Case Report

"Pure" invasive apocrine carcinoma of the breast with psammoma bodies

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ABSTRACT

Pure apocrine carcinomas are rare, morphologically distinct type of invasive of breast carcinomas, and represent about 0.5% of all invasive breast cancers. Existence of psammoma bodies (PBs) is extremely rare. Cytological, histological and immunohistochemical features of a case of apocrine carcinoma of the breast with PBs is described in a 56-year-old female. This report emphasizes the rarity of this lesion and supports currently held beliefs about the formation of PBs.

Keywords: Apocrine carcinoma, breast, FNA, invasive

INTRODUCTION

Pure apocrine carcinomas of breast are an extremely rare variant of invasive breast carcinomas.[1] Even rarer is the existence of numerous psammoma bodies (PBs) in these tumors. We report one such rare case in a 56-year-old female.

CASE REPORT

A 56-year-old female presented to the surgical outpatient department with painless lump in the right breast since 2 years. On clinical examination, there was a hard, mobile, nontender lump in the upper outer quadrant of the breast. Ultrasonography revealed an irregular cystic mass with indistinct margins in the right breast. Ultrasonography-guided fine-needle aspiration (FNA) of the breast lump was done, and the smears were moderately cellular and composed of large, polygonal cells with abundant cytoplasm that stained basophilic with May-Grunwald-Giemsa stain. Eccentrically placed nuclei were round or oval and vesicular, with variably prominent, mostly single, nucleoli. Cell clusters showed irregular margins and cellular overlapping, and mild-to-moderate nuclear atypia were present. Occasional binucleate and multinucleate forms and cells with marked atypia were seen. Single cells were noted, and dissociated bare nuclei were seen in the background. While most of the cells showed well-defined cell margins, a few cells that showed indistinct cell margins resembled histiocytes [Figure 1]. All the cells were of apocrine type, with no admixture of non-apocrine ductal or inflammatory cells. A cytologic report of apocrine carcinoma was prepared, and the patient underwent a right modified radical mastectomy with axillary clearance. On serial sectioning of the mastectomy specimen, a cystic solid growth measuring 4 cm × 3 cm × 1.5 cm was identified. Solid portion of the growth was gray-white with tan brown areas of hemorrhage. Microscopic examination revealed round-to-polygonal tumor cells with abundant granular eosinophilic cytoplasm and round nucleus with variably prominent nucleolus arranged in solid sheets, nests, glands and papillae. There were abundant PBs throughout the tumor [Figure 2]. Prominent apocrine snouts were identified in the luminal aspects of tumor cells [Figure 3]. The tumor cells were immunohistochemically positive for GCDFP-15 protein and negative for estrogen and progesterone receptors. Final diagnosis of invasive apocrine carcinoma (IAC) of breast with modified Bloom Richardsons grade I, score 5, was rendered.

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DISCUSSION

Apocrine phenotype in breast is common and can be seen in a broad spectrum of lesions, ranging from simple cyst to

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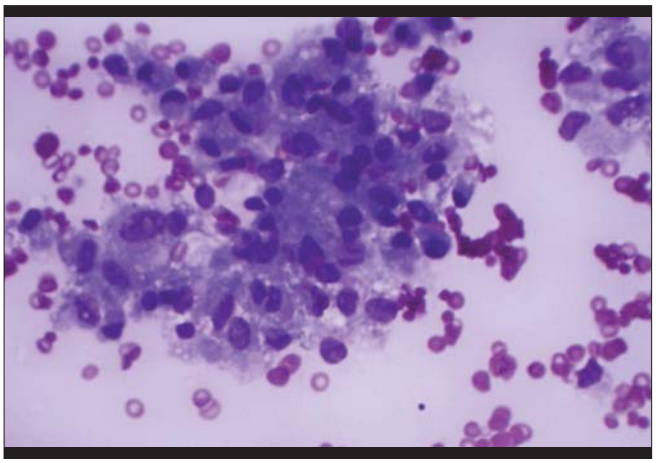

Figure 1: Cytology smears revealing tumor cells with abundant granular-to-foamy basophilic cytoplasm (Giemsa, 40×)

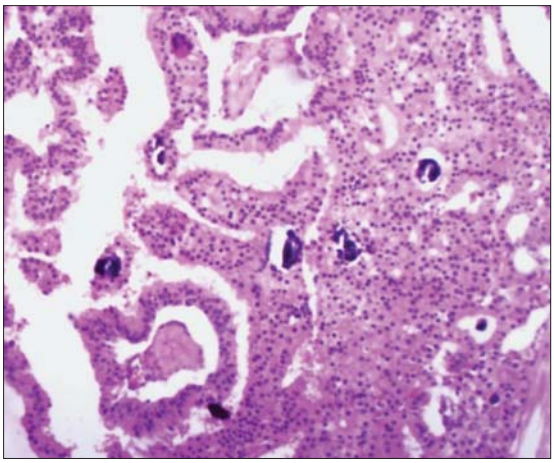

Figure 2: Microphotograph revealing numerous psammoma bodies in apocrine carcinoma (H&E, 20×)

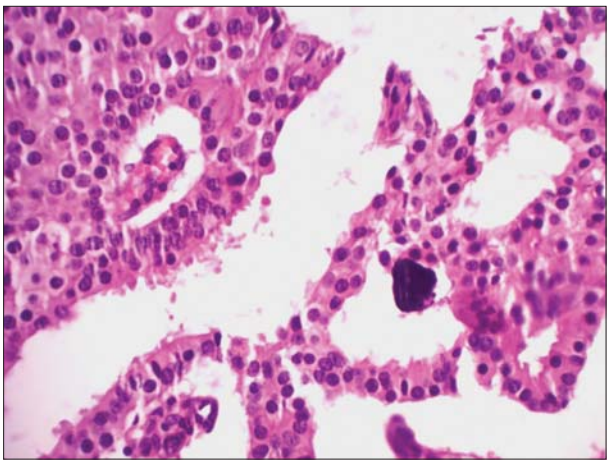

Figure 3: Higher magnification showing apocrine snouts of tumor cells and psammoma bodies (H&E, 40×)

infiltrating carcinoma. Pure apocrine carcinomas are a rare, morphologically distinct type of invasive breast carcinomas and represent about 0.5% of all invasive breast cancers.[1] By definition, IACs show cytologic and immunohistochemical features of apocrine cells, as characterized by an abundant, granular eosinophilic cytoplasm in more than 90% of the tumor cells. Adherence to a strict definition is necessary, since apocrine differentiation can be identified in up to one-third of all invasive carcinomas. There is no difference in the clinical and mammographic features, size and site of apocrine carcinomas and non-apocrine carcinomas. Bilaterality is also rare in apocrine carcinomas. Apocrine carcinomas are usually composed of two types of cells, which are variably intermingled.[2] Type A cell has abundant granular intensely eosinophilic cytoplasm and round nuclei with prominent nucleoli. These granules are Periodic Acid Schiff(PAS) positive after diastase digestion. When these cells predominate, the tumor mimics granular cell tumors. These types of apocrine carcinomas are sometimes referred to as myoblastomatoid. Type B cells show abundant foamy, vacuolated cytoplasm, resembling histiocytes and sebaceous cells. Nuclei of these cells are similar to type A cells. Apocrine carcinomas predominantly composed of type B cells resemble histiocytic proliferation.[2] In the present case, FNA predominantly showed type B cells and histopathological examination predominantly revealed type A cells. The apocrine tumor cells are typically GCDFP-15 positive and bcl-2 protein negative. Androgen receptors are usually positive in these tumors.

Microcalcification can be observed in benign and malignant breast lesions, but PBs are rarely reported in breast lesions[3] and are usually a feature of papillary neoplasms.[4] Of invasive carcinomas of the breast, non-psammomatous calcifications are much more frequently observed, and can be abundant in some special types of tumors such as tubular carcinoma and solid invasive papillary carcinoma. Rarely, PBs are found in pure mucinous carcinomas of breast.[5,6] Extensive search revealed a single case of apocrine carcinoma with psammomatous calcification in a male breast.[7] Calcium deposition has long been implicated in the pathogenesis of many degenerative diseases; hence the formation of PBs may be relevant in breast oncology. The presence of PBs in FNAC of clinically suspected breast lesions, which are cytologically negative for malignancy, warrants further histological confirmation.

The concentric calcific multilayering characteristic of PBs has a controversial origin. The most widely accepted hypothesis is deposition of layers of calcium and minerals over a nidus of a single necrotic cell. It has also been suggested that osteopontin protein produced by macrophages may play a role in the development of calcification in both psammomatous and non-psammomatous human neoplasms.[8]

IAC of the breast has a similar prognosis to infiltrating

ductal carcinoma not otherwise specified.[9] While some studies show a slightly better prognosis for apocrine carcinoma, overall there is no statistical advantage when matched by stage and grade. The 6-year survival rate for moderate-to-high grade apocrine breast cancer is thought to be between 70% and 80%. There is some evidence to suggest that lymphatic invasion and lymph node metastasis is less likely for apocrine carcinoma than for non-specific invasive ductal carcinoma, but this is a relatively new finding, which has not been broadly confirmed.[10]

We report this case to highlight the existence of this unusual variant of pure apocrine carcinoma of breast. We imagine its biological behavior is likely to be the same as that of pure apocrine carcinoma, but further studies are required to determine any prognostic implications of this tumor variant.

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