Plasmacytoid Cell Rich Pleomorphic Adenoma —
A Diagnostic Dilemma?

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Abstract

Pleomorphic adenoma (P.A.) is the most common neoplasm of major salivary glands. It accounts for approximately 75% of neoplasms of salivary gland. The cytology of P.A. is very diagnostic since it is characterized by an admixture of mesenchymal and epithelial elements. However, when there is one of the elements predominating, the cytologist faces a problem. We report a case of P.A. with a predominance of plasmacytoid cells (hyaline cells).

Introduction

P.A. is a benign neoplasm, occurring more frequently in the parotid than in the submandibular gland and accounting for 65-75% of the parotid gland tumours. The characteristic morphology of FNA of PA has been well described.¹

Hyaline cells are characteristic of benign mixed tumours, especially in the minor salivary glands, although they are also seen in mixed tumours of the skin and in malignant mixed tumours.²

These cells can be identified in 38-70% of minor salivary gland and about 10-20% of major salivary gland P.A. They lack cohesiveness and hence are readily obtained by fine needle aspiration. When identified in a neoplasm, they are characteristic and probably diagnostic of a mixed tumour.²

Lomax Smith and Azzopardi described hyaline plasmacytoid cells in salivary gland P.A., first in 1978, after which very few papers have discussed the diagnostic implications of these cells in surgical specimens.² Authors have suggested that these hyaline cells are modified myoepithelial cells. Ultrastructural and histochemical findings support a myoepithelial origin.²

Only rarely is the cellular component composed exclusively of hyaline cells.² Our case was unusual, in that virtually the entire cell population was composed of hyaline cells.

Case Report

A 24 year old woman presented to our institution with left infra-auricular swelling of 1 year duration. The swelling was 2 X 1 cm in size, firm, non tender and mobile. Fine needle aspiration cytology was performed. Remaining physical examination and laboratory studies were normal.

Fine needle aspiration was performed by the cytopathologist using a 25 gauge needle attached to a 10 ml syringe. Aspirated material was immediately smeared on to glass slides which were fixed in methanol as well as air dried. Slides were stained with Haematoxylin – Eosin (H and E) and Giemsa stains. Histopathological examination was not done at our institute and the patient was lost for follow up.

Cytological Findings

Cellular smears from the left parotid swelling revealed clusters of benign epithelial cells with spindle shaped mesenchymal cells against a myxoid background (Fig.1). There was no evidence of atypia. Also seen were numerous plasmacytoid cells (Fig. 2).

Smears were markedly cellular and showed the loose cohesiveness of the hyaline cells, which makes aspiration cytology a useful technique for evaluating these tumours. Cytomorphology of these cells is
distinctive and their recognition ensures that a correct diagnosis of PA can be done.²

Discussion

FNA cytology plays an important role in the management of salivary gland enlargement. Main indication for FNA is to differentiate between inflammatory and neoplastic lesions, for therapeutic planning.³

PA, the most common major salivary gland neoplasm is encountered more often in females. The peak age is 30-40 years. Histologically and cytologically, an admixture of epithelial and mesenchymal components are seen. The mesenchymal component may be myxoid or chondroid and is usually admixed with spindle myoepithelial cells.³

Plasmacytoid variant of PA (hyaline PA) is characterized cytologically by plasmacytoid appearing cells arranged in sheets and clusters, and singly scattered. Cells show abundant glassy cytoplasm, round to oval nuclei and inconspicuous nuclei. There is a controversy regarding whether these plasmacytoid cells represent modified myoepithelial cells or true epithelial cells; the former is favoured. Some authors agree that plasmacytoid cells originate from luminal cells and not from ME cells.⁴

Myoepitheliomas are rare tumours seen in the parotid gland commonly. Majority are benign with rare malignant examples. There is no sex predilection and peak age is third decade. Cytologically, smears reveal sheets and small clusters of monotonous epithelial cells with moderate cytoplasm. Nuclei are round with a finely granular chromatin and inconspicuous nucleoli. Single tumour cells with plasmacytoid appearance are seen. Extracellular matrix is composed of fibrillary material.⁵

PA are characterized by a combination of bland epithelial cells and fragments of metachromatic chondromyxoid stroma with spindle cells. Duct formation and chondroid stromal elements commonly seen in PA are not a feature of ME. Their absence in aspirates from PA, make ME and PA cytologically indistinguishable.⁵ It is difficult to differentiate ME from PA on FNA smears.⁶ In one study FNA from cases of plasmacytoid type ME revealed clusters and isolated plasmacytoid cells. Binucleation, pleomorphism, cytoplasmic vacuoles and granules were noted. Nuclear striations (Zebra lines)
were characteristic and seen in all smears. Myxoid background was rare.\textsuperscript{6} Because of the predominance of numerous isolated and clusters of plasmacytoid cells, hence, was initially diagnosed as plasmacytoma or PA. Plasmacytoma was ruled out but Cellular PA could not because of plasmacytoid cells and myxoid matrix. It is difficult to differentiate myoepithelioma from PA on FNA. Nuclear striations and nuclear grooves were frequently noted in these cases. These findings were not reported before.\textsuperscript{6}

FNA diagnosis of ME was a problem for these authors because of lack of experience with the tumour. Cytologic findings have been reported rarely. So far no specific cytologic findings have been described that enabled authors to diagnose ME with certainty. Cytologic diagnosis of ME is not straightforward since ME cells assume different morphologic forms e.g.plasmacytoid, spindle, clear, epithelioid.\textsuperscript{4} Histologic and clinical correlation help to differentiate PA from ME which is difficult on FNA.\textsuperscript{3}

Some reports have indicated that MEs have same prognosis as PA. Others believe that MEs have worse biological behaviour than PA based on higher rate of recurrence and malignant transformation. Complete surgical excision is the treatment of choice.\textsuperscript{5} Some authors opine that PA with hyaline cells are less likely to recur if totally excised.\textsuperscript{5}

Fine-needle aspiration (FNA) of the salivary gland is a sensitive and specific diagnostic tool. However, diagnostic problems are sometimes encountered in interpreting some cases, not only in differentiating benign from malignant cases but also in the specific classification of these neoplasms.\textsuperscript{7}

The diverse morphological features encountered in pleomorphic adenoma (PA) may cause diagnostic errors in fine needle aspiration cytology (FNAC). The cytopathologist needs to be aware of the cytologic variations in pleomorphic adenoma so as to avoid diagnostic errors.\textsuperscript{4}

References