Original Article

Histopathological Findings in Malignant and Benign Parotid Glands Tumors

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ABSTRACT

Objective: To understand the pathology of benign and malignant salivary gland tumors in parotid glands and its relation with gender.

Study Design: Cross-sectional-analytical study.

Place and Duration of Study: This study was conducted at the Department of Pathology, Government Said Mitha Teaching Hospital Lahore from 11st August 2017 to 15th September 2019.

Materials and Methods: Sixty-two parotid glands neoplastic lesions were included. The specimens consisted of incisional biopsies, partial parotidectomy and complete parotidectomy. All the samples were fixed in 10 percent formalin, processed, sectioned and stained according to standard protocol. Slides were analyzed by the authors and categorized according to the historical tumor class of the World Health Organization and were reviewed for descriptions of cellular morphology, encapsulation, perineural and vascular structures and the surrounding environment.

Results: The age of patients was 13-74 years. Twenty-five (40.3%) patients were male and 37(59.57%) patients included were female. Forty-four (70.96%) cases were classified as benign tumors and 18 (29.03%) cases as malignant tumors. In benign lesionspleomorphic adenoma was most common found in 36 (81.82%) patients and among malignant lesions Mucoepidermoid Carcinoma was most frequent found in 11 (61.11%) patients. No significant difference was found for distribution of benign, malignant and their subtypes between males and 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 with histological correlation is essential as parotid gland neoplasms have diverse clinical and prognostic outcomes.

Key Words: Salivary gland tumor, Parotid glands tumor, Neoplastic lesion

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INTRODUCTION

Salivary organ tumors have made a lot of discussion due to the complexity and variability in structure and clinical presentation. A number of non-neoplastic and neoplastic lesions originate in parotid gland. They are a diagnostic challenge due to their relative recurrence.[1] the yearly incidence of salivary gland neoplasm spans from 0.5 to two per million in various countries of the world with highest occurrence in Croatia.[2]

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Around 80 percent of the salivary neoplastic lesions occur in parotid gland and are mostly benign. Salivary neoplastic lesions are noticed in all age groups with highest occurrence in third or fourth decade for benign but 4th to 5th decades for cancers.[3] Incidence of salivary gland neoplasm between male and female is equal.[4] Rarity of salivary gland neoplasm is a challenge to expertise of pathologist. Most of the tumors occur in major salivary glands especially parotid and few of these occur in minor salivary glands that occur in palate.[2] risk factors leading to the neoplasm comprise of processed meat, excessive alcohol consumption, obesity and radiation exposure.[5] Workers exposed to chemicals in tannery and saw dust are also at risk of salivary gland tumors.[6] Lymphomas of salivary glands are associated with Sjogern syndrome.[7] Presenting complaints encompass simple palpable lesions with associated symptoms like rapid increase in lump size, pain, fix to surrounding deep tissue and over lying skin. Signs and symptoms of malignancy are nerve involvement and lymphadenopathy.[8] This study entails the dire need to identify different microscopic histological pattern of salivary gland neoplasms and their age frequency and distribution.

MATERIALS AND METHODS

This cross-sectional study was conducted at Department of Histopathology, Government Said Mitha Teaching Hospital Lahore from 11st August 2017 to 15th September 2019. A total of 62 cases of parotid gland lesion were included. Sources of class, age and form of histopathology reported at histopathology lab have been studied. The research involves parotid gland neoplastic lesions. The specimens included incisional biopsies, partial parotidectomies and complete lymph node drainage or node parotidectomies. Following detailed history and clinical review in the initial application forms, samples were set in formalin and parts taken from the lesion, its edges, underlying tissue and, wherever possible, lymph nodes were extracted. Upon gross inspection, the blocks were processed in automatic tissue processor and inserted into paraffin. Sections were taken from paraffin block. Hematoxylin and eosin stain was done on slides and special stains like periodic acid Schiff were done in selected cases. This whole process was outsourced. Microscopic histological features were studied under microscope comprising of cellular architecture, encapsulation, perinural and vascular invasion patterns examined by hispathologist. The data gathered were analyzed and the findings obtained correlated with current literature studies. The tumors were identified by the histological form of salivary tumors of the World Health Organization (WHO). Patients who give informed consent, presenting with palpable lesion were included. Non consenting patients and diagnosed metastatic neoplasm cases were excluded.

Data were analyzed by using SPSS 20.0. Chi-square was used to compare the tumor type between two genders and Likelihood ratio test was used to compare sub classification of tumors between two genders. The p-value ≤0.05 was considered statistically significant.

RESULTS

The mean age of patients was 39.7±12.2 years. 25 (40.3%) were male patients others were female patients. Mean BMI of patients was 23.24±2.46 kg/m^2 (Table 1). Forty four (70.96%) cases were classified as benign tumors and 18 (29.03%) cases as malignant tumors (Fig. 1). Though malignant cases were higher in percentage among males as compared to females but the difference was insignificant with p-value 0.320 (Fig.2). The most common benign lesion was pleomorphic adenoma in 36 (81.82%) patients followed by Warthin's tumor in 4 (9.09%) patients, lymphangioma in 2 (4.55%) patients and basal cell adenoma in 2 (4.55%) patients respectively. The distribution of classification was not significantly different between two genders (Table 2).

Among malignant lesions, the most commonly found malignant lesion was Mucoepidermoid carcinoma in 11 (61.11%) patients followed by adenoid cystic carcinoma in 3 (16.67%) patients, acinic cell carcinoma in 2 (11.11%) patients, carcinoma ex-pleomorphic adenoma in 1 (5.56%) patients and malignant lymphoma in 1 (5.56%) patients respectively. Again the distribution was not different between two genders with a p-value 0.201 (Table 3).

Table1: Descriptive statistics for the patients

Variable	No.	%
Mean age (years)	39.7±12.2	-
Mean BMI	23.24±2.46	-
Gender		
Male	25	40.3
Female	37	59.7

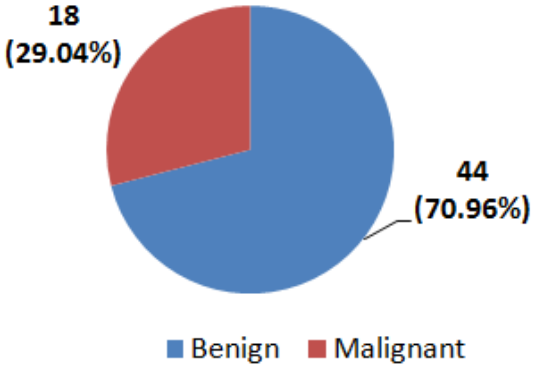

Figure No.1: Incidence of benign and malignant parotid gland tumors

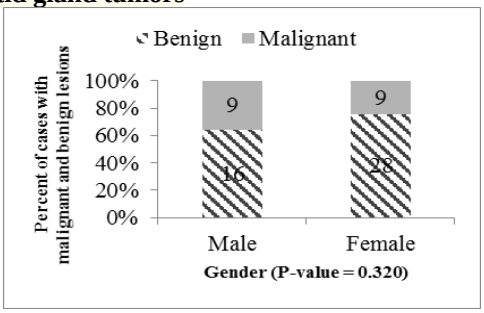

Figure No.2: Incidence of benign and malignant parotid gland tumors by gender

Table No.2: Histopathological classification of benign lesions according to gender

Benign lesion	No.	Male	Female
Pleomorphic adenoma	36 (81.82%)	13	23
Warthin's tumor	4 (9.09%)	1	3
Basal cell adenoma	2 (4.55%)	1	1
Lymphangioma	2 (4.55%)	1	1
Total	44 (100%)	16(36.4%)	28 (63.6%)

Liklihood ratio = 0.55 p-value = 0.909

Table No.3: Histopathological classification of malignant lesions according to gender

Malignant lesion	No.	Male	Female
Mucoepidermoid carcinoma	11 (61.11%)	5	6
Adenoid cystic carcinoma	3 (16.67%)	1	2
Acinic cell carcinoma	2 (11.11%)	2	0
Carcinoma ex-pleomorphic adenoma	1 (5.56%)	0	1
Malignant lymphoma	1(5.56%)	1	0
Total	18 (100%)	9 (50%)	9 (50%)

Liklihood ratio = 5.98 p-value = 0.201

DISCUSSION

Salivary gland tumors are typically unprecedented; their associated clinical presentation, however, differ in anatomy and somewhat capricious prognostic characteristics tend to be taken into consideration. Human and ethnic influences, as described in the prose, have an incredible influence on the spread of these neoplasms.[9,10]

Five years of research between January 2011 and December 2015 for Mallepogu's Anil Kumar et al.[11] The study was performed on 55 patients with salivary gland lesions from the Division of Patients in the ENT and Surgery Division, SVS Medical College, Mahabubnagar and Telangana Hospital. The findings of this study were published. Specimens of the salivary gland is directly fixed into 10 % formalin and handled with paraffin incorporation. Hematoxylline and eosin stain is stained in sections. In end, a descriptive microscopy was done.[11]

The most frequent location of a pleomorphic adenoma in the parotid glands was submandibular gland (18.18%) followed by submandibular gland and Bashir et al[12], close to studies performed on Amin et al.[13] In the middle age group (21-50 years) there is peach occurrence of male preponderance (M: F ratio, 1.31:1) such as Laishram et al[14] and Amin et al.[13] Amin et al[13] also reported 124 cases of salivary tumors in their overall study, 81 (65.3%) as benign and 43 (34.6%) as malignant. Parotid gland (57.2 percent) appeared in most tumors. The most common tumor was pleomorphic adenoma (59.6%), followed by non-specified adenocarcinoma (8.8%). The tumors appeared more commonly in women (54.8%) than men (45.2%). In 31.4 percent of cases ($p < 0.05$), malignant tumors have been associated with discomfort. 35 papers from various countries became part of the literature analysis. Females with an average age of 41.7 years were most affected. Pleomorphic adenoma was the most prevalent benign tumor (48.2%) with Reinheimer et al[15] being the common malignant tumor (8.7%).

In the second-to-third decade of life, benign SGLs were more prominent and malignant tumors in the fourth-sixth decade of life more prominent. The ratio of men to women was 1.72:1. Benign tumors were more common in parotid gland 26(81.25%), non-neoplastic lesions 20(54.05%) and malignant tumors 11(29.72%) both were more common in minor salivary glands. Pleomorphic adenoma 27(34.17%) was most common SLG tumor amongst all. Malignant SLG tumors mucoepidermoid carcinoma and adenoid cystic carcinoma had equal incidence 5(6.33%). Immunohistochestry markers were applied in 8(10%) cases.[16,17].

CONCLUSION

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

Author's Contribution:

Concept & Design of Study:	Sadia Yaseen
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Revisiting Critically:	Sadia Yaseen, Ayesha Khalid
Final Approval of version:	Sadia Yaseen

Conflict of Interest: The study has no conflict of interest to declare by any author.

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