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HISTOPATHOLOGICAL STUDY OF SALIVARY GLAND LESIONS

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ABSTRACT

Objective: The aim of the present study is to determine the incidence of Parotid gland lesions and study their morphology.

Material and Method: A study of 60 cases of Parotid gland tumors from January 2012 to December 2014 was carried out in pathology department of our hospital. A tissue bit was taken after detailed clinical history and physical examination. After routine tissue processing and H & E staining, histopathological diagnosis was made.

Results: Prevalence of salivary gland tumors in our study was 0.47 %. Benign salivary gland tumors comprised 71.6 % of all parotid gland tumors and malignant tumors accounted for 28.4 %. Pleomorphic adenoma was 46.67% and Mucoepidermoid carcinoma was11.67% of all Parotid gland neoplasms. Most of the benign neoplasms occurred in 3rd decade, while the malignant neoplasms more common in 5th decade. Males were more commonly affected than females.

Conclusion: Parotid gland tumors are relatively less common and they exhibit a wide variety of microscopic appearances even within one particular lesion. Accurate diagnosis is essential as parotid gland neoplasms have diverse clinical and prognostic outcomes.

Key Words: Salivary gland, Pleomorphic adenoma, Warthin tumour

INTRODUCTION

Parotid gland is the site of origin of many non neoplastic and neoplastic lesions. Parotid gland tumors are a morphologically and clinically diverse group of neoplasm, which may present significant diagnostic and management challenges because of their relative frequency, the limited amount of pretreatment information available and wide variety of biological behavior with different pathological lesions.[1]

Although accounting for less than 5% of all neoplasms, parotid gland tumors are of importance because of similar presentation i.e. swelling of particular gland whether lesion is neoplastic and non neoplastic.[1] They can show striking range of morphologic diversity between different tumor types and sometimes within an individual tumor mass. In addition, hybrid tumors, dedifferentiation and propensity for some benign tumors to progress to malignancy can confound histopathological interpretation.

Parotid gland tumors are rare, with overall incidence in the world of approximately 2.5 to 3 cases per 1, 00,000 per year. Malignant parotid gland tumors account for more than 0.5% of all malignancies and approximately 3 to 5% of all head and neck cancers.[2] Most patients with malignant parotid gland tumors present in the sixth or seventh decade of life with mean age for malignant lesions is 55 to 65 years while benign lesions typically develop at least a decade earlier at mean age of 45 years.[2]

The parotid gland is most common location of salivary gland neoplasms which accounts for 75-80% of cases. Benign tumors are much more frequent than malignant ones, benign tumors constitute (54-79%) as compared to malignant tumors (21-46%). Most frequently encountered tumor is Pleomorphic Adenoma and Mucoepidermoid Carcinoma being the most common malignant tumor.

Little is known about the etiology of parotid gland tumors and high risk populations have not been identified. An in-

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creased incidence of benign mixed tumors and other neoplasms has been observed following childhood therapeutic irradiation.

There are no reliable criteria to differentiate on clinical grounds the benign from malignant lesions, so morphological evaluation is necessary. The first attempt at classification came in 1841 in the form of thesis by A. Agrwal.[3] In 1859 Billorth published valuable articles describing parotid tumors histologically.

AIMS AND OBJECTIVES

- To study prevalence of Parotid gland tumors during period of 3 years.
- To study age, sex distribution of various parotid gland tumors and compare with findings of other workers.
- To study histomorphological (gross and microscopic) aspect and record the spectrum of morphological features of these lesions.
- To correlate clinical diagnosis with that of histological features.
- To differentiate benign from malignant conditions.

MATERIALS AND METHODS

A study of 60 cases of Parotid gland tumors from January 2012 to December 2014 was carried out in pathology department of our hospital. This study includes neoplastic lesions of the parotid glands. The specimens consisted of open biopsies, superficial parotidectomies and total parotidectomies with or without drainig lymph nodes.

After detail history and clinical examination were noted from the original request forms, specimens were fixed in formalin and sections were taken from the lesion, its margins, surrounding tissue and lymph nodes if any. Sections were processed in automated tissue processor and embedded in paraffin after gross examination. The paraffin blocks were cut and stained with hematoxylin and eosin and in selected cases special stains like PAS was done. These slides were examined under low power and high power magnification. The details of cellular architecture, encapsulation, perineural and vascular patterns and surrounding areas were studied.

The tumors were classified according to (WHO) World Health Organisation's histological typing of salivary gland tumors.

Data acquired from examination of each specimen was processed in systematic manner. The collected data were analyzed statistically and results obtained are compared with existing studies in the literature.

RESULTS

During the period of January, 2012 to December 2014; a total of 12587 specimens received for histopathological examination. Out of which 60 specimens were of salivary gland tumors, representing 0.47 %. Thus, the Prevalence of salivary gland tumors in our study was 0.47%.In each case, detailed clinical history, physical examination and gross examination was recorded.

Out of 60 cases 43 (71.6%) were benign while 17 (28.4%) were malignant (Table I & Graph I). In case of benign tumors pleomorphic adenoma (46.67 %) was the most common followed by warthin's tumor (16.67%) while in case of malignant tumors Mucoepidermoid carcinoma (28.4 %) was the most common (Table II & Graph II).

The parotid gland neoplasm presented over a wide range of age from 8 years to 79 years. From age wise distribution, benign tumors were noted in age range from 8 to 71 years with mean age of 39.5 years and mostly common in 4thdecade of life. Our youngest patient was 8 year old while the eldest patient was 71 year of age. Malignant tumors were noted in age range of 18 to 79 years with mean age of 48.5 years and common from 5th decade onwards (Table III).

In our study, male preponderance is seen for all parotid gland tumors with M: F ratio of 1.14:1. For malignant neoplastic lesions M:F ratio is 1.42:1, for benign neoplastic lesions M:F ratio is 1.04:1 (Table IV).

The most common symptom encountered during the study was swelling at the angle of the mandible (100%). The disparity between the total number of cases and the total number of symptoms and signs is because many patients presented with more than one signs and symptoms. Pain and tenderness, rapid enlargement of the mass, palpable cervical lymph nodes and skin ulceration were the other clinical features noticed. No facial paralysis was seen in our study (Table V).

DISCUSSION

This present study was conducted over a period of 3 years from January 2012 to December 2014 in one of the tertiary care teaching hospital. Study of 60 cases was done with respect to incidence, age, sex and clinical presentation, gross and microscopic features. The results obtained were compared with those of previous studies of well known workers in this study and the significant differences and similarities in results are discussed below.

In our study, among benign tumors, Pleomorphic adenoma was the most common benign tumor and Mucoepidermoid carcinoma was the most common among malignant tumors

as comparable to G C Fernandes et al.

The total number of biopsies received during the study period was 12587. Thus, parotid gland tumors were quite rare as compared to the other tumors located over other sites in the body. Prevalence in our study is lower as compared to the incidence observed by Solange et al[4] (2005) and Amos et al[5] (2007).

The benign tumors were more common than malignant tumors in our study. All authors agreed the same. In terms of relative proportions, present study correlates with other studies (Table 6) Ito et al[6], Edda et al[7], Ahmed et al[8]and Nagarkar et al[9](Table VI).

Benign tumors are seen at lower age compared to malignant tumors. Present study correlates with Edda et al[7]and Ahmed et al[8].

In our study, M:F ratio in all parotid gland tumors is 1.14:1 suggesting slight male preponderance. These findings are consistent with Erik G et al[10]and Ahmed et al[8].

In case of benign lesions there is equal sex distribution while in case of malignant lesions male predominance is noted. Our study is comparable with Mohd ayub[11].

In our study, Pleomorphic adenoma is the commonest benign tumor involving the parotid gland while in case of malignant tumours, Mucoepidermoid carcinoma is the most common, which is also comparable to other studies (Table VII).

SUMMARY AND CONCLUSION

- Parotid gland tumors are relatively less common and they exhibit a wide variety of microscopic appearances even within one particular lesion. Accurate diagnosis is essential as parotid gland neoplasms have diverse clinical and prognostic outcomes.
- Prevalence of salivary gland tumors in our study was 0.47 %.
- Benign tumors were common than malignant tumors.
- Benign salivary gland tumors comprised 71.6 % of all parotid gland tumors and malignant tumors accounted for 28.4 %.
- Pleomorphic adenoma was the commonest and accounted for 46.67%of all Parotid gland neoplasms.
- Mucoepidermoid carcinoma was the commonest malignant tumor accounted for 11.67% of all parotid gland tumors followed by Adenoid cystic carcinoma comprising of 3.33% of all parotid gland tumors.
- Most of the benign neoplasms occurred in 3rd decade, while the malignant neoplasms more common in 5th decade.
- Males were more commonly affected than females. For all parotid gland tumors M: F ratio was of 1.14:1. For malignant neoplastic lesions M: F ratio was 1.42:1, for benign neoplastic lesions M:F ratio was 1.04:1.

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Table 1: Incidence of benign and malignant parotid gland tumors

Type of lesion	Number of cases	Percentage
Benign	43	71.6%
Malignant	17	28.4%
Total	60	100%

Table 2: Incidence of all parotid gland tumors and their percentage

Lesions	Number	Percentage
Pleomorphic adenoma	28	46.66%
Warthin tumor	10	16.67%
Lymphangioma	1	1.67%
Capillary hemangioma	1	1.67%
Neurofibolipoma	1	1.67%
Myoepithelioma	1	1.67%
Basal cell adenoma	1	1.67%
Benign	43	71.6 %
Mucoepidermoid carcinoma	7	11.67%
Adenoid cystic carcinoma	2	3.33%
Acinic cell carcinoma	1	1.67%
Carcinoma ex pleomorphic adenoma	1	1.67%
Malignant lymphoma	2	3.33%
Squamous cell carcinoma	2	3.33%
Large duct carcinoma	1	1.67%
Sarcoma	1	1.67%
Malignant	17	28.4 %
Total	60	100%

Table 3: Age wise distribution of parotid gland lesions

Lesions	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	Total
Pleomorphic adenoma	1	2	4	9	11	1	0	0	28
Warthin tumor	0	0	1	1	1	2	3	2	10
Lymphangioma	1	0	0	0	0	0	0	0	1
Capillary hemangioma	0	0	1	0	0	0	0	0	1
Neurofibolipoma	0	0	0	0	1	0	0	0	1
Myoepithelioma	0	0	0	0	0	1	0	0	1
Basal cell adenoma	0	0	0	1	0	0	0	0	1
Benign neoplastic lesions	2	2	6	11	13	4	3	2	43
Mucoepidermoid carcinoma	0	1	0	1	1	2	2	0	7
Adenoid cystic carcinoma	0	0	0	0	1	1	0	0	2
Acinic cell carcinoma	0	0	0	0	0	1	0	0	1
Carcinoma ex pleomorphic adenoma	0	0	0	0	1	0	0	0	1
Malignant lymphoma	0	0	0	0	0	1	1	0	2
Squmous cell carcinoma	0	0	0	0	0	0	1	1	2
Large duct carcinoma	0	0	0	1	0	0	0	0	1
Sarcoma	0	0	1	0	0	0	0	0	1
Malignant neoplastic lesions	0	1	1	2	3	5	4	1	17

Table 4: Gender wise distribution of parotid gland tumors

Lesions	Males	Females	Total
Pleomorphic adenoma	11	16	27
Warthin tumor	6	4	10
Lymphangioma	1	0	1
Capillary hemangioma	1	0	1
Neurofibolipoma	0	1	1
Myoepithelioma	1	0	1
Basal cell adenoma	1	0	1
Benign neoplastic lesions	22	21	43
Mucoepidermoid carcinoma	3	4	7
Adenoid cystic carcinoma	1	1	2
Acinic cell carcinoma	1	0	1
Carcinoma ex pleomorphic adenoma	0	1	1
Malignant lymphoma	1	1	1
Squamous cell carcinoma	2	0	2
Large duct carcinoma	1	0	1
Sarcoma	1	0	1
Malignant neoplastic lesions	10	7	17
Total	32	28	60

Table 5: Clinical presentation of patient with parotid gland tumors

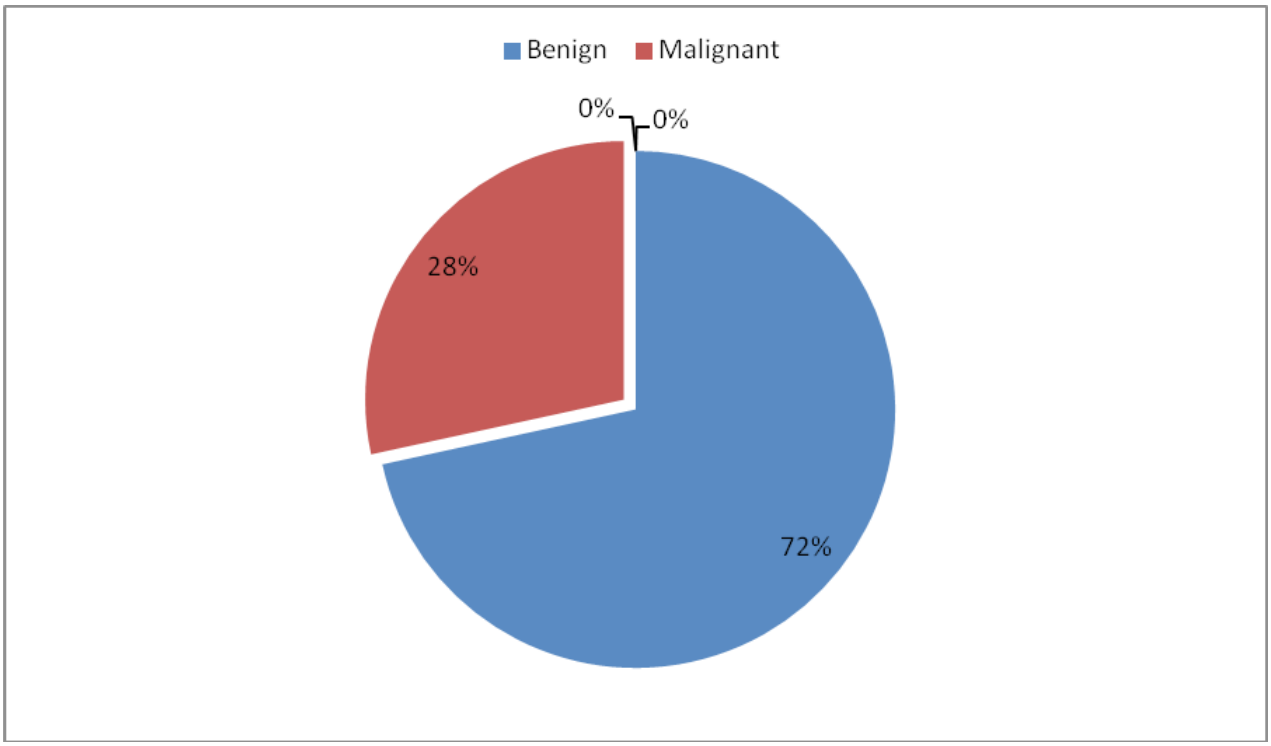
Presenting signs and symptoms	Number of cases	Percentage
Swelling at the angle of mandible	60	100%
Pain and tenderness	14	23.34%
Rapid enlargement of the mass	3	5.00%
Palpable cervical lymph nodes	2	3.34%
Skin involvement	1	1.67%

Table 6: Frequency of benign and malignant neoplasm

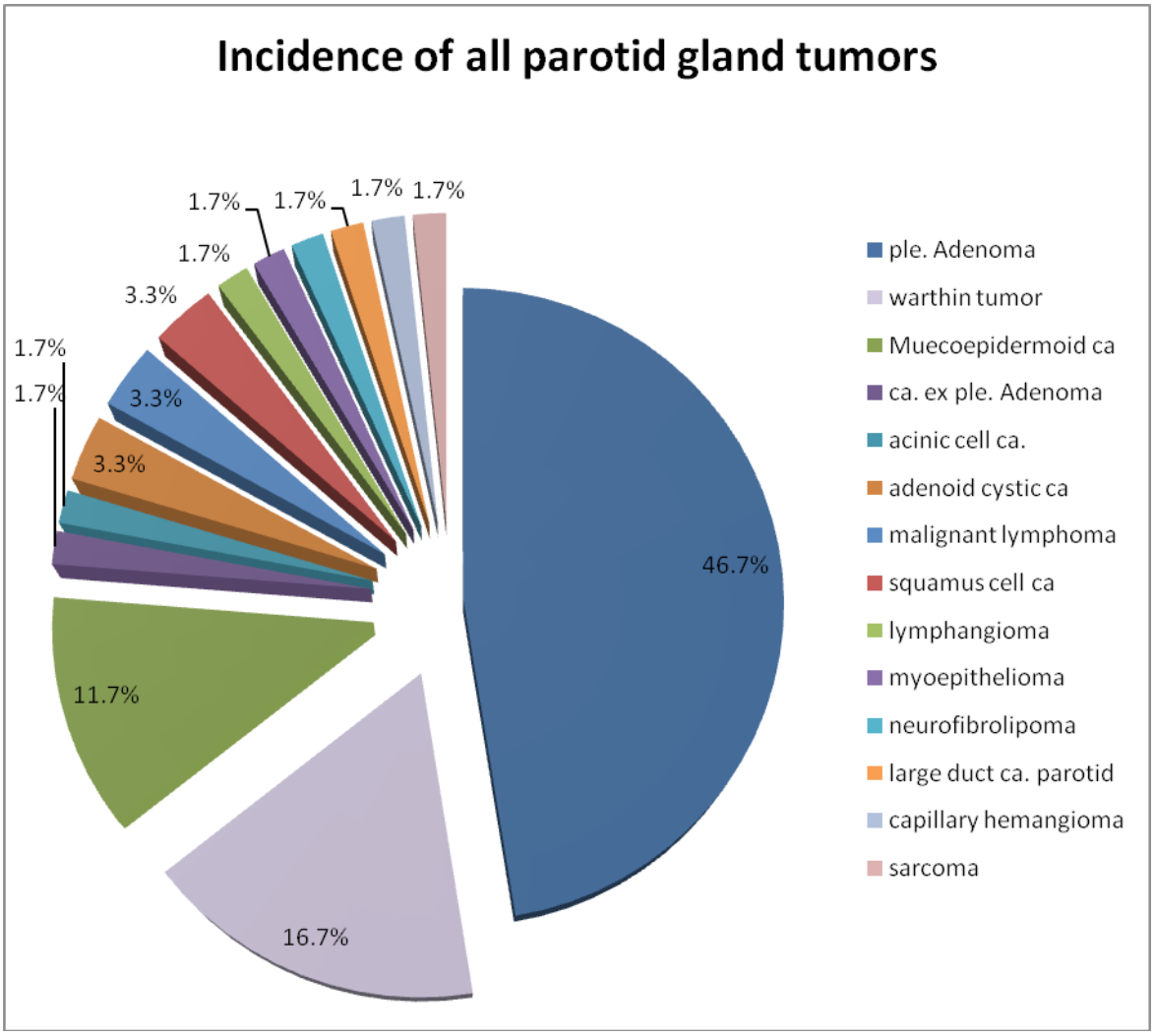
Series	Total	Benign	Malignant
Ito et al[6]	335	67.5%	32.5 %
Edda et al[7]	125	53.4%	46.6 %
Ahmed et al[8]	100	86.0%	14.1%
Nagarkar et al[9]	36	75.1%	25.2%
Present study	43	71.6 %	28.4 %

Table 7: Comparative analysis of various types of tumors in the parotid gland

Tumors	Eglis cornevs et al[12] (2005)	Das dilip K et al[13] (2004)	Shafkat ahmed et al[8](2002)	Ethunandan M et al[14](2002)	Schoeman BJ et al[15] (2007)	Present study
Pleomorphic adenoma	60.2%	69.00%	81.4%	48.3%	68%	46.66%
Warthin tumor	8.3%	16.7%	-	26.8%	3.1%	16.67%
Lymphangioma	-	1.4%	-	1.9%	2.4%	1.67%
Capillary hemangioma	-	1.2%	2.8%	-	-	1.67%
Neurofibolipoma	1.2%	-	2.8%	1.2%	-	1.67%
Myoepithelioma	-	-	-	0.4%	1.0%	1.67%
Basal cell adenoma	-	-	-	0.4%	-	1.67%
Mucoepidermoid carcinoma	4.6%	-	4.3%	1.8%	11.3%	11.67%
Adenoid cystic carcinoma	2.3%	-	1.4%	1.8%	3.1%	3.33%
Acinic cell carcinoma	0.8%	-	-	0.5%	4.1%	1.67%
Carcinoma ex pleomorphic adenoma	3.2%	1.2%	1.4%	1.8%	1.1%	1.67%
Malignant lymphoma	-	1.2%	-	3.9%	1.0%	3.33%
Squamous cell carcinoma	-	-	-	-	1.1%	3.33%
Large duct carcinoma	-	-	-	-	-	1.67%
Sarcoma	1.2%	-	-	-	-	1.67%



Graph I: Incidence of benign and malignant parotid gland tumors.



Graph II: Incidence of all parotid gland tumors.