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Research Article

CLINICO-PATHOLOGICAL PROFILE OF MAJOR SALIVARY GLAND TUMORS

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ABSTRACT

Background: Salivary gland tumors consist of a group of heterogeneous lesions with complex clinico pathological characteristics and distinct biological behaviours. These tumors comprise 3% to 10% of all head and neck neoplasms.

Objectives: This study has been undertaken to know the distribution of the salivary gland neoplasms among the major salivary glands, to study the clinico-pathological profile of major salivary gland tumors and to validate the results of FNAC with that of histopathological diagnosis in terms of sensitivity, specificity and diagnostic accuracy.

Methods: The study has been conducted in Department of General Surgery, Kamineni Institute of Medical Sciences, Narketpally from October 2010 to September 2012 with a study population of 25 patients. It is a prospective observational study.

Results: It was found that benign tumors were common in 4th decade of life and malignant tumors in 6th decade of life. More number of benign tumors was observed than malignant tumors accounting for 72% and 28% respectively. Parotid gland (76%) was commonly affected with salivary neoplasms. Most common type of benign tumor was Pleomorphic adenoma. The most common histological type of malignant salivary gland tumor was Mucoepidermoid carcinoma. FNAC has a diagnostic accuracy of 92 % with sensitivity of 85.71 % and a specificity of 94.44 %

Conclusion: Thus it can be concluded that benign tumors are more common than malignant one. FNAC can be employed as a regular screening test in low resource settings.

Keywords: Parotid Gland, Salivary Glands, Profile, Benign Tumor.

INTRODUCTION

Salivary gland tumors consist of a group of heterogeneous lesions with complex clinico pathological characteristics and distinct biological behaviours. These tumors comprise 3% to 10% of all head and neck neoplasms¹. Worldwide epidemiological series show geographic variation in the relative incidence of salivary gland tumors, with discrepancies among clinico pathological aspects^{2, 3}. Salivary gland tumors are complex neoplasms, due to their broad histological spectrum resulting from multiple tumor cell differentiation⁴. While tumors of the salivary glands can appear at any age, the maximum incidence is in the fourth decade of life for benign lesions and in the fifth decade for malignant tumors, although different authors consider the peak incidence correspond to the period between the fifth and seventh decades of life Salivary gland tumors are more frequent in adults than in children. Classically, these lesions have been reported to be more frequent in women than in men. Salivary gland tumors are

more commonly found in the Parotid gland than any other gland. Among all salivary gland tumors, the most frequently reported benign tumor is Pleomorphic adenoma followed by Warthins tumor. Among the malignant salivary gland neoplasms, the Mucoepidermoid carcinoma is the most commonly occurring tumor^{5,6}.

Salivary gland neoplasms are most often manifested as slow-growing, well-circumscribed masses. Symptoms such as pain, rapid growth, nerve weakness, and signs of cervical lymphadenopathy and fixation to skin or underlying muscles suggest malignancy. Trismus is associated with involvement of the pterygoid musculature by deep parotid lobe malignancies^{7,8}.

This study has been undertaken to know the distribution of the salivary gland neoplasms among the major salivary glands, to study the clinico-pathological profile of major salivary gland tumors and to validate the results of FNAC with that of histopathological diagnosis in terms of sensitivity, specificity and diagnostic accuracy.

MATERIALS AND METHODS

The study has been conducted in Department of General Surgery, Kamineni Institute of Medical Sciences, Narketpally from October 2010 to September 2012 with a study population of 25 patients. It is a prospective observational study.

Inclusion criteria:

All patients who came to General Surgery department with major salivary gland neoplasms between the period of October 2010 to September 2012.

Exclusion criteria:

- Sialadenitis.
- Salivary gland tumors with secondaries
- Tumors that cannot be operated upon.

The study was conducted after taking approval from the hospital ethical committee. A total of 25 cases of major salivary gland tumors were studied after taking written, informed valid consent and proforma were filled in detail as follows:

- history taking, clinical examination, investigations like complete blood picture, renal function tests, chest x ray, ECG, blood sugar levels, FNAC from the swelling USG/CT/MRI of mandible as and when required.

Patients were subjected to appropriate surgical treatment and following surgery the specimens were sent for histopathological study. Patients were followed up postoperatively till the time of discharge.

RESULTS

Table 1: Age wise distribution of tumors (N=25)

Age distribution (years)	Number of benign cases	Number of malignant cases	Total (n)	Percentage (%)
11-20	1	-	1	4.00
21-30	2	-	2	8.00
31-40	7	1	8	32.00
41-50	3	1	4	16.00
51-60	3	4	7	28.00
61-70	2	1	3	12.00
Total	18	7	25	100.00

The present study showed that benign tumors were common in 4th decade of life and malignant tumors in 6th decade of life.

Table 2: Nature of Disease (N=25)

Nature of disease	Number (n)	Percentage (%)
Benign	18	72.00
Malignant	7	28.00
Total	25	100.00

In the present study more number of benign tumors was observed than malignant tumors accounting for 72% and 28% respectively.

Table 3: Glands commonly affected (N=25)

Gland affected	Number (n)	Percentage (%)
Parotid	19	76.00
Submandibular	6	24.00
Sublingual	-	-
Total	25	100.00

In present study Parotid gland (76%) was commonly affected with salivary neoplasms as compared to Submandibular gland (24%) and no case was reported in Sublingual gland.

Table 4: Gland and Nature of Disease (N=25)

Gland	Nature of disease		Total
	Benign (n)	Malignant (n)	
Parotid	15 (78.95%)	4 (21.05%)	19 (100%)
Submandibular	3 (50.0%)	3 (50.0%)	6 (100%)

The present study shows that the Parotid gland is more commonly affected with benign tumors (78.95%) as compared to Submandibular gland where equal distribution is seen for both benign and malignant lesions.

Table 5: Distribution of histological types of benign salivary gland tumors (N=25)

Historical variant	Number of cases (n)	Percentage (%)
Pleomorphic adenoma	14	77.78
Basal cell carcinoma	1	5.55
Monomorphic adenoma	1	5.55
Warthins tumor	2	11.12
Total	18	100.00

Most common type of benign tumor is Pleomorphic adenoma followed by Warthins tumor constituting 77.77 and 11.12 % respectively.

Table 6: distribution of histological types of malignant salivary gland tumors (N=25)

Historical variant	Number of cases (n)	Percentage (%)
Mucoepidermoid carcinoma	4	57.14
Adenocarcinoma	3	42.86
Total	7	100.00

The most common histological type of malignant salivary gland tumor is Mucoepidermoid carcinoma in the present study accounting for 57.14 %

Table 7: Validity of FNAC with HPE (n=25)

FNAC Diagnosis	Histopathological diagnosis	
	Malignant	Benign
Malignant	6	1
Benign	1	17

- ❖ Sensitivity – 85.71 %
- ❖ Specificity – 94.44 %
- ❖ Diagnostic accuracy – 92 %

FNAC has a diagnostic accuracy of 92 % with sensitivity of 85.71 % and a specificity of 94.44 %

DISCUSSION

In the present study the mean age group for benign tumors was 41.83 years and mean age for malignant tumors was 53.57 years which is in accordance with other studies conducted in India as well as in other countries^{9,12}.

In present study female preponderance was seen with Male: Female ratio of 1: 1.27. This is in accordance with many studies in India as well as various studies around various parts of the world^{10,12,14}. Some studies however showed male preponderance like the one done by Shafkath.et.al⁹ in Jammu Kashmir where male to female ratio was 1.17:1. The reason given by the author for this observation in his study was less reporting of female cases as they are confined to home and seek less medical advice.

In the present study out of total 25 cases studied 18 cases were benign and 7 cases were malignant accounting for 72% of benign and 28% of malignant cases. This result is in accordance with many studies within India and other parts of the world as well^{8,12,14,15}. However some studies done in Uganda and Tanzania¹⁶ showed higher reporting of malignant tumors than benign tumors. The reason given by the authors to explain this finding was as most of the African areas are poverty stricken and no comprehensive health care coverage is there many patients with non life threatening benign tumors do not seek medical care. El-Ghazayerli.et.al and Abdel-Aziz.et al¹⁷ postulated that malnutrition and infection induced parotid disease diminishes the risk of parotid neoplasms and hence lower percent of benign tumors.

In the present study conducted out of 25 major salivary gland tumors 19 cases were seen in Parotid and 6 cases in submandibular gland accounting for a distribution of 76 % and 24 % respectively. No cases were reported in sublingual gland. This result is in accordance with various national and international studies which had majority of tumors in Parotid gland and no case reported in sublingual gland^{9, 12, 13, and 14}.

In the present study the distribution of tumors in parotid gland is 79% of benign tumors and 21% of malignant tumors. Whereas in submandibular gland. There is equal distribution of benign and malignant tumors. These findings are in accordance with studies in India as well with the studies around the world^{10,12,14,17}.

In the present study one malignant tumor was reported benign and one benign as malignant by FNAC with the rest of the 23 aspirations showing diagnosis same as that of HPE. The sensitivity of FNAC was 86% and specificity was 94%. The diagnostic accuracy was 92%. These results are in accordance with studies within and outside India^{18- 21}.

In the present study the most common type of benign tumor was pleomorphic adenoma accounting for 77.78% and the most common malignant tumor was Mucoepidermoid carcinoma accounting for 57.14%. This result is in accordance with various studies in India as well with studies from other countries^{9,10,12,22}.

CONCLUSION

Major salivary glands are commonly affected with benign tumors as compared to malignant tumors.

Benign tumors commonly occur in 3rd to 4th decade while malignant tumors are commonly seen in 5th to 6th decade. Regarding gender predilection of major salivary gland tumors slight female preponderance is seen.

The Parotid gland is most commonly affected with salivary neoplasms among major salivary glands followed by Submandibular gland. In parotid gland benign tumors outnumber the malignant tumors whereas equal distribution of benign and malignant tumors is seen in Submandibular gland. Pleomorphic adenoma is the most common histological variant of benign tumor followed by Warthins tumor.

Among the malignant neoplasms Mucoepidermoid carcinoma is the most common histological variant followed by Adenocarcinoma.

Preoperative FNAC plays an important role in the diagnosis of major salivary gland tumors. It is a safe, cost effective and minimal invasive diagnostic tool with high sensitivity and specificity.

REFERENCES

1. Yu-long wang, Yong-xue zhu, Tong-zhen chen, Yu wang, Guo-hua sun, Ling zhang et al. Clinicopathologic study of 1176 salivary gland tumors in a Chinese population: Experience of one cancer center 1997–2007. Acta Oto-Laryngologica 2012; 132: 879–886.

2. Regezi JA, Sciubba JJ. Oral Pathology. In: Clinical Pathologic Correlations. 3rdedn. Philadelphia : WB Saunders ; 1999 ; p.239.
3. Cawson RA, Binnie WH, Barrett AW, Wright JM. Oral disease. In: Clinical & pathological correlations. 3rd edn. Edinburgh: Mosby; 2001; p.167.
4. Spiro RH. Salivary neoplasms: overview of a 35-year experience with 2, 807 patients. Head Neck Surg 1986; 8:177-84.
5. Ansari MH. Salivary gland tumors in an Iranian population: a retrospective study of 130 cases. J Oral Maxillofac Surg. 2007; 65:2187-94.
6. Muhammed Isa Kara, Fahrettin Goze, Şeref Ezirganl, Serkan Polat, Suphi Muderris, Sahende Elagoz. Neoplasms of the salivary glands in a Turkish adult population. Med Oral Patol Oral Cir Bucal 2010; 15(6): 880-5.
7. Shafkat Ahrnad, Mohainmad Lateef, Rouf Ahmad. Clinicopathological study of primary salivary gland tumors in Kashmir. JK-Practitioner 2002; 9(4): 231-233.
8. Silas OA, Echejoh GO, Menasseh AN, Mandong BM, Otoh EC. Descriptive pattern of salivary gland tumors in Jos University Teaching Hospital: A 10-year retrospective study. Annals of African Medicine 2009; 8: 200-202.
9. Francisco Carlos Sancio-Gonçalves et al. Pattern and distribution of salivary gland tumours in a brazilian hospital. Odontol. Clín.-Cient., Recife 2010; 9(3): 249-252
10. Maria de Lourdes Silva de Arruda Morais, Paulo Roberto Azevedo ,Cyntia Helena Carvalho , Lélia Medeiros Tirzah Lajus , Antonio de Lisboa Lopes Costa. Clinicopathological study of salivary gland tumors: an assessment of 303 patients. Cad. Saúde Pública, Rio de Janeiro 2011; 27(5): 1035-1040.
11. David O, Blaney S and Hearp M. Parotid gland fine-needle aspiration cytology: an approach to differential diagnosis. Diagn Cytopathol 2007; 35: 47-56.
12. Claudia-Patricia Mejía Velázquez , Marco-Antonio Durán Padilla , Erick Gómez Apo , Daniel Quezada-Rivera , Luis-Alberto Gaitán Cepeda. Tumors of the salivary gland in mexicans. A retrospective study of 360 cases.Med Oral Patol Oral Cir Bucal. 2012; 17(2): 183-189.
13. Nitin M. Nagarkar, Sandeep Bansal, Arjun Dass, Surinder K. Singhal, Harsh Mohan. Salivary gland tumors - our experience. Indian Journal of Otolaryngology and Head and Neck Surgery 2004; 56:1.
14. Akhter J, Hirachand S, Lakhey M. Role of FNAC in the diagnosis of salivary gland swellings. Kathmandu Univ Med J (KUMJ) 2008; 6(2): 204-8.
15. Ochicha ochicha, Sani Malani, Aminu Mohammed, Akinfenwar Atanda. A Histopathological Study of Salivary Gland Tumors In Kano, Northern Nigeria. Indian Journal of Pathology and Microbiology 2009;52 (4): p 473-476.
16. El-Ghazayerli MM, Abdel Aziz AS. Salivary Gland Tumors in Egypt and Non Western Countries. Br J Cancer 1964; 18: 649-654.
17. Mohammed Shafiqul Islam, Md. Azharul Islam, Md. Abdus Sattar, AFM Ekramuddula, Hossain Imam Al Hadi. Malignant Salivary Gland Neoplasm – clinicopathological Study. Bangladesh J of Otorhinolaryngology 2008; 14(1): 1-5
18. Shintani S, Matsura H, Hasegawa. Fine needle aspiration of salivary gland tumors.Int J Oral Maxillofacial surg 1997; 26(4):284-6.
19. Stewart CJ, MacKenzie K, McGarry GW. Fine-needle aspiration cytology of salivary gland: a review of 341 cases. Diagn Cytopathol. 2000; 22(3):139-46.
20. Peter A. Brennan, Benedicts Davies, David Pollen, Zoe Mead, Duncan Bayne, Robert Puxeddu. et al. Fine needle aspiration cytology (FNAC) of salivary gland tumors: Repeat aspiration provides further information in cases with an unclear initial cytological diagnosis. Br J Oral Maxillofac Surg 2009: 1-4.
21. Sunil Kumar Y.et.al. Role of Fine Needle Aspiration Cytology in Salivary Gland Tumours in Correlation with Their Histopathology: A Two Year Prospective Study Journal of Clinical and Diagnostic Research. 2011; 5(7): 1375-1380.
22. Mahmoud Shishegar, Mohamad J. Ashraf, Negar Azarpira, Bijan Khademi, Basir Hashemi, Amir Ashrafi. Salivary Gland Tumors Inmaxillofacial Region: A Retrospective Study of 130 Cases in a Southern Iranian Population. Pathology Research International 2011; 11: p 1-5.

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