

CASE SERIES

Acinic cell carcinoma of the parotid gland: A diagnostic dilemma on cytology

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Abstract

Introduction: Acinic cell carcinoma (ACC) represents 1-6% of parotid gland neoplasms. **Case Report:** We report cytomorphological features of two uncommon variants of acinic cell carcinoma. The first case was an eleven-year-old female with a nodular mass in parotid and the FNA smears demonstrated a lymphoepithelial lesion composed of epithelial tumour cells with features of acinar cells in a lymphoid background. The second case was a 62-year-old male with a large parotid mass. The FNA smears revealed presence of extracellular, acellular amyloid-like material with tumour cells arranged in follicles. **Discussion:** Awareness of cytomorphological features of these unusual variants of acinic cell carcinoma may help to avoid diagnostic pitfall.

Keywords: Fine-needle biopsy, acinar cell carcinoma, parotid gland, parotid neoplasms

INTRODUCTION

Acinic cell carcinoma (ACC) is a low-grade malignancy constituting 1-6% of all parotid gland neoplasms.^{1,2} It has a female predominance with the age of patients ranging from 14 to 79 years.³ On histology, various morphologic patterns have been described including solid, microcystic, follicular, and papillary-cystic.³ This tumour is difficult to recognise on cytology as the monotonous acinar cellularity of a well-differentiated ACC is very similar to cellularity of a hyperplastic or normal salivary gland. The main difference lies in the fact that normal salivary gland has acinar cells intermingled with adipose tissue and ductal epithelial cells.⁴ We report cytological features of two unusual variants of acinic cell carcinoma, one with lymphoid stroma and another showing follicular pattern with amyloid-like extracellular material.

CASE REPORT

Case 1

An 11-year-old girl presented to the ENT outpatient department with chief complaint of an infra-auricular swelling for one year. On examination, a 2.5 x 2.5 cm lump was palpable in the left infra-auricular region which was firm in consistency, mobile and non-tender. A clinical diagnosis of an intra-parotid lymph

node was made. Ultrasonography revealed a mass lesion measuring 2.5 x 2.5cm in the left parotid region. FNAC was done using a 22-gauge needle attached to a 10 ml syringe. Both air dried and wet fixed smears were prepared and stained with May-Grunwald Giemsa (MGG) and Papanicolaou (Pap) stains, respectively. MGG stained smears were cellular with cells predominantly arranged in clusters in a background of lymphoid cells. Cells were oval to polygonal in shape with moderate amount of pale cytoplasm containing few azurophilic granules. (Fig. 1a) ductal epithelial cells were not seen. Acinar cell clusters with nuclear overlapping and mild nuclear atypia were seen in Pap stained smears. (Fig. 1b) Cells had moderate amount of granular cytoplasm, round to oval eccentric nucleus with fine granular chromatin and inconspicuous nucleoli. (Fig. 1c)

A cytological diagnosis of acinic cell carcinoma with lymphoid stroma was offered and excision was advised. Histopathological examination revealed a circumscribed tumour having nests of acinic cells with cribriform pattern at places, present in a reactive lymphoid background. No ductal epithelial cells were seen. (Fig. 1d) Periodic acid Schiff (PAS) stain was positive in the acinar cells confirming the diagnosis of acinic cell carcinoma.

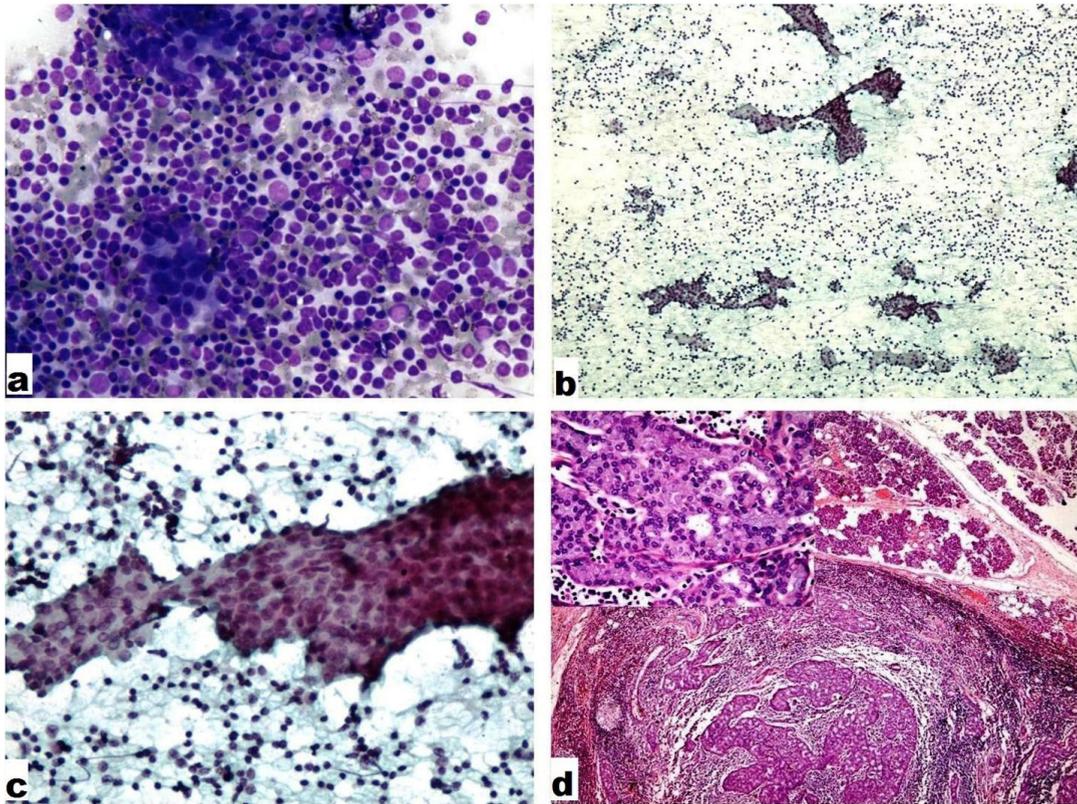


FIG. 1: (a) Cytology smears: oval to polygonal shaped cells in clusters with moderate amount of granular cytoplasm, round to oval eccentric nucleus with opened up chromatin (x400, May Grunwald Giemsa stain). (b) Clusters of cells in a background of lymphoid cells (x100, Papanicolaou stain). (c) Oval to polygonal cells showing nuclear overlapping, mild nuclear atypia and eccentric nucleus with fine granular chromatin along with nucleolus in few cells. (x400, Papanicolaou stain). (d) Histopathology: a circumscribed tumour with infiltrative margins. Cells arranged in the form of nests with cribriform pattern at places. Background shows the presence of a reactive lymphoid population (x40, H&E). Inset: Histopathology-higher magnification: oval to polygonal shaped cells with moderate amount of granular cytoplasm with round to oval eccentrically placed nucleus with mild nuclear atypia (x400, H&E)

Case 2

A 62-year-old male presented to ENT out-patient department with chief complaint of a right parotid swelling for 10 years. The swelling was gradually increasing in size. On examination, a 15 x 10 cm swelling was noted in the right parotid region. It was firm to hard, fixed and non-tender. A clinical diagnosis of pleomorphic adenoma with malignant transformation was made. FNAC was done using a 22-gauge needle attached to a 10 ml syringe. Pap stained smears revealed cell clusters having round to oval nucleus, moderate nuclear atypia and prominent nucleoli. Amyloid-like material was also identified in the lumen of the follicles and at places was arranged concentrically (Fig. 2a and 2b). MGG stained smears revealed tumour cells arranged in follicles, clusters as well as singly scattered.

Cells were round to oval in shape with scant to moderate amount of cytoplasm and round to oval moderately pleomorphic nucleus. A large amount of metachromatic extracellular material reminiscent of amyloid was also seen (Fig. 2c). A cytological diagnosis of a low-grade carcinoma was suggested and excision was advised. Histopathology revealed a circumscribed tumour showing features of follicular variant of acinic cell carcinoma with amyloid-like material (Fig. 2d). This extracellular material revealed metachromasia with crystal violet stain. The Congo red stain revealed faint apple green birefringence on polarised microscopy.

DISCUSSION

ACC is considered a low-grade malignancy that commonly occurs in parotid.² It often affects

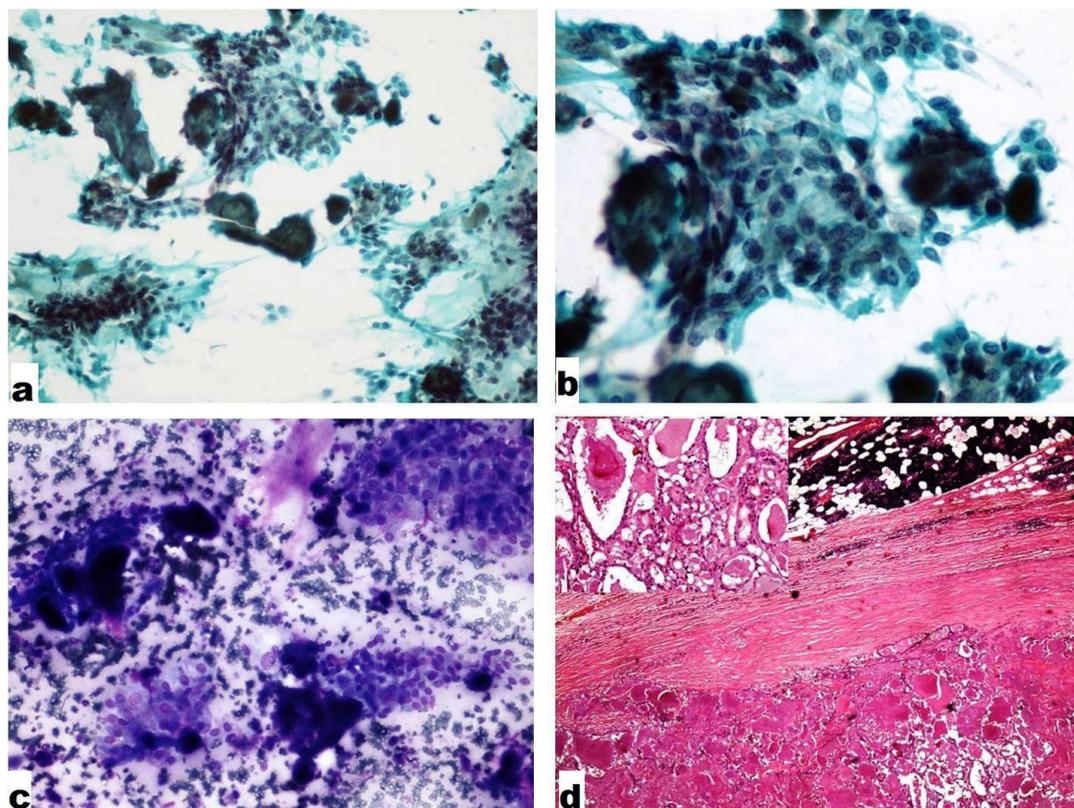


FIG. 2: (a) Cytology smears: oval to polygonal cells arranged in a follicular arrangement and few singly scattered along with extracellular greyish amyloid like material (x200, Papanicolaou stain). (b) Higher magnification showing cells in clusters with moderate nuclear atypia and prominent nucleoli (x400, Papanicolaou stain). (c) Cells arranged in follicles, clusters as well as singly scattered. Background showing large amounts of metachromatic extracellular material (x200, May-Grunwald Giemsa stain). (d) Histopathology showing a circumscribed tumour with extracellular amyloid like material (x40, H&E). Inset- Higher magnification: Cells arranged in a follicular pattern (x200, H&E)

females in the fourth and sixth decades.⁵ It represents 1-6% of all parotid neoplasms, out of which acinic cell carcinoma with lymphoid stroma accounts for 10-29% making it an uncommon entity.⁶⁻⁸ In a study by Michal *et al.* on acinic cell carcinoma with lymphoid stroma, the ages of patients ranged from 12 years to 70 years⁶ making our patient of 11 years as one of the youngest. Acinic cell carcinoma is difficult to recognise on cytology due to the innocuous nature of the acinar cells. Various morphological features reported in literature include presence of acinar cells, oncocytic cells and clear cells.⁴

In case 1, there was a population of oval to polygonal shaped acinar cells with well-defined cell boundaries with moderate amount of cytoplasm showing fine azurophilic granules visualised on MGG stained smears. In addition to the acinar cells, a polymorphous population of lymphoid cells was also present. This feature

has been sparsely reported in literature⁶⁻⁸ and is likely to create diagnostic difficulties in differentiating acinic cell carcinoma from Warthin's tumour and other lympho-epithelial lesions of salivary gland-like chronic sialadenitis and salivary inclusions in an intra-parotid lymph node. Warthin's tumour too shows the presence of oncocytic cells in a background of lymphoid cells.⁹ In the case of acinic cell carcinoma, cells have distinct cell boundaries, fine azurophilic granules in the cytoplasm and numerous bare nuclei in the background. However, in oncocytic tumours the cell boundaries are more distinct with dense granular cytoplasm. Bare nuclei are uncommonly seen in oncocytic tumours.⁴ These features help to differentiate acinic cell carcinoma from oncocytic tumours. In chronic sialadenitis there is predominance of sheets of ductal cells in a background of lymphoid cells and scant to absent acinar cells. However, in

ACC we have predominance of acinar cells with presence of azurophilic granules and absence of ductal cells. In the case of salivary inclusions in an intra-parotid lymph node, both acinar cells and ductal cells are seen in the smears with absence of atypia in the acinar cells.

In case 2, cells were arranged in a follicular pattern with large amounts of metachromatic extracellular material seen in MGG smears. Papanicolaou smears also revealed large amount of greyish amyloid-like material. Few studies in the literature have reported a follicular pattern in acinic cell carcinoma^{1,2} but the presence of metachromatic extracellular material has not been reported. This variant posed diagnostic difficulty on FNAC due to unusual cytological features and long-standing history.

The unusual features noted in this case were:

1. A follicular pattern of tumour cells and
2. Presence of large amounts of acellular material

A definite diagnosis was not established on FNAC and a diagnosis of low-grade carcinoma was offered. The absence of distinct chondromyxoid stroma did not support the clinical diagnosis of pleomorphic adenoma with malignant transformation. Histologic variants of acinic cell carcinoma with lymphoid stroma or with massive amyloid deposits are rare. There is limited cytological literature on these entities. Lack of familiarity with cytological features of unusual variants of salivary gland tumours like ACC may lead to diagnostic difficulty and pitfall.

Conflict of Interest: None

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