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A CLINICOPATHOLOGICAL STUDY OF 100 CASES OF SALIVARY GLAND LESIONS AT A TERTIARY CARE CENTRE.

Pathology

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ABSTRACT

Background: Salivary gland shows varied types of pathological lesions ranging from inflammatory lesions to neoplasms. We have studied the salivary gland lesions with correlation to clinical and histopathologic features.

Objective: Aim of this study was –

1. To study the epidemiology of salivary gland lesions in a tertiary care centre with respect to the age, sex and site distribution.
2. To study the histomorphological aspect of these lesions.
3. To correlate between fine needle aspiration cytology and histopathology of these lesions.

Materials and Methods: The present observational study was conducted in the department of pathology in Dr. VPMCH&RC, Nashik. Total 100 cases were studied over a period of two years with particular reference to age, sex, site, cytological details & histological types as per WHO classification. Detailed FNAC & histopathological examination was done in all the cases. Correlation between the cytological & histopathological diagnoses was assessed. **Results:** A total of 100 cases were studied, comprising of 62 male & 38 female and 16 cases were malignant. The parotid gland was the most commonly involved site (70% of cases). Of the 46 non-neoplastic cases, 38 were of chronic sialadenitis and 8 cases of mucous retention cyst. Among the 38 benign neoplastic lesions, 32 were Pleomorphic adenoma and 6 were Warthin's tumour. Mucoepidermoid carcinoma (8 cases) was the most common malignant neoplastic lesions. Correlated in 95% of instances. **Conclusion:** Salivary gland lesions, are most commonly seen in 2nd to 6th decade of life with more male predominance. Parotid gland is the most common site. Lesions have more frequent occurrences compared to neoplastic lesions, with chronic sialadenitis having highest incidence. Histopathologic examination is fairly accurate in making a diagnosis especially in non-neoplastic & benign neoplasms.

KEYWORDS

salivary gland lesions, neoplastic, benign, malignant, parotid gland, chronic sialadenitis

INTRODUCTION

There are three major salivary glands – parotid, submandibular and sublingual – as well as innumerable minor salivary glands distributed throughout the mucosa of the oral cavity. All these glands are subject to inflammation or to the development of neoplasms.(1) The histomorphological study of salivary gland lesions is complex and diverse. This diversity, combined with the fact that most surgical pathologists have limited opportunity for experience with salivary glands, is the primary reason behind the difficulty caused by these diseases for many pathologists. (2)

Overall incidence in the world, of salivary gland tumours, is approximately 0.4-13.5 cases per 1,00,000 population. The tumours as reported by various authors constitute about 2-6.5% of all head and neck tumours. Any of the salivary glands, major or minor, may be the seat of tumour formation. Major salivary glands are involved more frequently and out of them parotid (64-80%) being the most common site of involvement, followed by submandibular (7-11%), sublingual (less than 1%) and minor salivary glands (9-23%). Palate is the most frequent site of minor salivary gland tumours. (3,4)

Although accounting for less than 5% of all neoplasm, salivary gland tumours are of importance because of similar type of presentation i.e. swelling of particular gland in all cases whether neoplastic or non-neoplastic and striking range of morphological diversity between tumour types and sometimes within individual tumour mass. In addition, hybrid tumours differentiation and propensity for some benign tumours to progress to malignancy can confound histopathological correlation. (5,6) Salivary gland shows varied types of pathological lesions ranging from inflammatory lesions to neoplasms. We have studied the salivary gland lesions with correlation to clinical and histopathologic features.

AIMS AND OBJECTIVE

Aim of this study was –

- To study the epidemiology of salivary gland lesions in our region with respect to the age, sex and site distribution.
- To study the histomorphological aspect of these lesions.
- To correlate between fine needle aspiration cytology and histopathology.

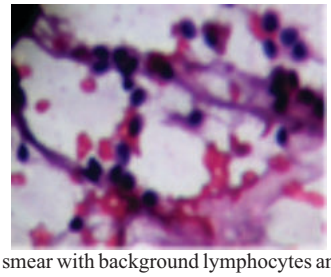
MATERIALS AND METHODS

The present observational study was conducted in the department of pathology in Dr. VPMCHRC, Nashik. Total 100 cases were studied over a period of two years with particular reference to age, sex, site, cytological details & histological types as per WHO classification. Detailed FNAC & histopathological examination was done in all the cases.

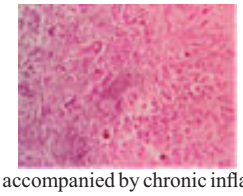
Specimens were fixed in 10% formalin and sections were processed and embedded in paraffin after the gross examination. The sections were taken from the lesion, its margins, surrounding tissues and lymph nodes if any. These sections were stained with haematoxylin and eosin. These slides were examined under low power and high-power magnification. The details of cellular architecture, encapsulation, perineural and vascular patterns and surrounding areas were studied. The tumours were classified according to WHO's histologic typing of salivary gland tumours. Data acquired from the examination of each specimen was tabulated using a proforma in a systematic sequence. The collected data were analysed statistically and the results obtained are compared to the existing studies in the literature.

Correlation between the cytological & histopathological diagnoses was assessed.

Chronic sialadenitis



Hypocellular smear with background lymphocytes and small cohesive group of ductal cells (Giemsa ×400)



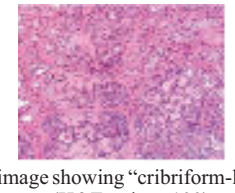
Periductal fibrosis accompanied by chronic inflammatory cell infiltrate and acinar atrophy (H&E ×400)

Mucous Retention Cyst

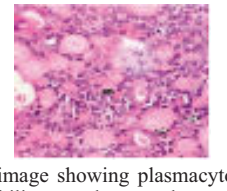
Histopathological section showing the cystic cavity lined by ductal epithelium and supported by fibrovascular connective tissue with numerous glandular acini (H&E x 100)

Histopathological specimen revealing fibro collagenous tissue lined by stratified squamous epithelium with admixed inflammatory infiltrate (H&E x 100)

Pleomorphic adenoma

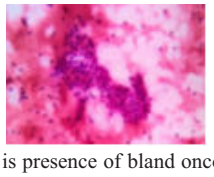


Histopathological image showing "cribriform-like" pattern containing multiple cyst-like spaces (H&E stain, × 100)



Histopathological image showing plasmacytoid myoepithelial cells (→) with eosinophilic cytoplasm and eccentrically placed nuclei (H&E stain, ×400)

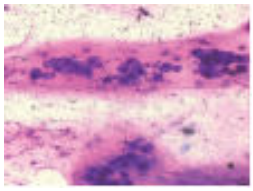
Warthin's Tumour



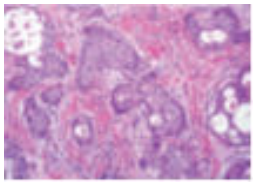
Cytologically there is presence of bland oncocytic cells in cohesive, monolayered sheets and lymphoid cells in amorphous and granular debris background. (H&E x 400)

Histopathologically lymphoid tissue is prominent. The lymphoid stroma is composed of B lymphocytes, but it also contains T lymphocytes, mast cells. (H&E x 400)

Mucoepidermoid carcinoma



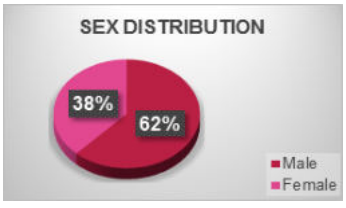
FNAC large pleomorphic cells with cytoplasmic vacuolation in mucoid background. (GEIMSA x 400)



Histopathological consists of a mixture of squamoid, mucinous, and intermediate cells growing as nests and microcysts. (H&E x 400)

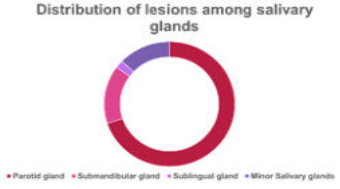
RESULTS

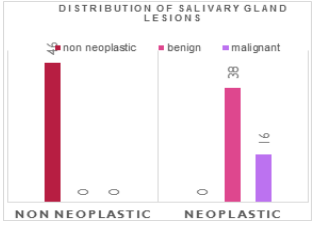
During the period from January 2021 to January 2023, a total of 100 cases were studied, which constituted of 62 male & 38 female patients, within the age range of 10-75 years. Of the total 100 cases, Non-neoplastic cases constituted 46, 38 were benign neoplasms, and 16 were malignant. The parotid gland was the most commonly involved site (70% of cases). Of the 46 non-neoplastic cases 38 were of chronic sialadenitis and 8 cases were of mucous retention cyst. Among the 38 benign neoplastic lesions, 32 were Pleomorphic adenoma and 6 were Warthin's tumour. Mucoepidermoid carcinoma (8 cases) was the most common malignant neoplastic lesions. Cytological and histological findings correlated in 94% of instances.

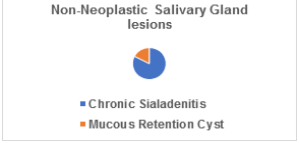


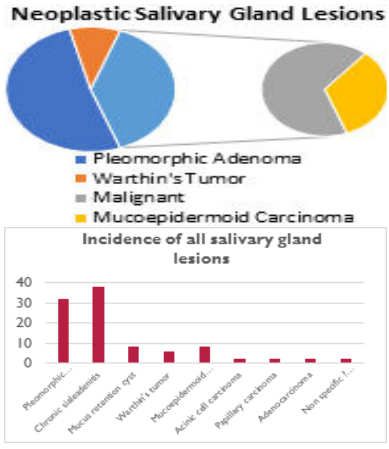
Distribution according to age & sex of study group

Age	Male	Female	Total	Percentage
10-19	02	02	04	04
20-29	08	14	22	22
30-39	24	06	30	30
40-49	14	02	16	16
50-59	06	12	18	18
60-69	06	02	08	08
70-79	02	00	02	02
Total	62	38	100	100









Sensitivity, specificity, and diagnostic accuracy of salivary gland cytology and it's correlation with histopathology.

HISTOPATH FNAC	BENIGN	MALIGNANT	TOTAL
BENIGN	81	02	83
MALIGNANT	03	14	17
TOTAL	84	16	100

Statistical Parameters	Percentage (%)
Sensitivity	96.4
Specificity	87.5
Diagnostic Accuracy	95.0

DISCUSSION

Although accounting for less than 5% of all the neoplasm, salivary gland tumours are of importance because of similar type of presentation i.e. swelling of particular gland in all cases whether neoplastic or non-neoplastic and striking range of morphological diversity between tumour types and sometimes within individual tumour mass. In addition, hybrid tumours, dedifferentiation and propensity for some benign tumours to progress to malignancy can confound histopathological correlation. (5,6)

This present study was conducted over a period of 2 years from January 2021 to January 2023, in the Department of Pathology, DRVPMCH&RC, Nashik. In our study the mean age of all the male and female patients was the 4th decade of life. Our results were consistent with the study of Ahmed et al and Vuhahula et al as shown in Table-3.

The current study also found that the incidence of salivary gland tumours is 27 per year (9). This is comparable to other studies (Table-7). Most salivary gland tumours usually arise in the parotid gland. In this study of 100 cases, 70% were found in the parotid gland. Other authors reported 82.8%, 79%, and 70% of parotid salivary gland tumours (8,10,13) (Table-5), and 75% of benign tumours were observed in the parotid gland. There is observational literature that malignant tumours (87.8%) occurred more frequently than benign tumours in minor salivary glands. (18) The median age of onset is 35.7 years. In the present study, the median age was 34 years, the youngest patient was 14 years old, the oldest patient was 74 years old, and the male to female ratio here was 3 :1 (19) Mucoepidermoid carcinoma was the most common malignancy. Warthin's tumour may be associated with Hodgkin's disease or T/NK-cell lymphoma. (20,21) Cancer of the salivary glands (22,23) usually presents as a painless, slowly enlarging mass, which may grow rapidly with or without facial paralysis.

Table 1: Showing incidence of inflammatory and neoplastic lesions.

Sr.No	Lesions	Total no of cases	Percentage
1	Inflammatory lesions	46	46
2	Neoplastic lesions	54	54
	Total	100	100

Table 2: Showing different types of salivary gland tumours and their incidence

Sr. No	Tumours	No of cases	Percentage
1	Benign Tumours	38	70.4
2	Malignant Tumours	16	29.6
	Total	54	100

Table-3: Age distribution in different case study series

Series	Benign	Malignant
Thoms et al (7)	39	47
Ahmed et al (8)	35.7	42.4
Vuhahula et al (9)	38	44
Rewusuwan et al (10)	72	49
Agarwal et al (11)	35	42
Present Study	40	44

Table-4: Sex distribution in different series

Series	Total	Benign	Malignant
Ahmed et al (8)	1:17:1	1:1:1	1:1:1
Vuhahula et al (9)	1:1:3	1:1:4	1:1:1
Rewusuwan et al (10)	1:1:3	1:1:2	1:1:5
Musani et al (12)	1:1:4	1:9:1	1:3:3
Present Study	3:1	1:1:4	7:1

We observed slight female preponderance in benign neoplastic lesions and male preponderance in malignant neoplastic lesions as compared to the study carried out by Vuhahula et al and others as shown in the above table.

Table-5: Location of salivary gland tumours in various sites in different series

Series	Parotid Gland	Submandibular Gland	Minor Salivary Gland
Thoms et al (7)	44%	25%	30%
Ahmed et al (8)	70%	18%	12%
Rewusuwan et al (10)	79%	18%	2%
Vuhahula et al (9)	34%	33.2%	32.8%
Buddhraj et al (13)	82.8%	13.8%	3.4%
Present Study	70%	15%	13%

The site distribution is consistent with that of Ahmed et al with predilection for parotid gland.

Table-6: Frequency of benign and malignant tumours among neoplastic lesions.

Series	Total	Benign	Malignant
Ito et al (15)	335	67.5%	32.5%
Vuhahula et al (9)	125	53.4%	46.6%
Ahmed et al (8)	100	86%	14%
Nagarkar et al (14)	36	75%	25%
Present Study	54	70%	30%

Benign tumours predominate over the malignant tumours which are observed in the present study as well as those in the series.

Table-7: Incidence per year of salivary gland neoplasm in different series

Series	NO of neoplasms	Period of Study (Years)	NO per year
Ahmed et al (8)	100	2	50
Rewusuwan et al (10)	198	4	49
Vuhahula et al (9)	268	10	27
Thoms et al (7)	190	9	21
Ito et al (15)	496	29	17
Nagarkar et al (14)	36	4	09
Agarwal et al (11)	147	17	08
Gupta et al (17)	113	21	05
Fenn et al (16)	57	15	04
Present Study	54	2	27

In the present study incidence per year is 27% cases which corelates with Vuhahula et al and Thoms et al.

SUMMARY & CONCLUSION

Salivary gland tumours are relatively less common, and they exhibit a wide variety of microscopic appearances, even within one particular lesion, and this usually leads to considerable problems in categorization and diagnosis. Accurate diagnosis is essential as salivary gland neoplasms have diverse clinical and prognostic outcomes. Majority of the salivary gland lesions were seen in the middle to older age group of life with male predominance. Parotid is the most common site followed by submandibular gland and minor salivary glands. Non-neoplastic lesions have more frequent occurrences compared to benign or malignant with chronic sialadenitis having highest incidence. Major salivary glands are affected commonly than minor salivary glands. Pleomorphic adenoma was the commonest tumour observed, mostly located in the parotid gland. Warthin was the second most common benign tumour of the salivary glands. Mucoepidermoid carcinoma was the commonest malignant tumour. Histopathologic examination is fairly accurate in making a diagnosis especially in non-neoplastic & benign neoplasms. In conclusion, from the present study, it is evident that histopathological examination of salivary gland lesions is the most important method in establishing the final diagnosis, in predicting prognosis, typing, staging and grading of malignant neoplasms.

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