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Original Research Article

Cytopathological categorization of salivary gland lesions according to milan system of classification: Our experience in a tertiary care centre of North-East India

Junu Devi¹, Asreen Suhana^{1,*}

¹Dept. of Pathology, Gauhati Medical College and Hospital, Guwahati, Assam, India



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ABSTRACT

Background: Fine needle aspiration cytology is a widely accepted pre-operative procedure for salivary gland lesions. The aim of this study to evaluate the salivary gland lesions in relation to age, sex, location and the prevalence of non-neoplastic and neoplastic lesions that presented to Gauhati Medical College and Hospital (GMCH), Guwahati,

Materials and Methods: A retrospective study was done over a period of 2 years, from January,2019 to December,2020 and the slides and data of 110 cases of salivary gland lesions that underwent FNAC in our hospital(GMCH) were reviewed.

Results: Out of a total of 110 cytological smears, 101 smears (91.9%) were adequate and 9 smears (8.1%) were inadequate. Out of 101 adequate smears, 35 (34.6%) were non-neoplastic lesions, 37 (36.6%) were benign and 29 (28.7%) were malignant lesions. Males were more commonly affected (M:F=1.6:1). Parotid gland was most commonly affected in relation to anatomical site. Most common benign lesion was Pleomorphic Adenoma and Mucoepidermoid carcinoma was the most common malignancy.

Conclusion: FNAC is a very reliable, cost-effective, safe and rapid diagnostic tool for categorizing malignant and benign salivary lesions which is complimentary to histopathology. Though histopathological examination remains the gold standard for diagnosis, FNAC remains an useful adjunct for planning patient management.

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1. Introduction

Salivary gland neoplasms account for less than 2% of all tumors in the human body.¹ Among head and neck neoplasms in adults, salivary gland lesions comprise 2-6.5%.²

FNAC is now the most widely used and accepted tissue-based diagnostic procedure in salivary gland lesions before any surgery.³ It becomes challenging at times due to overlapping of cytological features, so should be done in conjunction with history, clinical examination,

radiological investigations, followed by histopathological examination.⁴ It helps in differentiating neoplastic from non-neoplastic lesions and specific categorization,⁵ thereby avoiding unnecessary intervention.

The aim of this study was to evaluate the cytological spectrum of salivary gland lesions that presented to Gauhati Medical College and Hospital, Guwahati undergoing FNA during this 2-year period with respect to age, anatomical site, gender and type of lesion.

* Corresponding author.

E-mail address: asreensuhana@gmail.com (A. Suhana).

2. Materials and Methods

This is a 2-year retrospective study done in the cytology section of the department of Pathology, Gauhati Medical College and Hospital from January, 2019 to December, 2020. The study included 110 cases of salivary gland swellings of all age groups and both sexes.

The patient's age, sex and anatomic location was recorded. FNAC was performed using 22-27 gauge 20 ml disposable syringe and the air dried, ethanol fixed smears are then stained using May Grunwald Giemsa (MGG) stain. The smears are then examined for adequacy, cellular arrangement, cell types, nuclear and cytoplasmic features. Depending on the cytological characteristics, these are grouped into three categories, non-neoplastic, benign and malignant.

3. Results

Gender wise, salivary gland lesions were more common in males (61.8%).

Table 1: Sex wise distributions of salivary gland lesions (n=110)

Sex	No. of cases	Percentage
Male	68	61.8
Female	42	38.2

The most commonly involved age group was the fourth decade (28 cases), followed by the fifth.

Table 2: Age-wise distribution of salivary gland lesions (n=110)

Age group	Total
0-10	8
11-20	11
21-30	14
31-40	18
41-50	30
51-60	19
61-70	8
71-80	2

Among the total cases, most common location of salivary gland lesions was the Parotid gland.

Table 3: Anatomical distribution of adequate cases according to location and type (n=110)

Gland involved	Number of cases
Parotid gland	78
Submandibular gland	29
Minor salivary glands	3
Total	110

Among the total number of cases (110), 9 were non diagnostic. Most common type of lesion was benign neoplasm.

Table 4: Salivary gland lesions according to milan system

Diagnostic category	Number of cases
1.Non diagnostic	9
2.Non neoplastic	35
3.Atypia of Undetermined significance	0
4.Neoplasm	
A. Benign	37
B.Salivary gland lesions of uncertain malignant potential(SUMP)	1
5.Suspicious of Malignancy	0
6.Malignant	28

The most common type of lesion was benign, commonest being Pleomorphic adenoma (24.8%). Among the non-neoplastic lesions, sialadenitis (17.9%) was the most common. Mucoepidermoid carcinoma (10.9%) was the commonest of all malignancies reported in the salivary gland lesions of this study.

Table 5: Cytomorphological spectrum of salivary gland lesions (n=101)

Type of lesion	Diagnosis	No.of cases	%
Non-neoplastic lesions	Sialadenitis	18	17.9
	Sialadenosis	2	1.9
	Benign cystic lesion	10	9.9
	Abscess	4	3.9
	Lymphoepithelial cyst	1	1
Benign lesions	Pleomorphic adenoma	25	24.8
	Warthins tumor	2	1.9
	Basal cell adenoma	3	2.9
	Myoepithelioma	5	5
	Schwannoma	2	1.9
	Carcinoma ex pleomorphic adenoma	2	1.9
	Malignant lesions	Adenoid cystic carcinoma	3
Mucoepidermoid Carcinoma		11	10.9
Acinic cell carcinoma		5	5
Salivary duct carcinoma		4	4
Basal cell carcinoma		2	1.9
Secondary deposit		2	1.9

4. Discussion

This is a 2-year retrospective study on 110 salivary gland lesions that underwent fine needle aspiration in the department of Pathology, Gauhati Medical College and Hospital, Guwahati during the period from January 2019 to December 2020. Analysis is being done with respect to adequacy for reporting, male to female ratio, commonest

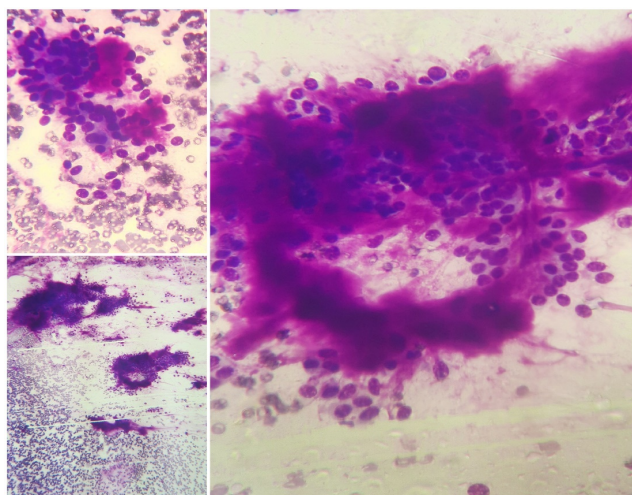


Fig. 1: High power and low power view of pleomorphic adenoma

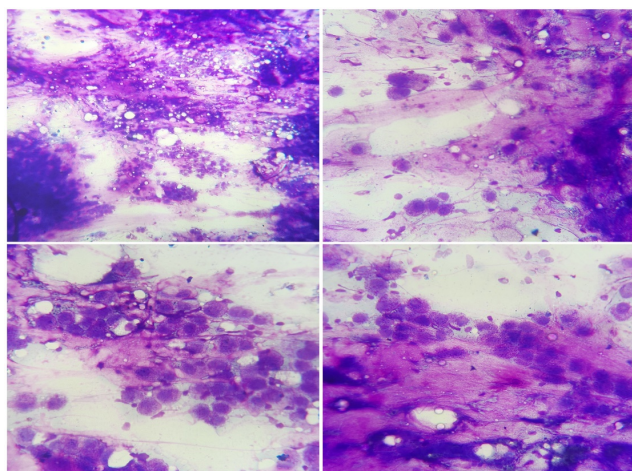


Fig. 2: Low power and high power view of Mucoepidermoid carcinoma

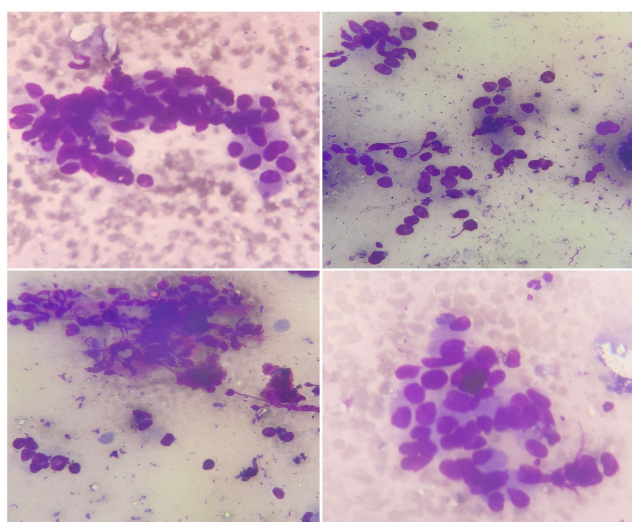


Fig. 3: Low power and high power view of Acinic cell carcinoma

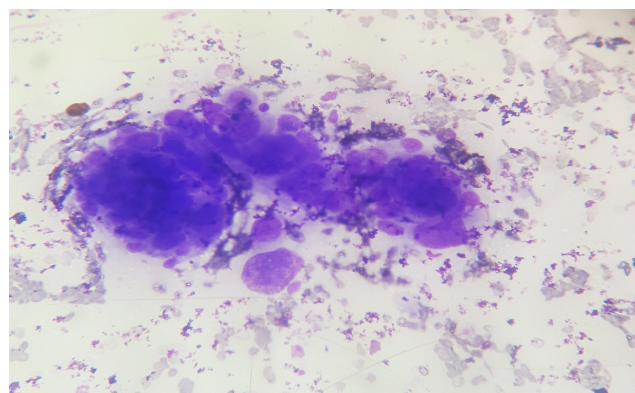


Fig. 4: High power view of Salivary duct carcinoma

age group and gland affected and the type of lesion.

In this study, male to female ratio is 1.6:1, which is similar to that observed by studies done by Das DK et al⁶ (1.28:1), Omhare et al⁷ (1.17:1), Mayur et al⁸ (1.2:1), Malati et al⁹ (1.4:1), Swarna B. Patil et al¹⁰ (1.1:1), Singh et al⁵ (2.4:1) and Desai et al.¹¹

Most common age group affected was 41-50 years (28 cases, %). Similar results were observed by Swarna B Patil et al.¹⁰ Studies done by Desai et al¹¹ and Mayur et al⁸ showed the common age group affected as 31-40 years and 21-30 years respectively.

Location wise, parotid gland (72.3%) is the most commonly involved, which was in concordance with studies done by Mayur et al,⁸ Roland NJ et al,¹² Singh et al,⁵ Verma et al,¹³ Sengupta et al,¹⁴ Aruna et al¹⁵ and Desai et al.¹¹

In this study, out of 110 cases, 109 cases (91.8%) were adequate for reporting. This was similar to studies done by Das et al⁶ (96% adequate aspirations), Nguansangiam et al¹⁶(94.8%) and Sandhu et al¹⁷(88.2%). The most common type of lesion was benign (37 cases, 36.63%), which is comparable with studies done by Sandhu et al¹⁷ (66 cases, 82.5%), Nguansangiam et al¹⁶ (89.47%) and Desai et al¹¹ (53.8%).

Among the non-neoplastic lesions, sialadenitis (17.9%) was the commonest. Studies done by Singh et al,¹⁸ Ashraf et al¹⁹ and Desai et al¹¹ had similar results.

Pleomorphic Adenoma was the commonest benign neoplasm, observed in 24.8% of total patients. Similar observations were made by Ito et al²⁰ (67.8%), Sandhu et al¹⁷ (93.93%), Singh et al,⁵ Khandekar MM et al and Desai et al.¹¹

Mucoepidermoid carcinoma (10.9%) was the most common malignancy in this study, which is similar to studies done by Jesus Souza et al,²¹ Omhare et al,⁷ Mayur et al,⁸ Singh et al,⁵ Chatterjee MT et al²² and Desai et al.¹¹

5. Conclusion

Many studies done over the years have proved fine needle aspiration cytology as a very important, rapid, feasible, cost-effective and minimally invasive diagnostic procedure for salivary gland lesions. This also help in planning the management of such lesions along with avoidance of surgery in one-third of cases.^{22,23} FNAC is now even preferred for various ancillary studies after cell block preparation from the obtained material.

6. Conflict of Interest

The authors declare no relevant conflicts of interest.

7. Source of Funding

None.

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Author biography

Junu Devi, Associate Professor

Asreen Suhana, Post-Graduate Trainee  <https://orcid.org/0000-0001-6181-1753>

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