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Original Research Article

Patterns of salivary gland lesions on fine needle aspiration cytology (FNAC)

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ABSTRACT

Background: A diverse range of inflammatory, cystic and neoplastic processes affect salivary glands.Fine needle aspiration cytology (FNAC) is a reliable tool for evaluation of salivary gland lesions.
Aims and objectives: To analyse the cytomorphological features of salivary gland lesions and to assess the frequency of distribution of these lesions.
Materials and Methods: It was an observational study conducted in the Department of Pathology, Govt. Medical College, Jammu. FNAC was performed on patients presenting with salivary gland swelling. May-Grunwald-Giemsa (MGG) and Papanicolaou (PAP) stained smears were examined under light microscope. The cytomorphological features were analysed and diagnosis was made.
Results: There were 65 cases which included 31 (47.7%) males and 34 (52.3%) females. The mean age of patients was 42.96 years. On microscopic examination, neoplastic lesions were 35 (53.8%) and non neoplastic lesions were 30 (46.2%). Pleomorphic adenoma was the most common benign neoplastic lesion and also was the most frequently diagnosed lesion in our study (21, 32.3%). Mucoepidermoid carcinoma cases were maximum among malignant lesions (4, 6.2%). Parotid gland was involved in majority of cases.
Conclusion: FNAC is a simple, rapid, reliable tool for the evaluation of salivary gland lesions thereby helping clinicians in deciding the further management plan.

1. Introduction

A diverse range of inflammatory, cystic and neoplastic processes affect salivary glands resulting in their enlargement.[1,2] Salivary gland neoplastic lesions constitute 2%–6.5% of all head and neck tumors.[2,3] Fine needle aspiration cytology (FNAC) is a simple, cost effective, reliable and minimally invasive procedure with a high sensitivity and specificity for evaluation of salivary gland lesions.[4–6] It helps to ascertain the nature of disease process. It can differentiate between inflammatory and neoplastic lesions; and also distinguishes benign from malignant neoplasms.[7,8] It therefore assists the clinician in deciding the appropriate plan of management.[1,6]

The present study was undertaken to analyse the cytomorphological features of salivary gland lesions and to assess the frequency of distribution of these lesions on FNAC.

2. Materials and Methods

It was an observational, retrospective study conducted in the Department of Pathology, Govt. Medical College, Jammu w.e.f. 1^{st} July 2021 to 30^{th} June 2022. It included patients presenting with salivary gland swelling. Detailed history, clinical examination and relevant investigations of all patients were recorded. FNAC was performed using 22 G needle and 20cc syringe after taking written informed consent. Smears were prepared; air dried smears were stained with May-Grunwald-Giemsa (MGG) stain

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and alcohol fixed smears were stained with Papanicolaou (PAP) stain. Stained smears were examined under light microscope. The cytological features were studied and diagnosis was made. Inadequate aspirates were excluded from the study.

3. Results

A total of 65 patients were included in the present study. Of these, 31 (47.7%) were males and 34 (52.3%) were females with male to female ratio of 0.9:1. The mean age of patients was 42.96 years with age ranging from 6 months to 77 years. Maximum cases were in the age group of 41-50 years (15, 23.1%) followed by 51-60 years (11, 16.9%) as shown in Table 1.

Table 1: Age wise distribution of cases

Age	Number of cases	Percentage (%)
0-10	04	6.2
11-20	08	12.3
21-30	08	12.3
31-40	08	12.3
41-50	15	23.1
51-60	11	16.9
61-70	08	12.3
71-80	03	4.6
Total	65	100

Table 2: Various salivary gland lesions diagnosed on FNAC

Cytological diagnosis	Number of cases	Percentage (%)
Non neoplastic	30	46.2
Acute sialadenitis	02	3.1
Chronic sialadenitis	10	15.4
Sialadenosis	09	13.8
Cystic lesions	09	13.8
Neoplastic		
Benign	26	40.0
Pleomorphic adenoma	21	32.3
Warthin's Tumor	04	6.2
Oncocytoma	01	1.5
Malignant	09	13.8
Mucoepidermoid carcinoma	04	6.2
Adenoid cystic carcinoma	02	3.1
Acinic cell carcinoma	01	1.5
Carcinoma ex pleomorphic adenoma	01	1.5
Non-Hodgkin Lymphoma	01	1.5
Total	65	100.0

Out of 65 cases, neoplastic lesions (35, 53.8%) were more than non neoplastic lesions (30, 46.2%). Chronic sialadenitis was the most common non-neoplastic lesion (10, 15.4%) followed by sialadenosis and cystic lesions (9, 13.8%) (Figures 1 and 2). Among neoplastic lesions, benign lesions (26, 40%) were more common than malignant

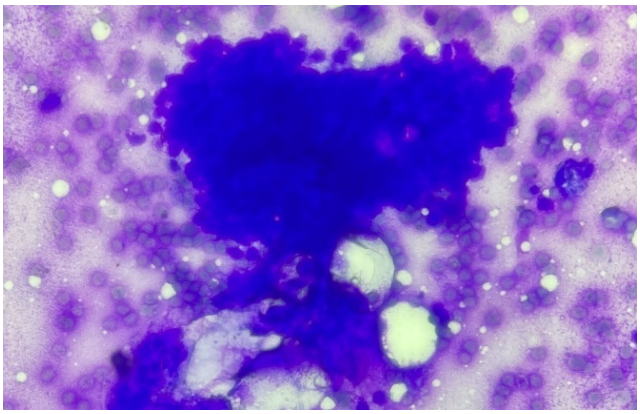

Fig. 1: Photomicrograph from a case of chronic sialadenitis showing sheet of ductal epithelial cells (MGG, 100X)

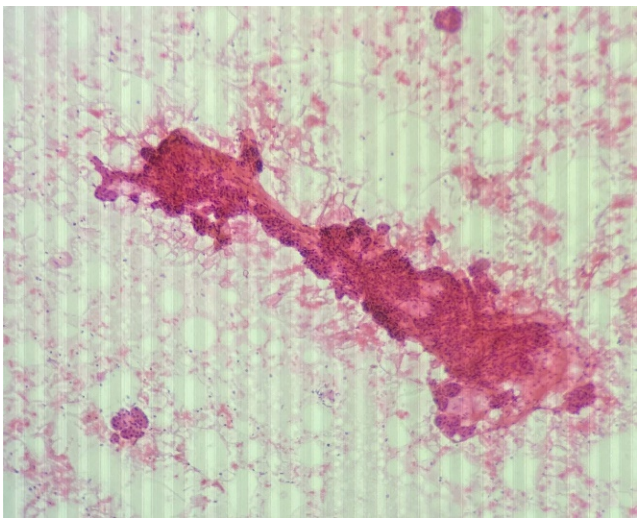

Fig. 2: Photomicrograph from a case of sialadenosis showing acinar cells adherent to fibrovascular stroma (PAP, 100X)

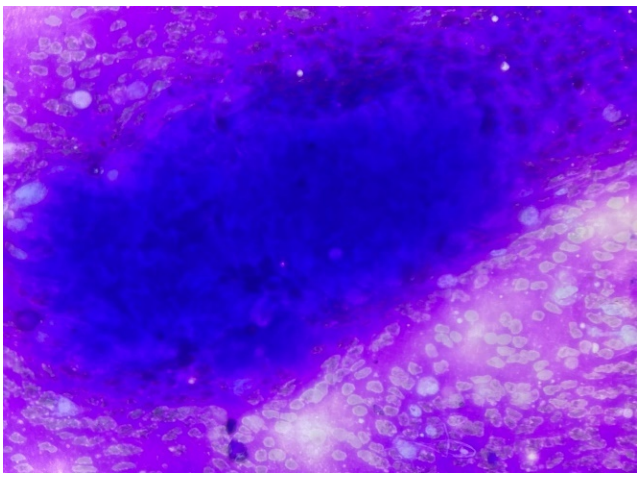

Fig. 3: Photomicrograph from a case of pleomorphic adenoma showing oval to spindle cells embedded in chondromyxoid matrix (MGG, 100X)

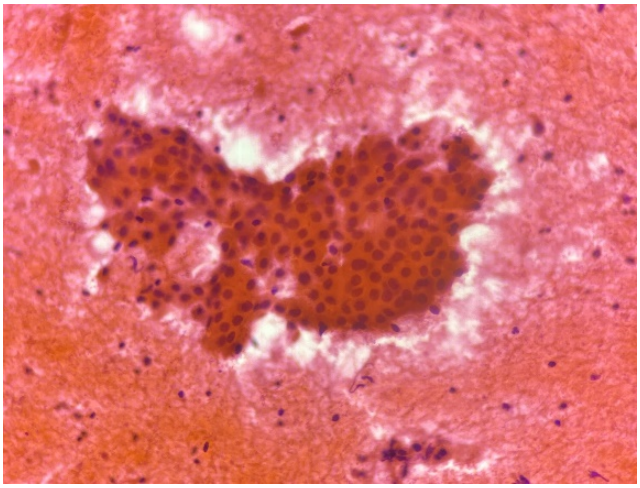

Fig. 4: Photomicrograph from a case of Warthin's tumor showing sheet of oncocytic cells along with lymphocytes (PAP, 100X)

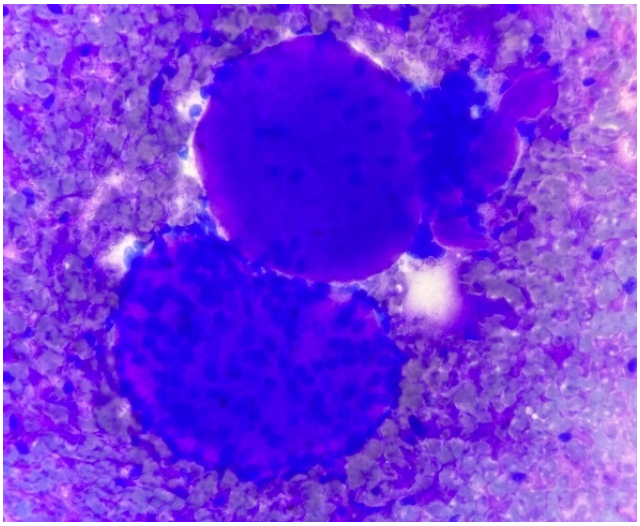

Fig. 5: Photomicrograph from a case of adenoid cystic carcinoma showing hyaline globules with adherent tumor cells (MGG 400X)

lesions (9, 13.8%). Pleomorphic adenoma was the most common benign neoplastic lesion and also accounted for maximum cases in our study (21, 32.3%) (Figure 3). The next common benign neoplastic lesion was Warthin's tumor (4, 6.2%) (Figure 4). Mucoepidermoid carcinoma cases were maximum among malignant lesions (4, 6.2%) followed by adenoid cystic carcinoma (2, 3.1%) (Figure 5). Table 2 shows various salivary gland lesions diagnosed on FNAC. Parotid gland was involved in majority of cases (35, 53.8%) followed by submandibular gland (21, 32.3%). Minor salivary glands were least involved (9, 13.8%).

4. Discussion

FNAC has emerged to be an important tool in the preoperative assessment of salivary gland swellings. A total of 65 cases were cytologically examined in the present study. There were 31 (47.7%) males and 34 (52.3%) females with male to female ratio of 0.9:1. This slight female preponderance in our study is comparable to studies by Poudel et al and Narote et al.[3,6] The mean age of patients in our study was 42.96 years, comparable to studies by Naz et al and Ankleswaria et al.[7,9] Maximum cases were in the age group of 41-50 years, similar to study by Rameeza et al.[4]

There were 35 (53.8%) neoplastic lesions and 30 (46.2%) non-neoplastic lesions. Neoplastic lesions were higher than non-neoplastic lesions, similar to other studies.[2,10–12] Chronic sialadenitis was the most common non-neoplastic lesion similar to studies by Fernandes et al and Omhare et al.[1,5] Sialadenosis and cystic lesions are next common non neoplastic lesions. In studies by Gupta et al and Aruna et al, sialadenosis was the second common lesion after chronic sialadenitis.[13,14]

Among neoplastic lesions diagnosed on FNAC in our study, benign were more common than malignant lesions. This is consistent with many other studies.[10–15] Pleomorphic adenoma accounted for maximum cases among benign neoplasms and was also overall the most frequent diagnosis in our study. This was also observed in other studies.[1–4,6–8,10–12,14] Warthin's tumor was the next common benign neoplasm in our study, comparable to studies by Naz et al and Nanda et al.[7,15] Mucoepidermoid carcinoma was the most common malignant lesion in our study. This was also seen in other studies.[3–6] This was followed by adenoid cystic carcinoma, as seen in studies by Narote et al and Purnima et al.[6,12] Parotid gland was involved in maximum cases followed by submandibular gland. This is similar to rest of the studies.[1–6]

5. Conclusion

The findings of our study are comparable to many studies available in the literature. A range of inflammatory, benign and malignant lesions of salivary gland can be diagnosed by FNAC. FNAC is a simple, rapid, reliable tool for the evaluation of salivary gland lesions thereby helping clinicians in deciding the further management plan.

6. Source of Funding

None.

7. Conflicts of interest

There are no conflicts of interest.

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