IJPRP

Indian Journal of Pathology: Research and Practice

Volume 7 Number 2, February 2018
DOI: http://dx.doi.org/10.21088/ijprp.2278.148X.7218.19

Original Research Article

Diagnostic Challanges in Cytodiagnosis of Salivary Gland Lesions with Emphasis on Misdiagnosed Cases

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(Received on 05.10.2017,
Accepted on 09.02.2018)

Abstract

Obective: Fine needle aspiration cytology (FNAC)is less invasive diagnostic modality in almost all lesion with good range of sensitivity, however few false negative and false positive report have been reported, here we emphasis on those misdiagnosed cases with possible explanation.

Material & Methods: This study includes a total 43 cases who underwent prior FNAC followed by biopsy examination at our institute. Cytological diagnosis was compared with histological diagnosis.

Results: Out of 43 cases studied 26 were benign and 17 were malignant on histology, 3 case of benign and 5 cases of malignant shows discrepancy with histology. we explain possible cause of misdiagnosis.

Keywords: Fine Needle Aspiration; Histological Diagnosis; Salivary Gland; Sensitivity; Specificity.

Introduction

Salivary glands are exocrine organs responsible for the production and secretion of saliva. They comprise the three paired major glands, the parotid, submandibular and sublingual, and the numerous minor glands. Minor glands are widely distributed throughout the mouth and oropharynx.Salivary gland tumours can show a striking range of morphological diversity between different tumour. FNA can be used both as a diagnostic test and as a screening tool to triage patients into different treatment groups i.e. surgical vs. medical management vs. to follow without intervention. Benign tumours and low-grade malignancies can be adequately treated with surgery alone, while high-grade tumours with regional lymph node metastasis will require postoperative radiotherapy. This paper highlights usefulness of FNAC in diagnosing benign and malignant lesions along with limitation

Salivary gland neoplasm are uncommon heterogeneous group of neoplasm comprising 3% of all head and neck neoplasms [1]. They occur in 1 in 100,000 . The prevalence of these tumours varies between studies [2,3], Tumors of many different origins can arise in the salivary glands. The World Health Organization (WHO) proposed the first histological classification of salivary gland tumours in 1972 [4].

The glands most commonly affected are the parotid and submandibular glands respectively, usually by benign tumours [4]. When the minor salivary glands are affected, it is usually by malignant tumours and almost every tumour arising from the sublingual gland is malignant [3,5]. The risk of malignant change has been report to be up to 10%. Features predictive of malignant change include age, tumour size, a long history of the mass, submandibular location, and the presence of hyalinized stroma [6].

For malignant salivary tumour, the commonest type overall is mucoepidermoid carcinoma. However, if we look at each salivary gland in turn, several large series have shown that mucoepidermoid carcinoma is only the commonest cancer in the parotid glands, comprising around 33% [7,8]. Adenoid cystic carcinoma is the commonest cancer in the submandibular and minor salivary glands, making up 42–49% [7,8].

Material and Method

This study is of one year duration conducted in year 2016 in department of pathology of Geetanjali medical college and hospital . Total 43 salivary gland neoplasm were studied including benign and malignant during this period. Prior FNAC study was done for each cases before undergoing surgical treatment and cyto-histological correlation was done.

Discussion

Total 43 case including benign and malignant lesion were included in study from major as well as minor salivary gland, of which 22 were male and 21 were female. Age group ranging from 26 to 65 year.

Benign diagnosis on histology made on 26 cases, male: female ratio in benign was 1.3:1. Number of Male and female patients were 15 and 11respectively. Most common site for benign lesions was parotid gland followed by submadibular gland and minor salivary gland (Table 1).

Cyto-histologic correlation made on all 26 benign lesions, of which only three cases show discrepancies. (Table 2).

Case 1

On FNAC, we aspirate only normal salivary acini, there was no inflammation at all in smear examined. So we gave sialadenosis on cytology. But final histological diagnosis was chronic sialadenitis. This can be explained by focal nature of inflammation and lack of presentative material on cytology.

Case 2

Here we reported a case of adenoid cystic carcinoma on FNAC. On aspiration cytology, many hyaline globule as well as epithelial component was seen. These cells have mild nuclear atypia and focal nuclear moulding, So on this morphological finding possibility of adenoid cystic carcinoma suggested. On histology, final diagnosis was Pleomorphic adenoma. Misdiagnosis on FNAC was due to misinterpretation of drying artifact as nuclear atypia and partly due to inability to comment upon invasion in tumour.

Case 3

In this case pleomorphic adenoma was diagnosed on FNAC, which was given basal cell adenoma on histopathology. Both lesions have hyaline globules and epithelial cell clusters having bland nuclei. However on histology, characteristic chondromyxoid background was absent. So final diagnosis was Basal cell adenoma.

Benign Lesions
Table 1

	Gender	Age	Location	FNAC
1	Male	26	Submandibular	Pleomorphic adenoma
2	female	40	Parotid	Pleomorphic adenoma
3	Female	32	Lip	Pleomorphic adenoma
4	Female	28	Submandibular	Pleomorphic adenoma
5	Male	55	Submandibular	Adenocystic carcinoma
6	male	60	parotid	Warthins tumour
7	Male	52	parotid	Warthins tumour
8	Male	35	Parotid	Chronic sialadenitis
9	Male	38	Parotid	Chronic sialadenitis
10	Female	46	Parotid	Chronic sialadenitis
11	Male	40	Parotid	Chronic sialadenitis
12	Female	30	Submandibular	Chronic sialadenitis
13	Female	40	Submandibular	Sialadenosis
14	Male	45	Submandibular	Oncocytoma
15	Male	32	Parotid	Sialadenosis
16	Male	40	Parotid	Pleomorphic adenoma
17	Female	34	Submandibular	Warthins tumour
18	Male	42	Parotid	Pleomorphic adenoma
19	Female	50	Submandibular	Pleomorphic adenoma
20	Male	32	Parotid	Monomorphic adenoma

21	Female	36	Submandibular	Basal cell adenoma
22	Male	38	Parotid	Warthins tumour
23	Male	47	Submandibular	Pleomorphic adenoma
24	Female	53	Parotid	Pleomorphic adenoma
25	Male	38	Parotid	Warthins tumour
26	Female	33	Submandibular	Pleomorphic adenoma

Cyto-Histo Correlation
Table 2

S. N.	Histology	FNAC
1	Pleomorphic adenoma	Pleomorphic adenoma
2	Pleomorphic adenoma	Pleomorphic adenoma
3	Pleomorphic adenoma	Pleomorphic adenoma
4	Pleomorphic adenoma	Pleomorphic adenoma
5	Pleomorphic adenoma	Adenocystic carcinoma
6	Warthins tumour	Warthins tumour
7	Warthins tumour	Warthins tumour
8	Chronic sialadenitis	Chronic sialadenitis
9	Chronic sialadenitis	Chronic sialadenitis
10	Chronic sialadenitis	Chronic sialadenitis
11	Chronic sialadenitis	Chronic sialadenitis
12	Chronic sialadenitis	Chronic sialadenitis
13	Chronic sialadenitis	Sialadenosis
14	Oncocytoma	Oncocytoma
15	Sialadenosis	Sialadenosis
16	Pleomorphic adenoma	Pleomorphic adenoma
17	Warthins tumour	Warthins tumour
18	Pleomorphic adenoma	Pleomorphic adenoma
19	Basal cell adenoma	Pleomorphic adenoma
20	Monomorphic adenoma	Monomorphic adenoma
21	Basal cell adenoma	Basal cell adenoma
22	Warthins tumour	Warthins tumour
23	Pleomorphic adenoma	Pleomorphic adenoma
24	Pleomorphic adenoma	Pleomorphic adenoma
25	Warthins tumour	Warthins tumour
26	Pleomorphic adenoma	Pleomorphic adenoma

Table 3: Discrepencies in Benign lesions

S. N.	FNAC	Histology	Age	sex	Site
1	Sialadenosis	Ch.sialadenitis	40	male	submandibular
2	Adenoid cystic carcinoma	Pleomorphic adenoma	55	male	submandibular
3	Pleomorphic adenoma	Basal cell adenoma	50	female	submandibular

Malignant Lesion

Malignant diagnosis on histology made on 17 cases (Table 4), of which 10 female and 7 male. Most common sites involved in malignant lesion were parotid and submandibular gland each eight in number and one case was from tongue. Age group in malignant lesion ranging from 26 to 60 years. Cyto-histo correlation was made in all 17 cases (Table 5) FNAC could give malignancy in 12 cases. Exact sub typing was made in 9 cases. On three case sub typing was not possible.

Table 4:

S. N.	FNAC	Location	Age	Sex
1	Malignant epithelial lesion	Submandibular region	Male	55
2	Poorly differenciated squamous cell carcinoma	Submandibular region	Male	62
3	Lymphadenitis	Submandibular region	Female	44
4	Adenocystic carcinoma	Parotid	female	40
5	Adenocystic carcinoma	Parotid	Male	39
6	Adenocystic carcinoma	Parotid	Female	46

7	Pleomorhic adenoma	Parotid	Male	54
8	Pleomorphic adenoma	submandibular	Female	48
9	Spindle cell neoplasm	Tongue	Female	32
10	oncocytoma	Parotid	female	65
11	Malignant epithelial lesion	submandibular	Male	46
12	Adenocystic carcinoma	Post.auricular	Female	52
13	Malignant epithelial lesion	submandibular	Male	60
14	Adenocystic carcinoma	Parotid	Female	49
15	Adenocystic carcinoma	submandibular	Male	53
16	Adenocystic carcinoma	Parotid	Female	59
17	Acinic cell carcinoma	Parotid	Female	47

Cyto-Histo Correlation
Table 5

S. N.	Histopathology	FNAC
1	Mucoepidermoid ca	Malignant epithelial lesion
2	Mucoepidermoid ca	Poorly differenciated squamous cell carcinoma
3	Mucoepidermoid ca	Lymphadenitis
4	Adenocystic carcinoma	Adenocystic carcinoma
5	Adenocystic carcinoma	Adenocystic carcinoma
6	Adenocystic carcinoma	Adenocystic carcinoma
7	Adenocystic carcinoma	Pleomorhic adenoma
8	Adenocystic carcinoma	Pleomorphic adenoma
9	Hyalinizing clear cell carcinoma	Benign epithelial tumour (?salivary gland)
10	Acinic cell carcinoma	oncocytoma
11	Malignant epithelial lesion	Malignant epithelial lesion
12	Adenocystic carcinoma	Adenocystic carcinoma
13	Malignant epithelial lesion	Malignant epithelial lesion
14	Adenocystic carcinoma	Adenocystic carcinoma
15	Adenocystic carcinoma	Adenocystic carcinoma
16	Adenocystic carcinoma	Adenocystic carcinoma
17	Acinic cell carcinoma	Acinic cell carcinoma

Table 6: Discrepency in malignant lesion

S. N.	FNAC	Histology	Age	Sex	Site
1	Lymphadenitis	Mucoepedemoid carcinoma	44	Female	Submandibular
2	Pleomorhic adenoma	Adenocystic carcinoma	54	Male	Parotid
3	Pleomorphic adenoma	Adenocystic carcinoma	48	Female	Submandibular
4	Oncocytoma	Acinic cell carcinoma carcinoma	65	Female	Parotid
5	Benign epithelial tumour (?salivary gland)	Hyalinizing clear cell carcinoma	32	Female	Tongue

Five cases show discrepancies. These case were given as benign lesion on FNAC (table 6) which were diagnosed as malignant on histopathology.

Case 1 Since few mucoepidermoid carcinoma may have prominent lymphoid follicle with germinal center, so smear received from such area contain mainly lymphocytic population so lead to erroneous diagnosis of lymphadenitis

Case2 and 3 were falsely given as pleomorphic adenoma, smears were rich in hyaline globule, cellularity was less, so not able to appreciate nuclear feature, and diagnosis on FNAC was restricted toward benign .

Case 4 Acinic cell carcinoma was misinterpreted as oncocytoma. On cytology smear shows oncocytic cells and few lymphocytes along with normal acinar cells, so differential could be warthins, oncocytoma and acinic cell carcinoma. Only few lymphocytes, lack of fluid material, absent pleomorphism, absent necrosis & bland nuclear features prompted us to diagnose it as benign oncocytoma. Definite diagnosis of acinic cell carcinoma was given on histology. Misdiagnosis was due to focal oncocytic differentiation in acinic cell carcinoma and absence of characteristic cytoplasmic granularity on cytology.

Case 5 Hyalinizing clear cell carcinoma was given as benign epithelial tumour (? salivary gland) diagnosis on cytology. Smears were showing few sheets of cells with bland looking ovoid nuclei and indistinct pale cytoplasm, Occasional stromal fragments were also seen.

Relative bland nuclear features, and unusual site of tongue for salivary gland tumour led to diagnostic discrepancy.

Benign Lesions

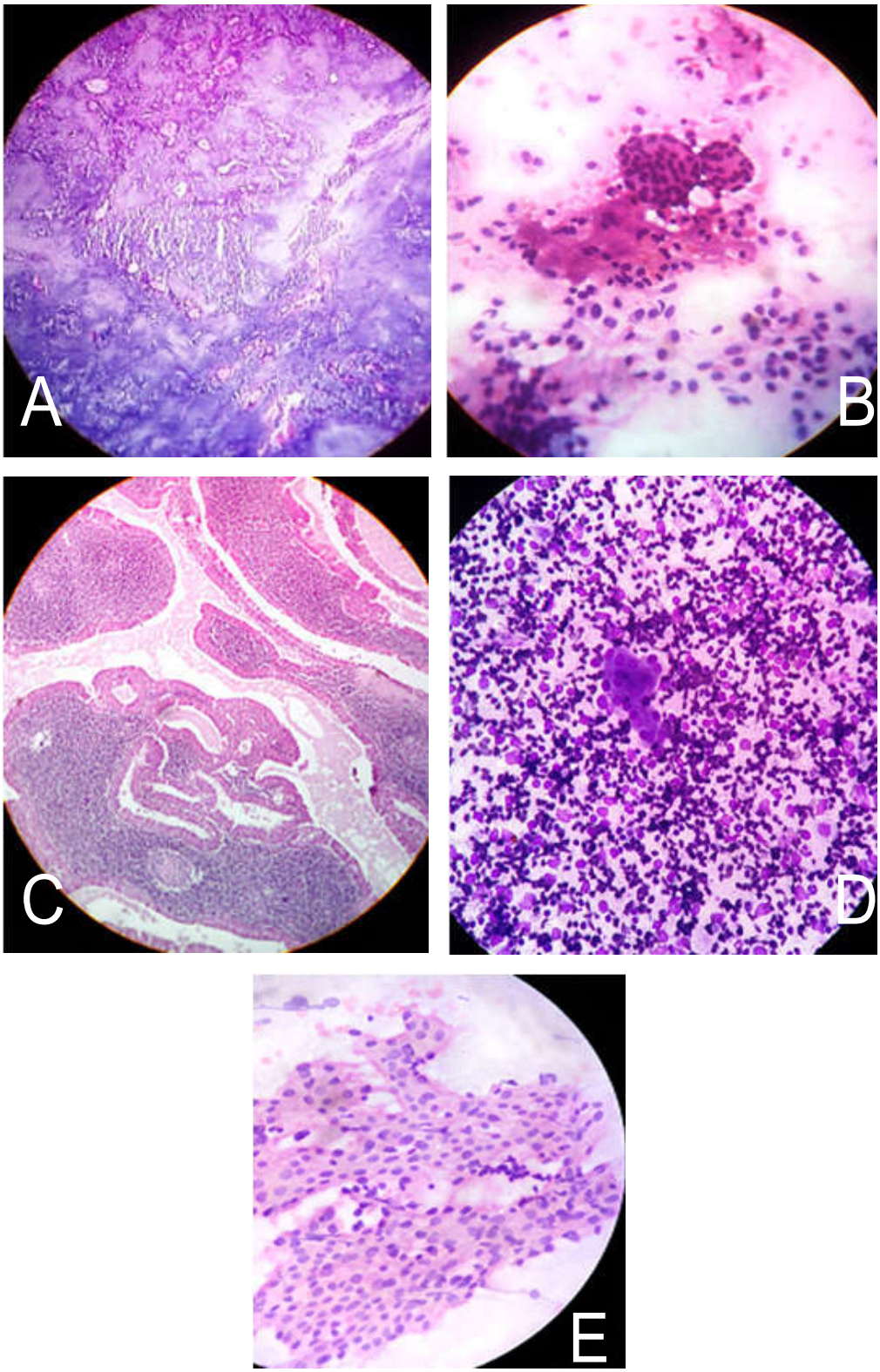

Fig. 1 A: Histology Pleomorphic adenoma. **B:** Cytology Pleomorphic adenoma. **C:** Histology warthins tumour. **D:** Cytology warhins tumour **E**: Cytology Oncocytoma

Malignant Lesion

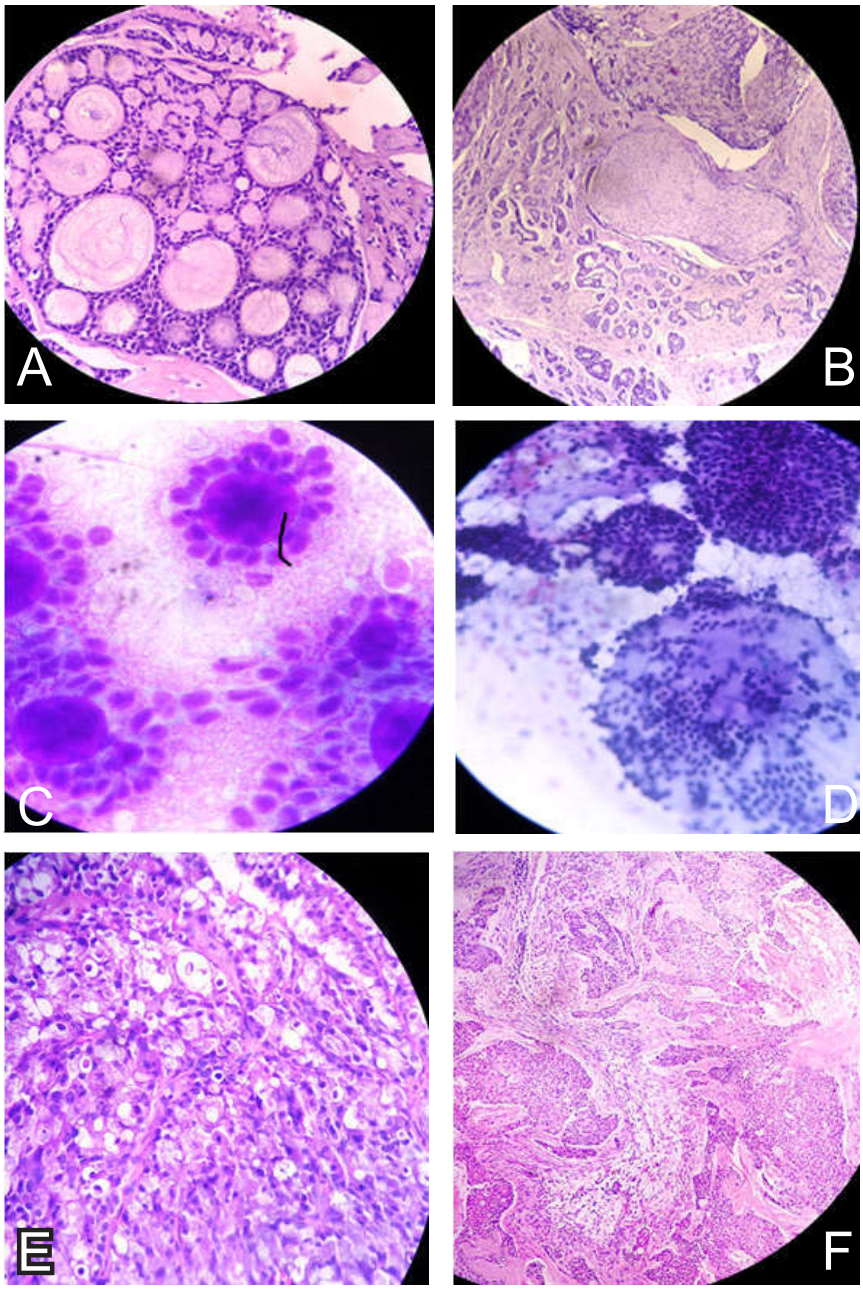

Fig. 2 A&B: Histology adenoid cystic carcinoma. **C&D:** Cytology adenoid cystic carcinoma **E**: Histology Acinic cell carcinoma. **F:** Histology Hyalinizing clear cell carcinoma

Conclusion

This paper highlights the utility of cytological features to distinguish benign from malignant lesion for proper medical / surgical management and limitation of FNAC where cytological features can be misguiding, so in such cases always cytopathologist should be cautious, and should not hesitate to ask for biopsy instead of under or over diagnosing the lesion.

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