



ORIGINAL RESEARCH PAPER

Pathology

DIFFICULTIES IN THE DIAGNOSIS OF PLEOMORPHIC ADENOMA BY FINE NEEDLE ASPIRATION CYTOLOGY OF SALIVARY GLANDS.

KEY WORDS: Salivary gland, pleomorphic adenoma, fine needle aspiration cytology

Dr Swechha Shekhar*

Post Graduate Student, Department of Pathology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand. *Corresponding Author

Dr Sunil Kumar Mahto

Associate Professor, Department of Pathology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand.

Dr Monika Bharti

Post Graduate Student, Department of Pathology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand.

ABSTRACT

Salivary glands are very common targets for fine needle aspiration. The hallmark of pleomorphic adenoma is to exhibit wide spectrum of morphology. Morphological spectrum can vary from predominantly epithelial types to predominantly stromal types. This morphological diversity poses a diagnostic challenge to cytopathologists. The aim of the present study was to assess the cytomorphological features of pleomorphic adenoma and to highlight the difficulties faced in its cytological diagnosis. The study was based on 42 salivary gland FNA cases with cytological diagnosis of pleomorphic adenoma. 26 were females and age ranges from 9-84 years (mean-36.92). We conclude that adequate and representative samples are required for proper diagnosis. It is essential for the cytopathologists to be aware of the cytomorphological variations of pleomorphic adenoma on FNAC to avoid the possibility of diagnostic errors.

INTRODUCTION

Fine needle aspiration cytology is an established technique providing high sensitivity and specificity in the diagnosis of salivary gland tumours. Cytopathologists face difficulties in evaluation of salivary gland tumours because of the heterogeneous nature of benign and malignant tumours arising in this area out of which many share similar cytological features.¹ Most common salivary gland tumour is pleomorphic adenoma. Hallmark of pleomorphic adenoma is morphological diversities showing varying combinations of epithelial and mesenchymal components. Predominance of one component over another possesses cytological diagnostic difficulties.

MATERIALS AND METHODS

This was a retrospective study of 42 cases of cytologically diagnosed pleomorphic adenoma from June 2021 to June 2022 in the Department of Pathology in Rajendra Institute of Medical Sciences, Ranchi, Jharkhand. The aspirations were performed using 22/23 gauge needle attached to a 5 ml syringe. The air dried and alcohol fixed smears were stained with May Granwald's Giemsa, Papanicolaou and Hematoxylin and Eosin respectively. Patients' age, sex and anatomical site were recorded from cytopathology forms. The smears were examined for ratio of epithelial to mesenchymal component as well as for their cellularity. Epithelial or mesenchymal predominance was considered depending on which component formed >60% of the tumour cellularity and equal distribution when either of them ranged >40% to <60%. The cellularity of the smears were graded as mild (<25%), moderate (>25% and <50%) or marked (>50%) on the basis of cells covering the area of standard cytology smear.

RESULTS

Age of the cases ranged between 9-84 years with mean age being 36.92 years (Table 1). Out of 42 cases, 26 were females (61.90%) and 16 males (38.10%) with M:F being 0.61.

Table 1: Age and gender distribution of cases

Sl. No.		Males	Females	Total
1	0-10	1	0	1
2	11-20	1	2	3
3	21-30	3	10	13
4	31-40	7	8	15
5	41-50	2	3	5

6	51-60	1	2	3
7	61-70	1	0	1
8	71-80	0	0	0
9	81-90	0	1	1
	Total	16	26	42

The cellularity of 42 cases of pleomorphic adenoma were categorized as mild (11.90%), moderate (47.61%), marked (40.49%) (Chart-1)

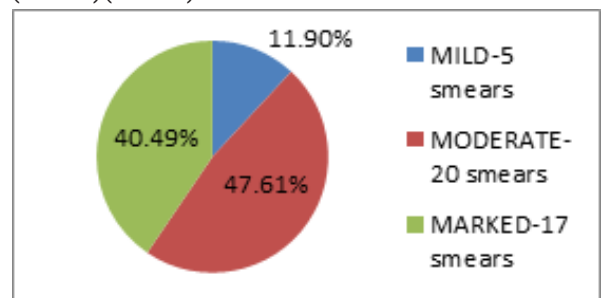


Chart-1: FNA smear cellularity of pleomorphic adenoma

The ratio of epithelial to mesenchymal component is shown in the Table 2 (E>M; 57.14%, E=M; 23.80%, E<M; 19.06%)

Table 2: Relative Epithelial (E) and Mesenchymal (M) component predominance in FNA smears of Pleomorphic Adenoma

	E>M	E=M	E<M
FNA smear (n=42)	24 (57.14%)	10 (23.80%)	8 (19.06%)

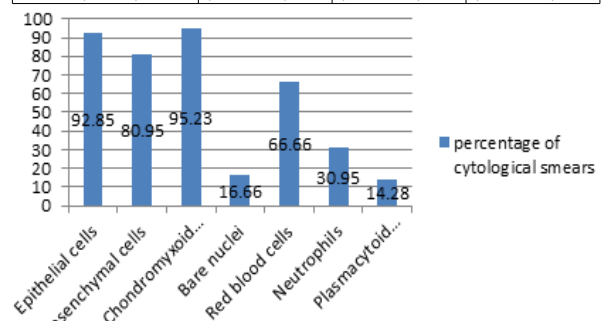


Chart-2: Percentage of cytological features.

Epithelial cells were seen in clusters and sheets in aspirates of 39 cases, mesenchymal cells seen in 34 aspirates and 40 aspirates showed chondromyxoid background. The epithelial cells were small with round to oval eccentric nuclei and had moderate amount of cytoplasm which was densely stained. Nucleoli were inconspicuous. Mesenchymal cells seen were round to spindle in shape with elongated nuclei. In Papanicolaou stain the chondromyxoid background appeared pinkish grey and appeared bright magenta in Giemsa stain (Fig. 1). Plasmacytoid epithelial cells were seen in aspirates of 6 cases. Aspirates of 7 cases showed bare nuclei. RBCs were seen in the background of 28 aspirates and neutrophils were seen in 13 aspirates (Chart 2).

DISCUSSION

Pleomorphic adenomas are the most common salivary gland tumours. 70 % of all parotid. tumours, 50% of submandibular tumours and 40-70% of all minor salivary gland tumours constitute of pleomorphic adenoma.^(2,3) Age group most commonly involved is 30-50 years predominantly occurring in females which is similar to the observation in our study.^(4,5,6)

The cytological diagnosis of pleomorphic adenoma is based on the presence of uniform sized epithelial cells having round to oval nuclei in the background of large amount of chondromyxoid material. But pleomorphic adenoma exhibits a spectrum of cytomorphological patterns due to which cytopathologists face difficulties in the accurate diagnosis.

Adenoid cystic carcinoma can be differentiated from pleomorphic adenoma by the presence of plasmacytoid appearance of tumour cells.⁷

Pleomorphic adenoma can also show mucin production and cystic degeneration. Benign lesions of salivary gland, Warthin's tumour, mucoepidermoid carcinoma show cystic change dominated by mucinous material and scanty cellular aspirates.⁸ When mesenchymal components and epithelial cells are seen within mucinous material, it should be diagnosed as pleomorphic adenoma.

Basal cell adenoma can be misdiagnosed when there is dominance of epithelial component. Malignancy should not be diagnosed until there is abundance of atypical cells with prominent nucleoli.⁹

Retention cyst can be mistakenly diagnosed when there is predominance of chondromyxoid component.¹⁰ Intraparotid schwannoma aspirates can mimic the chondromyxoid stroma of pleomorphic adenoma but the cells do not resemble the epithelial cells of pleomorphic adenoma.⁹

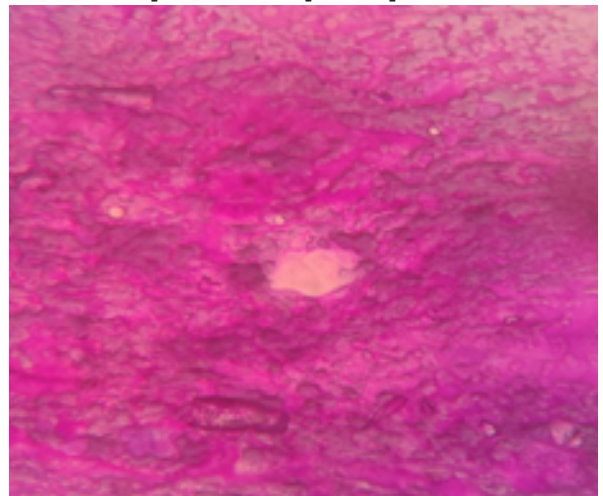


Fig 1: Cytology of pleomorphic adenoma with chondromyxoid matrix.

CONCLUSION

Adequate and representative sample is required for proper cytological examination of FNA of salivary gland lesions. In order to minimize the difficulties faced in diagnosis of pleomorphic adenoma, cytopathologists should be aware of the various cytomorphological patterns exhibited by it.

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