



A CLINICAL STUDY OF PAROTID GLAND TUMOURS

KEYWORDS

Parotid gland tumor, Fine needle aspiration cytology, Histopathological examination.

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ABSTRACT

The study of age and sex pattern in parotid gland tumors to determine the accuracy of fine needle aspiration cytology in diagnosing parotid gland tumors. Correlating with the postoperative histopathological study.

INTRODUCTION

The major salivary glands include the parotid glands, the submandibular glands and the sublingual glands. Tumors of the salivary gland are relatively uncommon and represent less than 2% of all head and neck neoplasms.

The majority of neoplasms arise in the parotid gland (70%), whereas tumors of the submandibular gland (22%), and sublingual and minor salivary glands (8%) are less common. The ratio of malignant to benign tumors varies by site. Parotid-80% benign, 20% malignant, submandibular and sublingual gland – 50% benign, 50% malignant, minor salivary glands – 25% benign, 75% malignant.

Patients with benign salivary gland neoplasms usually present with asymptomatic, slowly enlarging mass.

This study aims at determining the accuracy of fine needle aspiration cytology in diagnosing parotid gland tumors.

HISTORY :

Parotid Gland Tumors: The parotid gland is the most common site of salivary tumors. Most tumors arise in the superficial lobe, and present as slow-growing, painless swellings either below the ear, in front of the ear or in the upper aspect of the neck.⁵ Approximately 80% of salivary gland tumors are found in the parotid gland 80% of parotid neoplasms are benign and rest are malignant.

Etiopathogenesis : Two major theories of the pathogenesis of neoplasms of the salivary glands have emerged:

- 1) Multicellular theory
- 2) Bicellular theory

Investigations : A careful history and physical examination is the first step in trying to differentiate between a benign and malignant lesion.

1) Fine needle aspiration cytology : Fine needle aspiration cytology is a simple and reliable method for obtaining a diagnosis of a salivary gland neoplasm. Reports describe a sensitivity of approximately 85% to 95%, and a specificity of greater than 98% for this test for benign tumors.

The accuracy of FNAC for differentiating benign from malignant tumor should approach 90%.

The accuracy of FNAC for malignant tumors has been well established. The overall sensitivity has ranged from 85.5% to 99% and the overall specificity from 96.3% to 100%.

Heller et al studied 101 consecutive patients with tumors of major salivary glands. Overall, the results of the FNAC resulted in a change of clinical approach in 35% of patients.

2) Tumor markers :

Prekeratin

Vimentin

Carcino-embryonic antigen (CEA)

Lactoferrin

Amylase :

The implementation of tumor markers contributes not only to an improvement in tumor diagnosis, but opens up new aspects in the cyto- and histogenesis of tumors

3) Radiologic imaging : CT and MR imaging are the most commonly employed imaging modalities for evaluation of salivary gland tumors. These studies are often unable to differentiate benign from malignant tumors

METHODOLOGY

The materials and methods comprised of a detailed study of thirty cases of parotid gland tumors admitted to Government General Hospital, Kurnool in various surgical units during August 2010 to August 2012.

Only parotid gland tumors that was diagnosed by FNAC were included in the study. Parotid gland swellings with alternative diagnosis such as inflammatory parotid swellings and connective tissue disorders of the parotid like sjogren's syndrome presenting as enlargement of all the salivary glands were excluded from the study. Histopathology of the excised specimen were studied with the help from the department of pathology. The followup of the cases for a long time was not possible. Wherever possible the follow up results are included.

After admitting the patient to the hospital, the case was followed up from the day of admission by detailed taking, clinical examination and relevant investigations such as FNAC,X-ray etc.

RESULTS

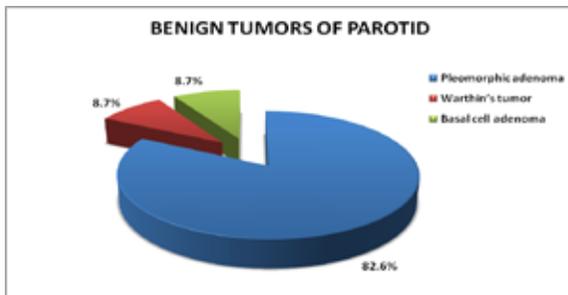
This series consists of thirty cases of parotid gland tumors admitted and treated in Government General Hospital attached to Kurnool Medical College, Kurnool from August 2010 to August. 2012.

Tumors of the Parotid Gland

Types of tumor	No. of cases	Percentage
Benign tumor	23	76.6
Malignant tumor	7	23.4
Total	30	100

Out of 30 cases in this series, 23 of them were benign and 7 were malignant. Percentage wise, benign tumors comprised of 76.6% and malignant tumors 23.4%.

Benign Tumors of Parotid : In this series, of 23 cases of benign tumors, 19 were pleomorphic adenoma which comprised of 82.60% of benign tumors, 2 each were Warthin's tumor and basal cell adenoma which comprised 8.7% each.



SEX WISE DISTRIBUTION OF PLEOMORPHIC ADENOMA

No of cases	Male	Female
19	10	9

Out of 19 cases of pleomorphic adenomas, 10 patients were males & 9 were females.

AGE WISE DISTRIBUTION OF PLEOMORPHIC ADENOMAS

Age in years	No. of cases
10-20	1
21-30	4
31-40	5
41-50	3
51-60	5
61-70	0
71-80	1
Total	19

The maximum of cases were seen in the fourth and the sixth decade, followed by the third and then the fifth decade. In this series, pleomorphic adenoma constituted a disease of middle age.

ACCURACY OF FNAC IN DIAGNOSING BENIGN PAROTID TUMORS

Benign parotid tumor	FNAC	HPR	Accuracy (%)
Pleomorphic adenoma	19	19	100
Warthin's tumor	2	2	100
Basal cell adenoma	2	2	100
Total	23	23	100

All 23 cases of benign parotid tumors, i.e, 19 pleomorphic adenomas, 2 Warthin's tumor and 2 basal cell adenomas were correctly diagnosed by FNAC. Hence the accuracy of FNAC in diagnosing benign parotid tumors in this series was 100%.

MALIGNANT PAROTID TUMORS

Malignant parotid tumors	No. of cases	Percentage
Mucoepidermoid carcinoma	4	57.1
Pleomorphic adenocarcinoma	1	14.3
Adenocarcinoma	1	14.3
Adenoid cystic carcinoma	1	14.3
Total	7	100

In this series of 7 malignant parotid tumors, 4 were mucoepidermoid carcinomas which accounted to 57.1% of malignant cases.

Pleomorphic adenocarcinoma, adenocarcinoma and adenoid cystic carcinoma accounted for the remaining 3 cases, each constituting 14.3% of malignant cases.

ACCURACY OF FNAC IN DIAGNOSING MALIGNANT PAROTID TUMOURS

Tumor type	FNAC	HPR	Accuracy (%)
Mucoepidermoid carcinoma	3	4	75
Pleomorphic adenocarcinoma	0	1	0
Adenocarcinoma	1	1	100
Adenoid cystic carcinoma	1	1	100
Total	5	7	71.4

Five of the 7 cases were correctly diagnosed by FNAC. Two cases which were wrongly diagnosed were , a case of pleomorphic adenocarcinoma and a case of mucoepidermoid carcinoma. The accuracy of FNAC in diagnosing malignant parotid tumors is 71.4%.

DISCUSSION

In this series of 30 cases of parotid gland tumors, the clinico-pathological details and the management of each of the tumors were studied.

Benign Tumors: In this series, benign tumors constituted 76.6% of all parotid gland tumours.

Type of Tumor	This series (%)	Spiro RH, 1986 ¹¹ (%)
Benign	76.6	80
Malignant	23.4	20

The present series tallied with the other studies. The study conducted by Spiro RH in 1986 showed benign tumors to constitute about 80% and malignant tumor to be about 20%. This series constituted 76.6% of benign tumors and 23.4% malignant tumours.

Comparative study of benign tumors:

Benign tumors	This series (%)	Foot and Frazel ⁵¹	Byrne and Spector ⁵² (%)
Pleomorphic adenoma	82.6	85.2	74.5
Warthins tumor	8.7	11.3	25.5
Basal cell adenoma	8.7	5.6	0.04

The subtypes of benign parotid tumours in this series is in accordance with the study conducted by Foot and Frazel in 1957. In the study conducted by Foot and Frazel, plemorphic adenoma constituted 85.2%, Warthin's tumor 11.3% and basal cell adenoma 5.0% of benign tumors. This series constituted 82.6% of pleomorphic adenoma, 8.7% Warthin's tumor and 8.7% basal cell adenoma.

The maximum number of cases of benign tumors were seen in fourth decade. Byrne and Spector series had maximum incidence of benign parotid tumors in fifth decade.

Accuracy of FNAC in diagnosing parotid gland tumors:

Tumor type	Accuracy		
	This series	Person and Zettergen ⁵³	Qizilbash ⁵⁴
Benign	100%	96%	90%
Malignant	71.4%	-	78.5%

In this series, the accuracy of FNAC in diagnosing benign parotid tumors was 100% and that of malignant tumors was 71.4%. It correlated well with studies done by Person, Zettergen and Qizilbash.

Tumor type distributions irrespective of whether the tumor is benign or malignant:

Tumor type	This series	Spiro RH ¹⁰
Plemorphic adenoma	63%	59%
Mucoepidermoid carcinoma	13%	7.9%
Warthin's tumor	6.7%	7.3%
Basal cell adenoma	6.7%	-
Pleomorphic adenoma	3.3%	4.4%
Adenocarcinoma	3.3%	-
Adenoid cystic carcinoma	3.3%	3.1%

In this series, plemorphic adenoma was the most common tumor of parotid constituting 63% of parotid gland tumors with muco-epidermoid carcinoma the second most common parotid tumor constituting 13% of cases.

CONCLUSION

FNAC is a good preliminary test for diagnosing parotid gland tumors. FNAC is simple, bed side procedure that is routinely done.

FNAC is a good tool in diagnosing benign parotid gland tumors but it must be cautiously interpreted in case of malignant parotid tumors.

SUMMARY

This is a clinical study comprising thirty cases of parotid gland tumors, that was diagnosed by FNAC.

The patients presented with swelling in the region of the parotid with or without pain. Most of the patients with benign tumors were middle aged. Malignant tumors were seen most commonly in 21-30 and 51-60 age groups.

Benign tumors constituted 76.6% of all parotid tumors and malignant tumors 23.4%.

Pleomorphic adenoma was the most common benign tumor constituting 82.6% of all benign tumors.

Eighteen of 19 pleomorphic adenoma patients presented within first five years of appearance of symptoms.

Superficial parotidectomy was done in 18 cases of 19 pleomorphic adenoma patients. Total parotidectomy with conservation of facial nerve was done in one patient with pleomorphic adenoma because tumor was arising from the deep lobe.

Of the other 4 cases of benign tumors, two each were warthin's tumor and basal cell adenoma. Superficial parotidectomy was done in all four cases.

Muco-epidermoid carcinoma was the most common malignant parotid tumor which was seen in 4 (27.1%) of 7 cases.

Facial nerve palsy was seen in 2 (28.6%) of 7 cases of malignant parotid tumors.

Superficial parotidectomy with irradiation was done in 3 of 7 cases of malignant parotid tumors. Total radical parotidectomy with irradiation was done in 2 cases and total conservative parotidectomy with irradiation in 1 case. Total radical parotidectomy was done in a case of adenocarcinoma of parotid who died postoperatively.

Facial palsy was the most common complication of parotid surgery seen in 7 of 9 complicated cases. Five of these 7 cases were transient who recovered completely during follow-up.

The accuracy of FNAC in diagnosing benign parotid tumors was 100% and that for malignant tumor was 71.4%.

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