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Challenges in diagnosing pleomorphic adenoma of the breast: A case report

Desafios no diagnóstico do adenoma pleomórfico da mama: Um relato de caso

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Abstract

Pleomorphic adenoma (PA) of the breast is an uncommon tumor, though it frequently arises in the salivary glands. In the breast, the imaging and morphological similarities to carcinoma often lead to diagnostic confusion in the biopsy. A 56-year-old woman presented with a palpable breast lump, classified as BI-RADS 4c on mammography. A tru-cut biopsy suggested PA, and the diagnosis was confirmed after tumorectomy. This case demonstrates the importance of systematically integrating clinical, radiological, and pathological findings for precise diagnosis and optimal management.

Keywords: Pleomorphic adenoma of the breast; Indolent growth; Multidisciplinary approach.

Resumo

O adenoma pleomórfico (AP) da mama é um tumor raro, mas comum nas glândulas salivares, frequentemente diagnosticado incorretamente como carcinoma devido à semelhança das suas características imagiológicas e das características morfológicas na biópsia. Apresentamos o caso de uma doente de 56 anos com nódulo mamário palpável, classificado como BI-RADS 4c na mamografia. A biópsia foi sugestiva de AP e o resultado anatomopatológico foi confirmado na tumorectomia. Este caso sublinha a importância da correlação entre achados clínicos, radiológicos e anatomopatológicos para um diagnóstico e tratamento adequados.

Palavras-chave: Adenoma pleomórfico da mama; Crescimento indolente; Abordagem multidisciplinar.

INTRODUCTION

PA of the breast was first described in 1906, and fewer than 100 cases have been reported to date[5]. It is most commonly seen in postmenopausal women.

Breast and salivary gland tumors can share morphological features but differ in incidence and clinical behavior. There are two types of PA: with or without myoepithelial differentiation[6]. In the breast, pure myoepithelial differentiation is more frequent, ranging from benign lesions (benign myoepithelioma, PA) to low-grade malignancy (adenomyoepithelioma) and high-grade malignant lesions (malignant myoepithelioma)[7].

Breast PA can be highly cellular, with areas of chondroid or myxoid differentiation. These findings may suggest malignancy. The differential diagnosis includes aggressive lesions such as invasive ductal carcinoma, metaplastic, or mucinous carcinoma. Recognizing it is challenging due to its rarity, variable histology, and radiological features that frequently mimic malignancy

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on imaging, given its solid, firm, and sometimes irregular appearance[6]. Cytological diagnosis is difficult, especially with limited sampling, and it is often misdiagnosed as primary sarcoma or metaplastic carcinoma[12]. As a result, 30-50% of patients initially diagnosed with a malignant neoplasm on biopsy undergo unnecessary aggressive surgery such as total, radical, or modified mastectomy, with or without lymph node biopsy. An exact diagnosis requires histopathological and immunohistochemical examination of the surgical excision material.

This case illustrates the importance of integrating clinical, radiological, and pathological findings to guide proper management for breast pleomorphic adenoma.

CASE REPORT

A 56-year-old postmenopausal woman with no relevant medical history presented with a painless, indolent mass measuring approximately 2.5 cm in the upper outer quadrant of the left breast. Clinical exam revealed a solid, round, easily palpable mass, with no associated skin or nipple changes and no palpable axillary or supraclavicular lymphadenopathy. Imaging supported these findings: mammography revealed a high-density, lobulated nodule with several millimetric calcifications nearby, corresponding histologically to a well-circumscribed lesion surrounded by a fibrous pseudocapsule. Breast ultrasound showed a multilobulated, heterogeneous nodule (peripherally hypoechoic and centrally hyperechoic) measuring 2.4 × 1.2 cm, supporting the clinical and radiological impressions. Histology confirmed tightly cohesive epithelial cells and chondromyxoid stroma. These findings were classified as BI-RADS 4c. An ultrasound-guided biopsy of the hyperechoic area was performed, and the anatomopathological study was compatible with PA. A lumpectomy then confirmed the diagnosis.

The lump was an oval mass about 2.4 cm in diameter, with yellowish-white solid components. Microscopic examination showed a well-circumscribed lesion, surrounded by a fibrous pseudocapsule of condensed breast parenchyma. The neoplasm was solid and biphasic, composed of spindled to stellate myoepithelial cells and tightly cohesive epithelial cells, focally forming ductular structures in a chondromyxoid stroma. No tumoral proliferation of stromal cells or chondroid metaplasia was observed. The epithelial cells with condensed eosinophilic cytoplasm were arranged in an island pattern. There was no nuclear atypia or abnormal mitosis. Immunohistochemical analysis demonstrated strong p63 positivity in cells exhibiting cytoplasmic clearing, confirming a myoepithelial component. The Ki-67 proliferation index was low (<5%). Additionally, a focus of high nuclear grade ductal carcinoma in situ, measuring approximately 0.3 cm and associated with microcalcifications but lacking necrosis, was identified. Surgical margins were clear.

In this case, the diagnosis was straightforward: the patient had an indolent, growing mass. The tumor was a well-circumscribed, solid lesion with myxoid morphology (epithelial, myoepithelial, and chondromyxoid cells) without metaplasia, and the nuclear-clearing cells showed no atypia. These features indicated a benign tumor. A phylloide tumor was unlikely given the indolent growth pattern, small lesion size, and microscopy that did not reveal increased growth in the intracanalicular area or necrotic or hemorrhagic features, although a myoepithelial component was present. Pure myoepithelial differentiation was not observed on histology, so a benign myoepithelial lesion and a sarcomatoid lesion were less likely. The definite diagnosis was PA of the breast.

Accurate diagnosis was critical in determining management: the patient underwent tumorectomy with negative surgical margins. No adjuvant therapy was needed, and no evidence of recurrence was observed during a 24-month follow-up period. Surveillance consisted of biannual clinical examinations and annual mammography to monitor for disease recurrence.

DISCUSSION

Pleomorphic adenoma of the breast is a highly uncommon neoplasm, predominantly identified in postmenopausal women. Histologically, it is characterized by a mixture of epithelial and myoepithelial cells within an abundant extracellular myxoid and chondroid stroma. Diagnostic challenges arise due to its rarity and the frequent mammographic presentation of

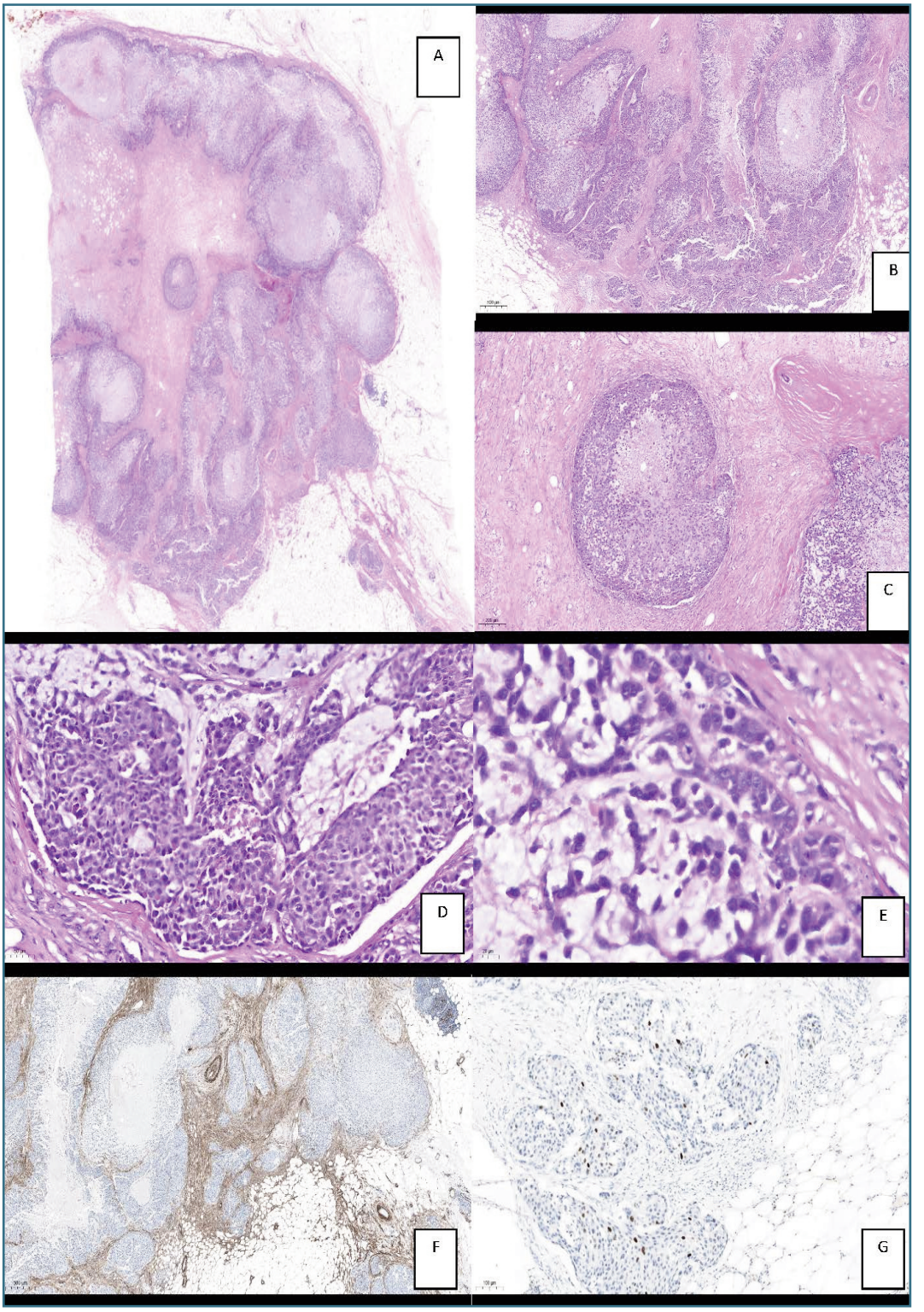

FIGURE 1. Microscopic examination of the Pleomorphic Adenoma of the Breast. A and B: Biphasic morphology with spindled to stellate myoepithelial cells and cohesive epithelial cells, focally forming ductular structures, embedded in chondromyxoid stroma. C, D, and E: Epithelial cells with eosinophilic cytoplasm arranged in islands, with no nuclear atypia or abnormal mitosis observed. F: Ki67 showing a low proliferation index. G: Immunostaining of p63 is strongly positive.

suspicious features. Despite a generally favorable prognosis, only a few cases of recurrence have been reported in the literature.

Compared with previously reported cases, the clinical presentation, histological features, and immunohistochemical findings in our patient were consistent with the diagnosis of pleomorphic adenoma.

This case underscores the critical role of a multidisciplinary approach and accurate diagnosis of a rare benign breast condition, often mistaken for malignancy and leading to unnecessary surgical or adjuvant interventions. All features of a benign pleomorphic adenoma of the breast were present, supporting the diagnosis. The tumor lacked metaplastic stroma but showed myxoid histology, with biphasic morphology of myoepithelial and epithelial cells in a chondromyxoid stroma; no chondroid metaplasia was observed. There was a well-circumscribed lesion with a pseudocapsule, no nuclear atypia, and no abnormal mitosis. Immunostaining confirmed a myoepithelial component (p63-positive) and a low proliferative index (Ki-67 < 5%). This report describes the typical characteristics of pleomorphic adenoma of the breast.

The correct diagnosis led to definitive treatment: tumor resection with free margins.

In summary, the rarity of breast pleomorphic adenomas poses diagnostic challenges. A lack of awareness or misdiagnosis as a malignant tumor may lead to inadequate treatment. This report clarifies the clinical, histological, and immunohistological features of breast pleomorphic adenoma, helping clinicians recognize key diagnostic pointers. The following tips assist in correlating imaging, pathology, and clinical evaluation:

1. Pay attention to the biphasic morphology with epithelial and myoepithelial cells in a chondromyxoid stroma, which can help differentiate from malignant lesions.
2. Ensure that immunohistochemical studies, such as p63-positive myoepithelial components and a low Ki-67 proliferation index, are included to support diagnosis.
3. Be aware that metaplastic stroma is absent in pleomorphic adenoma but is often present in more aggressive pathologies.
4. Maintain a multidisciplinary approach that incorporates clinical, radiological, and pathological evaluations to reinforce an accurate diagnosis. Armed with this knowledge, more clinicians can confidently distinguish pleomorphic adenoma from malignant breast tumors and provide appropriate treatment strategies.

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AUTHOR CONTRIBUTIONS

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PATIENT'S INFORMED CONSENT

Written and informed consent was obtained from the patient.

CONFLICT OF INTEREST

The authors declare to have no conflict of interest.

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