Original Article

Salivary Gland Tumours

Salivary Gland Tumours: A Tertiary Care Hospital Experience

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ABSTRACT

Objective: To study demographic, clinical and histopathological features of salivary gland tumours in a tertiary care hospital.

Study Design: Prospective cross sectional study.

Place and Duration of Study: This study was carried out in the Department of ENT, Head & Neck surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar from June 2010 to May 2014.

Materials and Methods: This prospective cross sectional study of 4 years was carried out in the Department of ENT, Head & Neck surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar. All the patients qualifying inclusion criteria were evaluated in terms of detailed history, thorough examination and relevant investigation. After performing required surgery specimen was examined for histopathology.

Results: In this study 123 patients were included with mean±SD age of 40±5.1 years (age range 7–76 years). Males were 81 and females were 42 with male: female ratio of 1.9:1. Most of the patients presented in 4th decade (28.45%, 35). Lump was the commonest clinical feature lasting for 1-5 years (66.66%, 82). Among the tumours 77.23% were benign while 22.76% were malignant. Benign tumours were commonly noticed in parotid gland (53.65%). Pleomorphic adenoma was the commonest benign tumour (65.04%, n-80), affecting parotid gland in 52.03%. Mucoepidermoid carcinoma is the commonest malignant tumour (12.19%) predominantly found in minor salivary gland of palate (6.50%).

Conclusion: Salivary gland tumours predominantly affecting middle aged male population. Benign tumours are the commonly occurring salivary gland tumours .Pleomorphic adenoma is commonly occurring benign tumour affecting predominantly parotid gland while mucoepidermoid carcinoma is the commonest malignant tumour of salivary glands.

Key Words: Benign, Malignant, Tumours, Major and minor salivary gland, Histopathology

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INTRODUCTION

The major salivary glands are parotid, submandiblar and sublingual while minor salivary glands are located throughout submucosa of upper aero-digestive tract with maximum amount on the palate. Both benign and malignant tumours may develop in salivary glands. Although tumours of salivary gland are less than 1% of the all tumours, however prevalence of these tumours reported in the literature differs.[1] It constitutes 2% to 4% of all the head and neck tumours. The annual prevalence of salivary gland tumours across the globe is reported from 0.4 to14 cases per 100,000 populations. The annual prevalence of malignant tumours of salivary gland ranges from 0.4 to 2.6 per 100,000 populations . The commonest benign and malignant tumours of salivary gland are pleomorphic adenoma and mucoepidermoid carcinoma, respectively.[2] The incidence of tumours is that about 80% involves parotid gland, while 10% to 20% occurs in submandibular and sublingual glands. Approximately 80% of benign tumour of parotid gland is pleomorphic adenoma.[1] The exact cause for these tumours is still unknown; probably tobacco, vitamin A deficiency, Ionizing radiation, chemotherapy and prolonged exposure to sunlight may contribute in their development. The presenting feature of benign salivary gland is a long standing lump, while malignant counterpart can present with rapid growth in lump, pain, nerve paralysis, skin involvement, trismus, fistula formation, weight loss and cervical lymphadenopathy.[2,3] About one third of malignant parotid tumours involve facial nerve, where as malignant tumours of submandibular gland may invade hypoglossal nerve followed by trigeminal and facial

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nerves. Regarding embryological development of salivary gland it is assumed that these glands develop as result of initial thickening of the epithelium of the stomodeum, where as parotid gland develops from oral ectoderm while submandibular and sublingual glands develop from endodermal germ layers.[3] As due to complexity of salivary gland structures and rarity of occurrence of tumors, it is a diagnostic dilemma for histopathologist on one hand and a challenge for its classification on the other hand. World Health Organization (WHO) established first classification of salivary gland tumours in 1972, which has been amended so many times in last 4 decades.[4] The diagnosis of salivary gland tumours can be achieved with clinical features complemented with ultrasonography, sialography, computed tomography, magnetic resonance imaging, fine needle aspiration cytology; confirmed by histopathological study of the specimen. However it is difficult to distinguish between benign and malignant salivary gland tumours on basis of fine needle aspiration cytology.[2,4] In case of benign salivary gland tumours total excision of the tumour is treatment of choice followed by observation for any recurrence, while in case of malignant tumours treatment option is; total excision of primary tumours along with removal of the surrounding involved tissues, as well as neck dissection, followed by chemo-radiotherapy. The incidence of complications especially damage to nerve is common in malignant tumours due to close relationship of nerve with gland.[5] As salivary gland tumours are common in our society and sizeable cases are frequently presenting to our unit, which are managed properly. So this study was aimed to look into demographic, clinical and histopathological features of salivary gland tumours.

MATERIALS AND METHODS

This prospective cross sectional study of 4 years duration (June 2010 to May 2014) carried out in the Department of ENT, Head & Neck surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar. After getting approval from hospital ethical board patients were enrolled in study qualifying inclusion criteria. All patients of either gender in the age range of 7 to 75 years were included in study, while patients not welling for registering in study, operated in other heath care facility and with non-tumour salivary gland diseases were excluded. Well informed written consent was taken from each patient explaining risks, benefits, associated complication of the procedure, prognosis of the disease and if needed publication of photograph. Every patient was evaluated in terms of detailed history, thorough meticulous local, ENT and upper aero-digestive mucosal lining and systemic examination complemented by relevant investigations especially ultrasonography, sialography and fine needle aspiration cytology (FNAC) of the mass. Every mass was assessed for its site, size, consistency, duration, fluctuation, transillumination, surrounding structure status, bimanual palpation, lymphadenopathy, skin and neurological involvement. After getting diagnosis of the lesion based on clinical assessment, radiological investigation and FNAC, surgery was performed accordingly depending upon the nature, extent and prognosis of the disease. Each patient was put on postoperative injectable empirical antibiotics, analgesics for 3-7 days depending upon the severity of the condition. Drain from wound site was removed after 24 hour if there was less than 25 ml collection in drain. The specimen was examined by same histopathologist to confirm the diagnosis and if needed patients was subjected to chemo-radiotherapy. The data were administered into a predesigned proforma and analyzed using SPSS version 17.

RESULTS

In this study 123 patients were included with mean±SD age of 40±5.1 years (age range 7–76 years). Males were 81 and females were 42 with male: female ratio of 1.9:1. Most of the patients presented in 4th decade (28.45%, 35), followed by 2nd and 3rd decades (17.88%, 22 and 15.45%, 19). Right side salivary glands were commonly involved (75.61%, 93) and among these glands parotid gland was commonly affected (68.29%, 84) while glands in cheek were least involved (4.1%, 5) (Table 1). Regarding clinical features of salivary gland tumours; in majority of patients lump was lasting for 1-5 years (66.66%, 82). The commonest size of the swelling measured was 6-10cm^2 (69.91%, n-86), with mean size 7.3±3.6 cm. Most of the swelling (72.35%) were firm on palpation and slow growth of the lump was noticed in most of the patients (61.78%).

Table 1: Age, gender, side and site-wise distribution of salivary gland tumours (n=123)

Age (yrs)	Mean±SD	Male (%)	Female (%)	Right (%)	Left (%)	Parotid (%)	Submand (%)	Palate (%)	Cheek (%)
≤10		2 (1.62)	-	1(0.81)	1(0.81)	2(1.62)	-	-	-
11-20	14±3.2	9 (7.31)	2(1.62)	9(7.31)	2(1.62)	6(4.87)	1(0.81)	4(3.25)	-
21-30	25±5.2	13(10.56)	9(7.31)	18(14.63)	4(3.25)	10(8.13)	7(5.69)	3(2.43)	2(1.62)
31-40	36±8.1	12(9.75)	7(5.69)	13(10.56)	6(4.87)	15(12.19)	2(1.62)	-	2(1.62)
41-50	44±2.5	23(18.69)	12(9.75)	27(21.95)	8(6.50)	29(23.57)	3(2.43)	2(1.62)	1(0.81)
51-60	56±7.8	10(8.13)	8(6.50)	15(12.19)	3(2.43)	11(8.94)	3(2.43)	4(3.25)	-
61-70	65±4.2	9(7.31)	3(2.43)	8(6.50)	4(3.25)	9(7.31)	2(1.62)	1(0.81)	-
≥71		3(2.43)	1(0.81)	2(1.62)	2(1.62)	2(1.62)	1(0.81)	1(0.81)	-
Total		81	42	93	30	84	19	15	5

Table No.2: Clinical features of patients with salivary gland tumours (n-123)

Status of Lump		Frequency (%)
Duration	≤ 12 months	29 (23.58)
	1-5 years	82 (66.66)
	≥ 6 years	12 (9.75)
Size	< 5cm^2	22 (17.88)
	6-10cm^2	86 (69.91)
	>11cm^2	15 (12.19)
Consistency	Soft	9 (7.31)
	Firm	89 (72.35)
	Hard	25 (20.32)
Growth Pattern	Rapid	16 (13.01)
	Slow	76 (61.78)
	No growth	31 (25.20)
Cervical Lymphade-nopathy	Present	15 (12.19)
	Absent	108 (87.80)
Pain	Present	14 (11.38)
	Absent	109 (88.61)
Fixity	Present	13 (10.56)
	Absent	110 (89.43)
Facial palsy	Present	9 (7.31)
	Absent	114 (92.68)
Tenderness	Present	8 (6.50)
	Absent	115 (93.49)
Transillumination	Present	7 (5.69)
	Absent	116 (94.30)
Trismus	Present	5 (4.06)
	Absent	118 (95.93)
Skin Involvement	Present	3 (2.43)
	Absent	120 (97.56)
Hypoglossal palsy	Present	1 (0.81)
	Absent	122 (99.18)

Other features found were cervical lymphadenopathy, pain, fixity, tenderness and facial nerve palsy in12.19% 11.38%, 10.56%, 7.31% and 6.50% respectively (Table 2). Among these tumours 95 cases (77.23%) were benign while 28 cases (22.76%) were malignant. Overall benign tumours were commonly noticed in parotid gland (53.65%), followed by submandibular gland and palate i.e. 11.38% and 3.25% respectively. Among the benign tumours pleomorphic adenoma was the commonest histopathological finding (65.04%, n-80), followed by myoepithelioma (6.50%, 8). Pleomorphic adenoma was found in parotid gland 52.03%, submandibular gland 8.13% and only 1.62% in cheek. The overall incidence of malignancy was common in minor salivary glands of palate (9.75%, n-12), followed by parotid gland (8.13%, 10). Among the malignant tumour mucoepidermoid carcinoma was the most common finding (12.19%, n-15), followed by adenoid cystic carcinoma (3.25%, n-4). Mucoepidermoid carcinoma was predominantly found in minor salivary gland of palate (6.50%), followed by parotid and submandibular gland 4.06% and 1.62% respectively (Table 3).

Table No.3: Distribution of Salivary gland tumours according to histopathology (n-123)

Type of tumour	Salivary Glands				
	Total (%)	Parotid (%)	Submand (%)	Palate (%)	Chee k (%)
Benign					
Pleomorphic adenoma	80 (65.04)	64 (52.03)	10 (8.13)	4 (3.25)	2 (1.62)
Myoepithelio ma	8 (6.50)	2 (1.62)	4 (3.25)	-	2 (1.62)
Warthin's tumor	4 (3.25)	4 (3.25)	-	-	-
Oncocytoma	2 (1.62)	2 (1.62)	-	-	-
Basal cell adenoma	1 (0.81)	1 (0.81)	-	-	-
Total	95 (77.23)	73 (59.34)	14 (11.38)	4 (3.25)	4 (3.25)
Malignant					
Mucoepidermo id carcinoma	15 (12.19)	5 (4.06)	2 (1.62)	8 (6.50)	-
Adenoid cystic carcinoma	4 (3.25)	1 (0.81)	1 (0.81)	2 (1.62)	-
Carcinoma ex pleomorphic adenoma	2 (1.62)	2 (1.62)	-	-	-
Acinic cell carcinoma	3 (2.43)	1 (0.81)	1 (0.81)	1 (0.81)	-
Squamous cell carcinoma	2 (1.62)	1 (0.81)	1 (0.81)	-	-
Adenocar-cinoma	2 (1.62)	-	-	1 (0.81)	1 (0.81)
Total	28 (22.76)	10 (8.13)	5 (4.06)	12 (9.75)	1 (0.81)

DESCUSSION

The major salivary glands are parotid, submandibular and sublingual and minor salivary glands are numerous located mainly on palate. Tumours may arise from major as well as minor salivary glands. Both benign and malignant tumours affect these glands irrespective of the age. In this study mean±SD age of the patients was 40±5.1 years (age range 7–76 years), coinciding Ashkavandi's[6] study with age range from 5-83 ears and mean age 41.8±16.7, and Shrestha's[7] study with age range of 12-75 years and mean age of 44.76 years. We found male predominance in this study with male: female ratio of 1.9:1 simulating reports of Memon, Shrestha and Lawal with male: female ratio of 1.5:1, 1.7:1, 1.2:1 respectively.[7-9] This male predominance cannot be explained based on results of this study. In this study most of the patients presented in 4th decade (28.45%, 35), followed by 2nd and 3rd decades which is in accordance with Kumar's[10] study with majority of patients received in 2nd and 3rd decade (25.0%, 18.3%) and Souvagini's[11] study with maximum number of patients presented in 3rd and 4th decade (31.1%, 39.8%), while it is contradicting Lawal's[9] report who found

majority of patients in late age of 5th to 6th decade (53.5%). In this study right side salivary glands were commonly involved (75.61%, 93) and parotid gland was commonly affected (68.29%, 84), which is supported by Shetty's[12] study where right side and parotid glands were commonly affected followed by submandibular. Similarly Oti[13] reported that right salivary glands were the commonest (17.35%) affected glands, with parotid predominance (9.91%), and Wahiduzzaman's[14] study where parotid gland was commonly involved (84.0%) followed by submandibular gland (16.0%). In this study the clinical features noted were slowly growing lumps for 1-5 years (66.66%, 82) with mean size of 7.3±3.6 cm, firm on palpation (72.35%), with cervical lymphadenopathy, pain, fixity, tenderness and facial nerve palsy in 12.19% 11.38%, 10.56%, 7.31% and 6.50% respectively, which is consistent with study of Souvagini[11] who reported that mostly the tumours were slow growing lumps (80%),that was firm (86.66%) with associated facial paralysis (4.44%), hypoglossal nerve paralysis (2.22%), pain (33.33%), and muscle spasm (13.33%). Likely Wahiduzzaman[14] found that clinical features were swelling (100.0%), pain (12.0%), facial nerve paralysis (6.0%) and palpable lymph node (10.0%). On histopathological examination among these tumours 95 cases (77.23%) were benign while 28 cases (22.76%) were malignant. Benign tumours were common in parotid gland (53.65%), followed by submandibular gland and palate i.e. 11.38% and 3.25% respectively. Pleomorphic adenoma was the commonest histopathological finding (65.04%, n-80), predominantly affecting parotid gland (52.03%). Our results are keeping with study of Etit D[15] who reported that out of 235 cases, 146 (62.13%) were benign and 89 (37.87%) were malignant. Among the major salivary glands, parotid gland was affected 82.38%, followed by submandibular gland 17.62%. He also found that the two most common benign tumors were pleomorphic adenoma (n = 98; 67.12%) and Warthin's tumor (n = 31; 21.23%). Our results are also supported by Ashkavandi's[6] result where benign tumours constituted 248 (67.8%) of all tumors, pleomorphic adenoma was the most common tumor comprising 54.3%, and these neoplasms tend to involve parotid and submandibular glands more frequently. Similarly Morais[16] revealed that out of 303 epithelial salivary gland tumors, 215 (71%) were benign and 88 (29%) were malignant; pleomorphic adenoma was the most frequently found benign tumor primarily affecting the parotid. Likewise Souvagini[11] disclosed that benign tumours were frequently encountered in parotid (71%) followed by submandibular (4.5%) gland, whereas pleomorphic adenoma was the commonest benign tumour. However my results varies from Lawal's[9] study who noted that out of 413 salivary gland tumours, 221 (53.5%) were malignant and 192 (46.5%) were benign. In his study the overall incidence of malignancy was 22.76%, malignant tumour was common in minor salivary glands of palate (9.75%, n- 12), followed by parotid gland (8.13%, 10). Mucoepidermoid carcinoma was the most common malignant tumour (12.19%, n-15), followed by adenoid cystic carcinoma (3.25%, n-4). Mucoepidermoid carcinoma was predominantly found in minor salivary gland of palate (6.50%), followed by parotid and submandibular gland 4.06% and 1.62% respectively. Our results are at variance from that of Oti[13] where malignant tumour was 28.1%, a total of 10 out of 38 tumours (26%) in the right parotid were malignant, while 36% tumours in the minor salivary glands were malignant of which 75% were located on the palate. The commonest malignant tumour was adenoid cystic carcinoma (13.22%). However regarding malignancy our results are in conformity with Wahiduzzaman[14] who found that malignant tumours were 23.8%, mucoepidermoid carcinoma was the commonest malignant tumour affecting parotid gland (16.67%), while adenoid cystic carcinoma commonly affecting submandibular glands (50.0%). Similarly in Shrestha's[7] study mucoepidermoid carcinoma was most common (38.1%) among the malignant salivary gland tumors. Parotid was the most common site of occurrence 26 (23.6%) for mucoepidermoid carcinoma followed by minor salivary glands 10 (9.0%) and submandibular gland 6 (5.4%). Submandibular gland was the most common site of occurrence for adenoid cystic carcinoma 14 (12.7%). In addition Souvagini[11] observed that overall malignancy was 20%, of which mucoepidermoid carcinoma was 44.4% and adenocystic carcinoma was 33.3% on palate and cheek. Our results are also consistent with Memon[8] report where malignant tumours were 20%, parotid was commonly affected (87%) and mucoepidermoid carcinoma was 2.5%. Likely In shetty's[12] study mucoepidermoid carcinoma was 12.5% and adenoid cystic carcinoma was 8.9%

CONCLUSION

It is concluded that salivary gland tumours predominantly affecting middle aged male population. Benign tumours are the commonly occurring salivary glands tumours in long standing lumps arising from salivary glands .Pleomorphic adenoma is commonly occurring benign tumour affecting parotid gland commonly, while mucoepidermoid carcinoma is the commonest malignant tumour of salivary glands.

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