74.4% of all neoplastic lesions. Similar observations were made in study by Ayub (2008), whereas in the study in Kenyan population by Hill in 2002, its incidence was found low, about 46%.

In our series, adenoid cystic carcinoma and Mucoepidemoid carcinoma were most common malignant tumours, each representing 37.5% of malignant lesions and 7.3% of all salivary gland tumours. Our study is in conformity with Obaid and Yousuf (2004). Whereas Hill (1979) and Speight (2002) reported Mucoepidemoid carcinoma most common tumour. The average age at presentation of ACC in our study was 45.8% years and none of the patients were below 30 years of age. Peak incidence of ACC is between 50 to 60 years of age Kim (2004). Males were more affected, twice than females in our study. Nascimento et al also reported that ACC was more common in men.

In addition, we searched extrasalivary sites for Adenoid Cystic Carcinoma and found three cases, one each in lacrimal gland, vagina and nasal cavity.

CONCLUSION:

In our study, benign tumours comprise more than 75% of all lesions. Pleomorphic adenoma is the most common benign tumour. ACC and Mucoepidermoid carcinoma are among the common malignant tumours, together representing 75% of all malignant salivary gland tumours.

ACC was also found at extra salivary sites; therefore it should not be overlooked at extra salivary sites.

REFERENCES:

1. M. Ayub Musani, Zahid Sohail, Morphological pattern of Parotid gland tumours, J coll physician Surg, 2008; 18:274-77.
2. Brandon G. Bentz, C.Anthony Hughes, et al. Masses of the salivary gland region in children, Arch otolaryngol head and neck surg. 2000; 126:1435-39.
3. Hilal Altino, Ozhan kula, et al. Adenoid cystic carcinoma, Turkish resp J 2003, 4; 85-87.
4. Lima SS, Soaress, et al. Epidemiologic profile of salivary gland tumours, analysis of 245. Rev Brs Otorhimo laryngol 2005; 71:335-40.
5. Richard draper, Adenoid Cystic Carcinoma, EMIS 2008; 21.
6. Obaid MA, Yousuf A. Surgical Management of epithelial parotid tumours, J Coll physical surg Pak, 2004; 14:394-99.
7. B Mova hedian, R Noori, M Rezaei, Epidemiology of Salivary gland lesions in referring patients to Isfahan University

of Medical Sciences 1998-2003, J of Isfahan Dental School; 3:1386.
8. M. Azeem Aslam, Adenoid cystic carcinoma in head and neck, J Coll physician Surg Pak 2002; 12:552-555.
9. Anil Ahuja, K T Wong, et al. Imaging of Salivary glands. Biomied Imaging and Int j, 2007; 1-3 (Abstract).
10. Zarbo R J, Regezi J A, et al. HLA- DR antigenism in normal, inflammatory and neoplastic salivary glands, Oral Surg Oral Med Oral Pathol, 2007: 1-2 (Abstract).
11. Hill AG, major Salivary gland tumours in a rural Kenyan hospital, East Afr Med J; 79:8-10.
12. Nascimento AG, Ameral ALP, et al. Adenoid cystic carcinoma of Salivary glands: a story of 61 cases with Clinical Pathologil Correlation. Cancer 1986; 571:312-19.