

Original Research Article

Cytological Spectrum of Salivary Gland Lesions in a Tertiary Care Hospital

Shilpa M Shetty¹, Chethan Sagar S², Ramesh Babu K³¹Tutor, ²Consultant, ³Professor and Head, Department of Pathology, Shimoga Institute of Medical Sciences, Shimoga, Karnataka 577201, India.

Abstract

Background: Salivary glands are subjected to a wide and heterogenous range of tumor like conditions as well as tumors, and fine needle aspiration (FNA) forms an inexpensive, easy, reliable diagnostic modality. **Aims/Objectives:** 1. To study series of salivary gland lesions on FNAC at our institute. 2. To assess age, gender and site wise distribution of salivary gland lesions. **Materials and method:** A 4 year study was conducted from January 2015 to December 2018. All the salivary gland lesion FNAC performed in the department of Pathology, SIMS, Shimoga during the study period were included in the study, with exclusion of cases where the aspirate was acellular or hemorrhagic. Corresponding biopsy specimens if available during the study period were reviewed. **Results:** 143 cases of salivary gland lesions were included in the study. Non-neoplastic lesions were 77 (53.84%) and neoplastic lesions were 66 (46.15%). Non-neoplastic lesions were further divided into 3 categories inflammatory (52 cases, 67.53%), sialadenosis (13cases, 16.88%) and cystic (12 cases, 15.58%). Benign neoplasms accounted for 58 cases (87.87%) and malignant neoplasms were 08 cases (12.12%). Commonest non-neoplastic lesion belonged to inflammatory category, i.e. chronic sialadenitis (29 cases, 55.76%). Commonest benign and malignant neoplasm was Pleomorphic adenoma (52 cases, 89.65%) and Mucoepidermoid carcinoma (04 cases, 50%) respectively. **Conclusion:** In the present study we have shown the variety of lesions associated with salivary glands, both non-neoplastic and neoplastic. With increasing incidence of these salivary gland lesions, fine needle aspiration cytology has emerged as an easy and economical diagnostic modality.

Keywords: Parotid; FNAC; Pleomorphic adenoma; Histopathology.

Corresponding Author:

Chethan Sagar S, Consultant, Department of Pathology, Shimoga Institute of Medical Sciences, Shimoga, Karnataka 577201, India.

E-mail: dhruvshetty010217@gmail.com

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Introduction

Salivary glands are exocrine glands comprising of three paired major glands—parotid, submandibular,

sublingual and minor glands.¹ Minor salivary glands are found in lips, gingiva, floor of mouth, cheek, hard and soft palates, tongue, tonsillar area and oropharynx.²



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Salivary glands are subjected to a wide and heterogenous range of tumor like conditions and tumors, frequently posing diagnostic challenges to the clinicians. Salivary gland tumors are rare and represent <5% of head and neck tumors.³ Fine needle aspiration (FNA) though forms an inexpensive, easy and reliable diagnostic modality; gray zone in salivary gland lesions are not uncommon especially when the aspirate is scant or acellular.⁴ FNA is applicable to detect lesions in major salivary glands like parotid and submandibular glands, and also aids in diagnosing sublingual and minor salivary gland lesions. FNA, firstly helps in distinguishing clinically suspected salivary gland lesions from non-salivary gland swellings, especially lymphnode enlargement and secondly provides pre-operative strategy to the clinician.³ Diagnostic limitations in FNA are not rare because of overlapping clinical and morphological features of salivary gland lesions.⁵ Hence, excision biopsy subjected to histopathological examination complements FNA in diagnosing salivary gland lesions.

Aims and objectives of the present study were to learn about the distribution pattern of salivary gland lesions at our institute and to assess age, gender, site wise distribution of these lesions.

Materials and Methods

We conducted a 4 year study from January 2015 to December 2018 at Shimoga institute of medical sciences, Shimoga. All the salivary gland lesions referred for FNAC to Pathology department at our institute during the study period were included, with exclusion of cases where the aspirate was acellular or hemorrhagic. After obtaining permission from the Head of the department and Institutional Head; case details and gross specimen details were obtained from the FNAC/ Histopathology request forms. Respective FNAC and Histopathology slides were retrieved from the departmental archives and were reviewed.

Total of 143 cases were included in the study. FNA technique involved aspiration of material from various salivary gland lesions using 10 ml disposable syringe and 23G needle. Smears were prepared and they were stained with Leishman, Hematoxylin and eosin and Papanicolaou's stains. Only 30 cases underwent surgical intervention, the slides of which were reviewed.

Institutional ethical clearance has been obtained.

Results

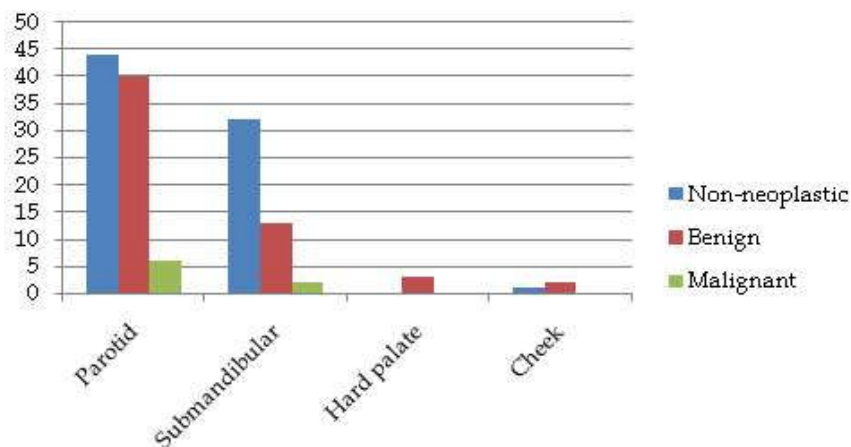
Total of 143 fine needle aspirations of salivary gland lesions performed in the Pathology department of our institute during the study period of January 2015 to December 2018 were included in the study. Various salivary gland lesions were categorised into non-neoplastic (77 cases, 53.84%) and neoplastic (66 cases, 46.15%) group [Table 1]. In non-neoplastic lesions there were 52 cases (67.53%) of Inflammatory lesions, 13 cases (16.88%) of Sialadenosis and 12 cases (15.58%) of Cystic lesions. Inflammatory lesions included chronic sialadenitis (55.76%), acute sialadenitis (23.07%), acute on chronic sialadenitis (19.23%) and granulomatous sialadenitis (1.92%). In neoplastic group, benign neoplasms (58 cases, 87.87%) constituted Pleomorphic adenoma (78.78%), Warthin's tumor (7.57%) and Basal cell adenoma (1.51%). Malignant neoplasms (08 cases, 12.12%) included Mucoepidermoid carcinoma (6.06%), Mucoepidermoid carcinoma/Squamous cell carcinoma (3.03%), Acinic cell carcinoma (1.51%) and 01 case was just diagnosed as positive for malignancy without further typing.

Commonest age group affected in non-neoplastic lesions was 41-50 years (29.87%), in benign neoplasm was 21-30 years (25.86%) and in malignant neoplasm 37.5% of cases were observed each in age groups 31-40 years and 51-60 years. Male: Female ratio in non-neoplastic lesions was 1.08:1, in benign neoplasm was 0.87:1 and in malignant neoplasm was 1:1. Parotid gland involvement constituted 57.14% of cases in non-neoplastic category and 69.69% of cases in neoplastic category. Submandibular gland was affected in 41.55% of non-neoplastic lesions and 22.72% of neoplastic lesions (Fig. 1).

Thirty cases underwent surgical intervention, out of which 07 inflammatory non-neoplastic cytological diagnosis correlated well with histopathology. 01 case of cystic lesion was diagnosed as Intermediate grade Mucoepidermoid carcinoma on histopathology and 01 case of chronic sialadenitis was diagnosed as Warthin's tumor on histopathology. 16 cases of neoplastic lesions on FNA correlated well with histopathology. 03 cases of Pleomorphic adenoma, on histopathology were diagnosed as one case each of low grade Mucoepidermoid carcinoma, Acinic cell carcinoma and Myoepithelioma. 01 case each of Basal cell adenoma and Acinic cell carcinoma on FNA were both diagnosed as Pleomorphic adenoma on histopathology [Table 2].

Table 1: Distribution of lesions

| Sl. No. | Category | No. of cases |
|---------|----------------------------------------------------|---------------|
| 1. | Non-Neoplastic | 77/143 |
| A) | Inflammatory | |
| | -Chronic sialadenitis | 29 |
| | -Acute sialadenitis | 12 |
| | -Acute on chronic sialadenitis | 10 |
| | -Granulomatous sialadenitis | 01 |
| B) | Sialadenosis | 13 |
| C) | Cystic lesion | 12 |
| 2. | Neoplastic | 66/143 |
| A) | Benign | |
| | -Pleomorphic adenoma | 52 |
| | -Warthin's tumor | 05 |
| | -Basal cell adenoma | 01 |
| B) | Malignant | |
| | -Mucoepidermoid carcinoma | 04 |
| | -Mucoepidermoid carcinoma/ squamous cell carcinoma | 02 |
| | -Acinic cell carcinoma | 01 |
| | -Positive for malignancy | 01 |

**Fig. 1:** Site of involvement**Table 2:** Variation in cytological and histopathological diagnosis in 07 cases:

| Sl. No. | Cytological diagnosis | Histopathological diagnosis |
|---------|-----------------------|---------------------------------------------|
| 01. | Sialadenitis | Warthin's tumor |
| 02. | Cystic lesion | Intermediate grade Mucoepidermoid carcinoma |
| 03. | Basal cell adenoma | Pleomorphic adenoma |
| 04. | Pleomorphic adenoma | Myoepithelioma |
| 05. | Pleomorphic adenoma | Low grade mucoepidermoid carcinoma |
| 06. | Pleomorphic adenoma | Acinic cell carcinoma |
| 07. | Acinic cell carcinoma | Pleomorphic adenoma |

Discussion

Fine needle aspiration cytology helps to distinguish salivary gland lesions into following category -inflammatory, benign and malignant, hence

allowing use of appropriate management strategies. FNA in diagnosing various mass lesions of salivary gland has been accepted as an excellent diagnostic modality as it is reliable, inexpensive and easy to perform.⁴

In the present study, non-neoplastic lesions affected individuals more commonly in the 5th decade (29.87%) which was comparable with study done by Todase V *et al.*⁶ showing 25.71% of non-neoplastic cases belonging to 5th decade. Benign neoplastic lesions were common in the 3rd decade in present study with 25.86% cases, which correlated well with study done by Todase V *et al.*⁶ (27.5%). In present study, malignant neoplastic lesions were common in the 4th (37.5%) and 6th decade (37.5%). Studies done by Todase V *et al.*⁶ and Kakoty S *et al.*⁷ showed malignant lesions involving 6th, 7th decade (30.76% cases each) and 6th decade (33.33%) respectively. In present study for non-neoplastic lesions Male:Female ratio was 1.08:1 and that in neoplastic lesions it was 0.78:1., which correlated with study done by Omhare A *et al.*⁸, where in non-neoplastic lesions Male:Female ratio was 3.7:1 and in neoplastic lesions it was 0.34:1. Parotid gland followed by submandibular gland was the commonest site of involvement for the salivary gland lesions in the present study with 62.93% and 32.86% cases respectively. Similar finding was presented by Saldanha C, *et al.*⁹ in their study with involvement of parotid and submandibular gland in 71.5% and 27.7% of cases respectively.

Commonest non-neoplastic lesion in the present study was chronic sialadenitis (37.66%), which correlated with study done by Verma S *et al.*¹⁰ and Arul P *et al.*¹¹ with 54.29% and 82.75% of cases respectively. Pleomorphic adenoma formed largest group in benign neoplasm with 89.67% of cases in the present study, which was similar to the finding observed by Bobati S *et al.*¹² and Tessy P J *et al.*¹³ showing 60.71% and 76.31% of cases in their respective study. Commonest malignant neoplasm in the present study was Mucoepidermoid carcinoma with 50% of cases, which correlated with studies done by Sushma H M *et al.*¹⁴ and Upasana P *et al.*¹⁵ with 30% and 35.29% of cases respectively.

Variation in cytological and histopathological diagnosis was seen in 07 cases (Table 2). 01 case of cystic lesion was diagnosed as Intermediate grade Mucoepidermoid carcinoma on histopathology; this could be because of aspiration of scantily cellular mucoid material on FNA. 01 case of Chronic sialadenitis was diagnosed as Warthin's tumor on histopathology; which occurred because of predominance of lymphocytic infiltrate, presence of occasional ductal epithelial cells and lack of apocrine epithelium. 01 case of Pleomorphic adenoma was diagnosed as low grade Mucoepidermoid carcinoma; because mucoid material in the background was mistaken for chondromyxoid matrix. Another case of Pleomorphic adenoma was

diagnosed as Myoepithelioma on histopathology; but this confusion is of little biological consequence. One more case of Pleomorphic adenoma was diagnosed as Acinic cell carcinoma; false negative diagnosis might have occurred due to increased cellularity and scant chondromyxoid matrix. Pleomorphic adenoma was misdiagnosed as Basal cell adenoma on FNA due to absence of chondromyxoid matrix and presence of occasional myoepithelial cells. Cellular Pleomorphic adenoma with scant chondromyxoid matrix may be mistaken for Acinic cell carcinoma on FNA.

Two cases were diagnosed as Mucoepidermoid carcinoma/ Squamous cell carcinoma on FNA because of high cellularity, many atypical squamoid cells, occasional vacuolated cells and necrotic background. 01 case on FNA was just diagnosed as Positive for malignancy, as repeated aspiration yielded scant to moderate cellularity with many atypical cells which could not be typed further.

Conclusion

With this study, we have shown distribution pattern of various salivary gland lesions including non-neoplastic and neoplastic lesions. FNA forms an inexpensive and reliable diagnostic modality, providing guidance towards appropriate treatment strategies. Due to overlapping clinical and cytological features of salivary gland lesions, diagnostic limitation is not uncommon. In the present study, in 4 years only 143 cases of salivary gland lesion FNA was available. Keeping the gray zone of salivary gland lesions in mind, it is advisable for more and more cases to take consultation and undergo FNA.

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