CASE REPORT

Fine-needle aspiration findings in epithelioid myoepithelioma of the parotid gland: A diagnostic pitfall

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ABSTRACT
The cytological features of myoepithelioma of the parotid gland are documented in only a few case reports. We describe the fine-needle aspiration cytological findings in a case of epithelioid myoepithelioma of the parotid gland in a 43-year-old male. The differential diagnosis with other salivary gland neoplasms is discussed.

Key words: Cylindromatous pattern, epithelioid myoepithelioma, parotid gland, pleomorphic adenoma

INTRODUCTION

Myoepithelioma is an uncommon benign tumor of the salivary glands. It accounts for only 1.5% of all tumors in the major and minor salivary glands.[1-2] Four major histological subtypes are well established (epithelioid, spindle cell, plasmacytoid cell and clear cell).[1-2] Because of the varied morphology, the lack of established cytologic criteria and the vast differential diagnosis, diagnosing myoepithelioma on fine-needle aspiration cytology (FNAC) is difficult.

CASE REPORT

A 43-year-old male presented with 2-year history of a painless swelling in the right preauricular region. On examination, a 3-cm diameter well-defined firm lesion was palpable. There was no associated facial weakness or cervical lymphadenopathy. Ultrasonography revealed a hypoechoic lesion measuring 3.6 × 3.4 × 2 cm posterior to angle of mandible. FNAC showed moderate to high cell yield [Figure 1a]. These cells were arranged predominantly in discrete forms, cohesive clusters, rare acinar, papillary and cylindromatous pattern [Figure 1b and c]. These cells were epithelioid having mild anisokaryosis, fine uniformly distributed chromatin, regular nuclear border, ovoid nucleus, indistinct nucleoli and moderate amount of cytoplasm [Figure 1d]. Some of the clusters showed fibrillary material without definite chondromyxoid stroma on Giemsa stain [Figure 1a inset]. Plenty of cyst macrophages were seen. There was a notable absence of tubule formation, mitotic figures, necrosis and cytological atypia. Based on the cytomorphology, a diagnosis of low-grade parotid neoplasm was rendered.

The patient subsequently underwent a right superficial parotidectomy with resection of the mass. Grossly, the salivary gland specimen measured 4 × 3.5 × 2 cm. On cut section the tumor was solid, grey-white, well-capsulated and measured 3 × 2.5 cm [Figure 2a]. Histopathologic examination showed an encapsulated tumor composed of small round to polygonal cells with centrally located nuclei, fine chromatin and variable amounts of eosinophilic to clear cytoplasm arranged in nests, glandular, trabecular pattern and in sheets. These cells showed occasional nuclear grooves with microcystic areas [Figure 2b-d]. There was no necrosis, cellular atypia or mitosis. Histopathological differential diagnosis of primary neuroendocrine tumor—carcinoid, paraganglioma and metastatic papillary carcinoma thyroid—were considered. On immunohistochemistry, tumor cells were positive for p63, S-100, SMA (smooth muscle actin), CK (cytokeratin) and HMWCK (high molecular weight CK). However, tumor cells were immunonegative for TTF1 (thyroid transcription factor), chromogranin and EMA (epithelial membrane antigen). Final diagnosis of myoepithelioma-epithelioid type was made. There was no evidence of recurrence at one year of follow up.

DISCUSSION

Myoepitheliomas are common in parotid gland, clinically both sexes are affected equally with a mean age of 44 years at presentation.[1] The criteria for classifying a myoepithelioma on morphology alone is somewhat subjective composed predominantly of myoepithelial cells, with (less than 10%) or without duct-like structures or the presence of myxoid...
stroma. Hence, immunohistochemical and/or ultrastructural studies is essential at arriving correct diagnosis.

In one study consisting of seven myoepitheliomas, the cytological findings of plasmacytoid, spindle and mixed types were described. In the plasmacytoid type, the smears showed clusters and single cells. The cells were round to oval with eccentrically placed nuclei with abundant granular cytoplasm. Acinar and gland-like arrangements were noted, but myxoid tissue was rarely seen. This contrasted to the spindle cell type consisting of numerous clusters of spindle cells with scant cytoplasm and the focal presence of myxoid tissue. The mixed type showed a combination of plasmacytoid and spindled cells in a myxoid background. None of the seven cases described were diagnosed as myoepithelioma on aspiration cytology. Plasmacytoid myoepitheliomas were diagnosed on FNAC as “plasmacytoma or pleomorphic adenomas.” Those that were diagnosed histologically as myoepithelioma, spindle cell type were diagnosed on FNAC as “spindle cell neoplasm.” Mixed-type myoepitheliomas were diagnosed on FNAC as “inflammatory pseudotumors or pleomorphic adenomas.” This study highlighted the difficulty in differentiating myoepitheliomas from pleomorphic adenomas by cytomorphology.

In pleomorphic adenomas, the epithelial/ductal cells are small and cuboidal, arranged in flat sheets or trabeculae that can undergo squamous, oncocytic or sebaceous metaplasia. Myoepithelial cells are usually present, can be spindled, stellate or plasmacytoid and are found in clusters, discrete or within the chondromyxoid matrix. Chondromyxoid matrix material is the most specific feature for making the correct diagnosis. In our case, there was a predominance of epithelioid-type cells with minimal stroma making the distinction morphologically difficult [Tables 1 and 2]. Also in our case there was presence of scant hyaline to myxoid material that appeared fibrillar or in dense globules that surrounded the cells in a vaguely cindromatous pattern. Others have described this pattern in myoepitheliomas.

Adenoid cystic carcinomas consist of numerous cohesive three-dimensional clusters of small basaloïd cells with scant cytoplasm often arranged around an amorphous basement membrane-type material (cindromatous pattern). The basaloïd cells have high nuclear to cytoplasmic ratio, hyperchromatic nuclei and coarse granular chromatin. Although our case had rare cindromatous structures, the tumor cells were extremely bland in appearance lacking...
cytologic atypia or mitotic figures and thus making adenoid cystic carcinoma unlikely. Basal cell adenoma should also be included in the differential diagnosis.

Malignant myoepithelioma is difficult to distinguish from benign myoepithelioma.\[8,9\] Histologically, the most important diagnostic feature for malignancy is tumor infiltration into the adjacent normal tissue that is impossible to discern on cytology. The diagnosis of malignancy depends on cytologic features like cellular atypia, pleomorphism, necrosis and mitotic activity, which can be absent. Many authors have reported that when malignant cytologic features are not present, a diagnosis of malignancy may not always be possible, especially when the diagnosis of malignancy is based solely on an infiltrative growth pattern. The assessment of cell proliferative activity with the use of the immunohistochemical stain for MiB-1 (Ki-67) (>10%) is a useful aid to distinguish between benign and malignant myoepithelioma as described.\[10\]

Immunohistochemistry is useful for confirming the diagnosis of myoepithelioma. Reports have shown positivity for alpha SMA, S-100 protein, CK, vimentin, desmin, p63, calponin, smooth muscle myosin heavy chain and glial fibrillary acidic protein\[4\] and negativity for EMA.\[3\] The positivity for p63, SMA, S-100, CK and HMWCK confirmed the diagnosis of myoepithelioma in our case.

To conclude, myoepithelioma-epithelioid type should be considered in the differential diagnosis of low-grade parotid neoplasm with a cylindromatous pattern because it is less prone to recurrence than pleomorphic adenomas, basal cell adenoma and adenoid cystic carcinoma. To the best of our knowledge, this is the third case report of an epithelioid myoepithelioma of the parotid gland on FNAC.

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