

Original Research Article

Study of salivary gland tumors and its management outcome in tertiary care hospital in Chennai

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Received: 01 June 2021

Revised: 16 June 2021

Accepted: 17 June 2021

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ABSTRACT

Background: Salivary gland tumors can arise from either the major salivary glands (parotid, submandibular and sublingual) or the minor salivary glands which are located throughout the submucosa of the upper aerodigestive tract. They can show a striking range of morphological diversity between different tumor types and sometimes within an individual tumor mass. Aim of the study was to study the role of fine needle aspiration cytology (FNAC) in the diagnosis of salivary gland tumors.

Methods: This study was conducted comprising 34 patients attending the department of general surgery at Rajiv Gandhi government general hospital, MMC from January 2019 to December 2020 period of 24 months. A standard protocol was followed consisting of detailed history and physical examination, radiological evaluation followed by fine needle cytological examination. Histopathological examination was done in all the excised tumors for final diagnosis.

Results: FNAC was done only in 20 out of 29 parotid tumors of which 12 were benign, 5 were malignant and 3 were inconclusive. In the present study superficial parotidectomy was done in 24 cases. Total parotidectomy was done in 3 out of 5 cases. Two patients refused surgery. Following surgery, 5 patients developed transient facial nerve paralysis and one patient developed permanent facial nerve paralysis

Conclusions: In tumors of the parotid gland, post-operative facial nerve palsy was rarely noticed. The best means of reducing iatrogenic facial nerve injury in parotid surgery remains an understanding of the anatomy coupled with a gentle technique.

Keywords: Salivary gland tumors, Salivary gland tumor radiological features, Carcinoma, Mucoepidermoid

INTRODUCTION

The salivary gland tumors form 6% of tumors of the head and neck. Cancer arising in the salivary glands remains a challenging problem for the head the neck surgeon. The relative rarity of these cancer makes it difficult to study their biological activity and response to therapy.¹ The intricate anatomy of the facial nerve and the

submandibular triangle present technical challenges in surgical dissection.² Salivary gland tumors comprise 3-6% of all head and neck neoplasms in adults with the incidence being one to three per 1,00,000 people per year. The mean age at presentation for malignant salivary neoplasms is 55 to 65 years while benign lesions typically develop at least a decade earlier, at a mean age of 45 years. The parotid gland is the most common

location of salivary gland tumors which accounts for 70-85% of cases.³ Other sites include the submandibular gland (8-15%) the sublingual gland (<1%) and the minor salivary glands, which are most densely concentrated in the hard palate (6-8%), but present throughout the upper aerodigestive tract.⁴

As a general rule, the smaller the salivary gland in adults, the higher the probability that a neoplasm arising in such a gland will be malignant. Malignant tumors comprise 15-25% of all parotid tumors, 37-43% of submandibular gland tumors, and over 80% of minor salivary gland tumors.⁵

METHODS

This study was conducted comprising 34 patients attending the department of general surgery at Rajiv Gandhi government general hospital, MMC from Jan 2019 to Jun 2020 over a period of 12 months.

All patients with parotid swelling due to parotid tumors from 13 years of age were included in the study. All the cases, tumor-like conditions and infectious causes of swelling are excluded from the study. A standard protocol was followed consisting of detailed history and physical examination, radiological evaluation followed by FNC examination. Clinical data regarding age, gender, clinical aspects, tumor localization, TNM classification, treatment and follow-up information (clinical outcome and survival time) were retrieved from medical files. The follow-up period was defined as the time from diagnosis until the last visit to the hospital. Availability of complete information about these aspects was considered the inclusion criteria and based on these only 109 were included. Slides stained with hematoxylin-eosin of all cases were reviewed based on the histologic typing of salivary gland. Based on the histopathological type treatment was planned. Post-operative morbidity and mortality were studied. A proforma was devised and cases were followed.

Statistical analysis

Statistical testing was conducted with the statistical package for the social sciences system version SPSS 17 (SPSS Inc., Chicago, USA). For all statistical tests, a p<0.05 will be taken to indicate a significant difference. The above statistical procedures were performed by the statistical package IBM SPSS statistics. The p<0.05 were treated as significant in two tail condition.

RESULTS

In our study parotid tumors are common in the 3rd to 5th decade with male predominance. Submandibular tumors are mostly in the younger age group, also with male predominance. In our study, the age of the patients ranged from 13 years to 72 years. The mean age was 42.59 years and the median age was 42 years. In our

study, salivary gland tumors are common in the 2nd and 4th decade of life and less common in 1st decade of life (Table 1).

Table 1: Age incidence.

Age (years)	Parotid		Submandibular	
	Total no. cases	Percent (%)	Total no. cases	Percent (%)
0-20	4	13.7	3	60
21-30	7	24	2	40
31-40	5	17.2		
41-50	6	20.6		
51-60	3	10.3		
61-70	3	10.3		
>70	1	3		

Table 2: Clinical manifestation of parotid tumors.

Symptoms	Total no. of cases	Percent (%)
Swelling	29	100
Pain	3	10.3

Thus, in the main presentation is swelling of the glands and pain is present in present in only 3 cases. The presence of facial nerve paralysis, skin infiltration or ulceration, and metastatic neck nodes were found only in patients with malignant tumors. A history of pain, hardness, and fixity, found in 30-50% of parotid cancers were significant indicators of malignancy (Table 2).

Table 3: Clinical presentation.

Signs	Total no. of cases	Percent (%)
Facial nerve involvement	3	10.3
Lymph node involvement	-	-
Muscle involvement	-	-
Deep lobe involvement	-	-

In the present study out of 29 cases of parotid tumors, facial nerve involvement was present in 3 cases at presentation, of which all the three cases were found malignant. There was no lymph node involvement. There was no deep lobe involvement (Table 3).

Table 4: Clinical manifestation of submandibular tumors.

Symptoms	Total no. of cases	Percent (%)
Swelling	5	100
Pain	2	40

In submandibular tumors, all the cases presented with swelling, of which two had vague pain (Table 4).

Table 5: FNAC findings in parotid tumors.

Total	Parotid			
	Benign (%)		Malignant (%)	
29 cases	Total	FNAC +ve	Total	FNAC +ve
	15	12 (80)	5	5 (100)

FNAC was done only in 20 out of 29 parotid tumors of which 12 were benign, 5 were malignant and 3 were inconclusive (Table 5).

Table 6: FNAC findings in submandibular tumors.

Submandibular			
Benign (%)		Malignant (%)	
Total	FNAC +ve	Total	FNAC +ve
5	5 (100)	0	0

In submandibular tumors all 5 cases underwent FNAC and all were found to be benign tumors (Table 6).

Table 7: Operative management.

Procedure	No. of cases	Percent (%)
Superficial parotidectomy	24	88.8
Total parotidectomy	3	11.1

In the present study superficial parotidectomy was done in 24 cases. Total parotidectomy was done in 3 out of 5 cases. Two patients refused surgery. Following surgery, 5 patients developed transient facial nerve paralysis and one patient developed permanent facial nerve paralysis. There was no complication following submandibular gland excision (Table 7).

Sialography is seldom indicated in parotid gland neoplasms because it may cause inflammation or infection. Sialography was routinely done previously in patients with parotid gland neoplasms; extravasation of the dye may cause a severe inflammatory reaction, preventing a clear demarcation of tumor margins and may also delay the planned surgical procedure. The treatment of choice for parotid neoplasms is mainly superficial parotidectomy. This may be followed by radiotherapy if the tumor is malignant.

DISCUSSION

The parotid, submandibular, and sublingual glands constitute the major salivary gland. When functioning properly the glands are rarely noticed but when involved with neoplastic disease, they can be a challenge in diagnosis and treatment.⁶ In this study, the parotid, submandibular tumors were analyzed. Age, sex incidence, histopathologic type, and various treatment modalities were analyzed in particular reference to FNAC, surgical treatment, and post-operative complication mainly of the facial nerve injury.⁷ The

neoplasms of the parotid are more common in the 3rd-7th decade. Previous studies showed that the male incidence for Warthin's tumor was more than double that of female patients. Byars et al and others reported on FNAC cytologic findings of 247 salivary gland lesions. They reported sensitivity and specificity rates of 87.8% and 98% respectively for the detection of malignant tumors.⁸ Liew et al found the diagnostic sensitivity of FNAC was only 58% for cancer of the salivary gland.⁹ Heller and others state the sensitivity for the diagnosis of benign salivary gland tumor ranges from 88% to 98% with a specificity of 94%. The sensitivity for the detection of malignant tumors of salivary glands ranges from 58% to 96%, with the specificity of 71% to 88% additionally, FNAB is not very accurate in differentiating among the various types of malignant tumor with a specific accuracy of only 27% to 85%. In our study, FNAC was conducted in 15 out of 24 benign parotid tumors and was positive in 12 cases (80%) and inconclusive in 3 cases of all the 5 malignancies FNAC was positive in all the 5 cases (100%). In all the 5 submandibular tumors FNAC was conducted and all the 5 reports showed benign tumors MPT (benign mixed tumor) (100%). In the present study MPT was diagnosed in 76% of parotid cases. All of them had undergone superficial parotidectomy. Follow-up showed no incidence of recurrence.⁹ Adequate surgical removal i.e., at least superficial parotidectomy must be performed. For tumors deep to the facial nerve, the procedure of total conservative parotidectomy is performed by removal of the portion of the gland deep to the nerve, with preservation of the nerve and its branches.¹⁰ In our study Warthin's tumor is encountered in 1 case, (3%) of tumors, which underwent superficial parotidectomy. In our study malignancy is reported in 5 cases, out of which 3 had undergone total parotidectomy and the other 2 cases refused surgery. Two cases of mucoepidermoid carcinoma with pre-operative facial nerve involvement underwent total parotidectomy. One case diagnosed as adenoid cystic carcinoma with facial nerve palsy underwent total parotidectomy. In the previous study also, due to its strong tendency to invade nerves and perineural lymphatics facial nerve involvement was high (30%), because of which it has a poor prognosis.¹¹ In our study, the incidence of adenoid cystic Ca was 3% which co-relates with the previous studies. Of the 34 salivary gland tumors, 5 cases were diagnosed as submandibular tumors, of which all were benign mixed tumors. In the previous studies, 5% of tumors were seen in the submandibular gland of which 50% are malignant. In our study, 14% of tumors occurred in submandibular glands of which all are benign tumors. FNAC was done in all the 5 cases, of which all showed the benign mixed tumor.¹³ The most feared complication after parotidectomy is facial nerve paralysis, which is reported to be 3-5% permanently and transient facial nerve palsy is reported to be 8.2 to 65%. In our study, permanent facial palsy is seen 1 case (4%) and transient facial palsy in 5 cases (20%).¹⁴ Many techniques have been proposed over the years for accomplishing parotidectomy with identification and preservation of the facial nerve and its 5 or more major branches.¹⁵

CONCLUSION

In this study age, sex incidence, histopathological type, and various treatment modalities of the parotid and submandibular gland tumor were analyzed in particular reference to FNAC and surgical treatment. FNAC of the parotid gland was positive in all malignant cases. In benign tumors, it was positive in 80% of cases. In the rest of the cases, it was inconclusive. In submandibular gland tumors, it was positive in all benign tumors. No complication was encountered following FNAC. So, it has gone a definitive role in pre-operative diagnosis of all malignant tumors of the parotid gland and submandibular gland tumors. This simple and effective procedure with high specificity and sensitivity can be recommended in all salivary gland tumors. In tumors of the parotid gland, post-operative facial nerve palsy was rarely noticed. The best means of reducing iatrogenic facial nerve injury in parotid surgery remains a keen understanding of the anatomy coupled with a gentle technique.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Dhanraj M, Duraisami V, Samidurai M, Ross K. Study of salivary gland tumors and its management outcome in tertiary care hospital in Chennai. *Int Surg J* 2021;8:2025-8.