Case Report

Pleomorphic Adenoma of Breast: Study of a Common Tumor in an Uncommon Location

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Abstract

Pleomorphic adenoma occurs commonly in the major salivary glands but is uncommonly encountered in the breast. In both of these locations, the tumor is typically grossly circumscribed and has a "mixed" histological appearance, being composed of myoepithelial and epithelial components amid a myxochondroid matrix. Pleomorphic adenoma of the breast is a rare, benign tumor accounting for 68 cases in the literature. It is most commonly seen in postmenopausal women. Here, we have reported a case of mammary pleomorphic adenoma in an asymptomatic 45-year-old woman which was preoperatively thought to represent a carcinoma on clinical and radiological grounds. It is the rarity of the tumor in the breast, rather than its histological appearance, that causes diagnostic difficulty.

Key words

Pleomorphic adenoma of Breast, Histological appearance, Benign.

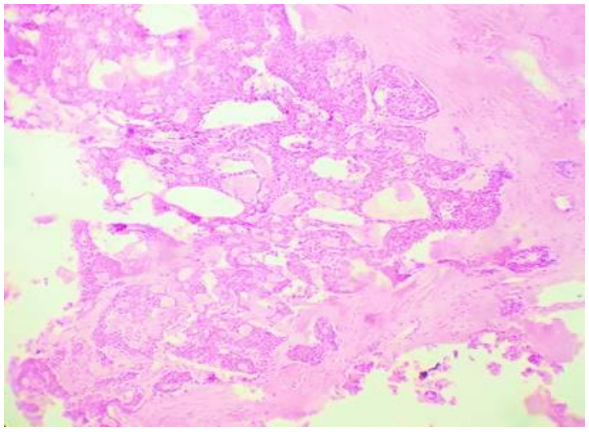
Introduction

Pleomorphic adenoma (PA) or benign mixed tumor is the most common tumor type in the salivary gland [1]. Its uncommon sites are larynx, paranasal sinuses, palate, and nasal septum [2]. It also occurs in skin and is known as chondroid syringoma [1]. PA is uncommon in the breast tissue. This is not surprising given that the breast is a modified sweat gland [2] that shares with its skin and salivary gland counterparts an embryologic origin from the same ectodermal layer. The first case report was in 1906 when Lecene was the first one that reported PA in the breast [3]. PAs are considered to be a variant of intraductal papilloma or adenomyoepithelioma [4] and are typically found in the subareolar

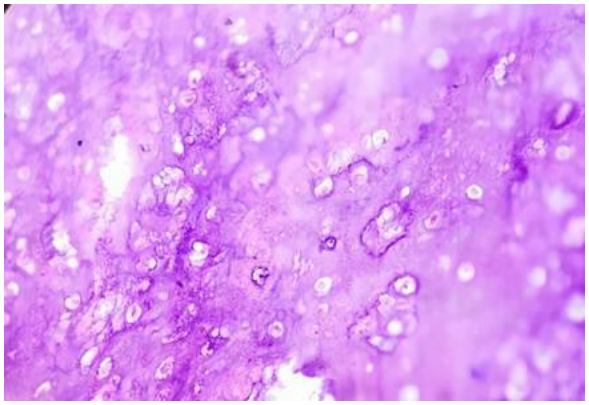
region [5, 6]. PAs are generally indolent. Rare examples of malignant PA (i.e., carcinoma ex PA) in the breast have been reported [7].The rarity of PA in the breast, as well as its unusual appearance, has contributed to misdiagnosis in this location [8, 9].

Photograph - 1: MRM Specimen with a well circumscribed bony hard growth.

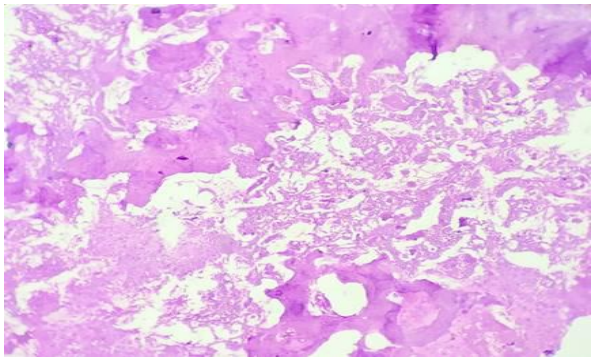
Photograph – 2: Epithelial and mesenchymal components of Pleomorphic Adenoma (H&E Stain, 10X).



Photograph – 3: Predominantly chondroid stroma (H&E Stain, 40X).



Photograph – 4: Myxochondroid and osteoid pattern (H&E Stain, 10X).



Case report

A 45-year-old woman presented with a slowly growing palpable mass in the right breast. An ultrasound showed a well-circumscribed, hypoechoic mass that spanned 5.5 cm. The mass was described as firm in consistency; it measured 6 cm in maximum dimension and was located in subareolar region. However, there was no nipple retraction or discharge. The patient had no distinctive past or family history. The tumor did not adhere to the surrounding tissue. The preoperative clinical, cytological and radiological impression was that of a carcinoma. Patient was undergone surgery of MRM (Modified Radical Mastectomy). The right MRM specimen of breast measured 12X7X2 cm and, on sectioning, showed A well -circumscribed bony hard whitish growth measuring 6.5x5.5x4.5 cm beneath nipple and areola. Serial sectioning revealed whitish, homogeneous, cut surfaces (**Photograph - 1**). Microscopically, the tumor was comprised of an admixture of stromal and epithelial elements. The dominant stromal component was characterized by bland spindled myoepithelial cells embedded in a largely myxoid, focally chondroid, matrix (**Photograph - 2, 3, 4**). The epithelial component, represented by scattered compressed glands, cords tubules islands or sheets interspersed in the stroma, was cytologically insipid and mitotically quiescent. The native breast glandular parenchyma, minimally represented in the specimen at the perimeter of the tumor, was inactive. There was no evidence of any epithelial dysplasia and malignancy. The gross and histological findings

in this tumor were characteristic of mammary Pleomorphic Adenoma.

Discussion

Pleomorphic adenoma (PA) is the most common tumor of the parotid gland; however, it is among the least common neoplasms of the mammary gland. In the latter location, it afflicts primarily adult females and typically presents as a solitary palpable central mass [9-11]. Published cases of mammary PAs have ranged in size from 0.6 cm to 17 cm, with most spanning ~2 cm [12, 13]. The 17 cm tumor was of a patient that had this tumor for 30 years; but the majority of the tumors are reported to be 2 cm in size [11]. PA can also occur, albeit most uncommonly, in the skin, vulva, and upper respiratory tract [15].

PA is usually characterized by epithelial or myoepithelial cells, myxoid and/or osseous matrix. Myoepithelial cell proliferation may be a key factor in tumorigenesis. Multipotency of ductal cells that differentiate into myoepithelial cells may be a key factor in this kind of tumor, suggested by Narita and Matsuda [5]. In all its primary locations, PA generally behaves in an indolent manner and neither recurs nor metastasizes following complete resection; nevertheless, at least 3 cases of malignant PA (i.e., carcinoma ex PA) in the breast have been reported [7]. In these cases of carcinoma ex PA, areas diagnostic of PA were present in addition to areas with histological features of malignancy as defined in the salivary gland counterpart [16]. The latter include infiltrative growth pattern, necrosis, marked cytological atypia, high mitotic rate, and presence of atypical mitoses [7]. It is notable that benign PAs of the breast have been mistaken for mucinous carcinoma [9] and metaplastic carcinoma [8], on limited samples of fine needle aspirates (FNA) and needle core biopsies (NCB), respectively—the perfidious myxoid matrix proving to be the diagnostic pitfall in these instances.

Adenocarcinoma with cartilage/ osseous metaplasia, stromal sarcoma, phyllodes tumor, and fibroadenoma can be listed in differential diagnosis of PA of the breast [11].

Although several sporadic clonal changes have been reported in PAs of the salivary gland, the most common chromosomal rearrangements therein involve 8q12, containing the target gene PLAG1, or 12q13-15 with the target gene HMGA2 [17]. The detection of PLAG1 and HMGAs translocations by either reverse transcriptase-polymerase chain reaction or fluorescent in situ hybridization can be useful in confirming the diagnosis in the rare diagnostically challenging PA in the salivary glands; however, the diagnostic utility of this technique at other sites remains uncertain.

It is essential for the pathologists to consider PA of the breast as a differential diagnosis of a rounded circumscribed mass in the juxta-areolar areas, and careful paraffin sections should be performed to eliminate an unnecessary mastectomy. Nowadays, many diagnostic modalities are present but histopathology along with immunohistochemistry is gold standard tool for final diagnosis [18].

Conclusion

In summary, the present case was of mammary Pleomorphic Adenoma, which was clinically, cytologically and radiologically suspected to be a carcinoma. Histologically, the tumor demonstrated the characteristic histopathological features of a Pleomorphic Adenoma. Pathologists should keep this tumor in mind whenever a tumor with prominent myxochondroid appearance is encountered, particularly in aspiration cytology or needle core biopsy material so that we can avoid unnecessary mastectomy for the patients.

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