Papillary Apocrine Metaplasia Mimicking Papillary Cancer: Case Report

Papiller Kanser ile Karışan Papiller Apokrin Metaplazi Vakası

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ABSTRACT Cystic breast lesions which are detected by ultrasonography are classified as simple, complicated or complex. Complex cystic breast masses can be benign, atypical, or malignant lesions. Cysts with thick walls, thick septa, intracystic masses, or other discrete solid components are defined as complex cysts. The case was here presented of a 47-year old female with a complex cystic breast lesion, the sonographic, mammographic and histpathological findings of which resembled malignancy. Imaging studies allow the determination of tumour character, but mammographic or sonographic methods are insufficient to differentiate these lesions from one another. Biopsy and imaging-pathology correlation are necessary for a definitive diagnosis.

Key Words: Ultrasonography; mammography; breast cyst; breast neoplasms

ÖZET Ultrasonografi ile tespit edilen kistik meme lezyonları basit, komplike, ve kompleks olarak üç sınıfta toplanır. Kompleks kistik meme lezyonları benign, atipik ya da malign olabilir. Kalın duvarlı, kalın septa, intrakistik kitle ya da solid komponent içeren lezyonlar kompleks kist olarak adlandırılırlar. Bu yazıda 47 yaşında kadın hastada ortaya çıkan kompleks kistik meme kitlesinin radyolojik ve patolojik bulguları sunulmuştur. Görüntüleme teknikleri tümöral lezyonları karakterize etmede yararlıdır; ancak mamografik ve sonografik metodlar kompleks kistik meme lezyonlarını birbirinden ayırmada yetersiz kalmaktadır. Bu noktada, kesin tanıya ulaşmak için biyopsiler ile radyoloji-patoloji korelasyonunu esas alan yöntemler belirleyici hale gelmektedir.

Anahtar Kelimeler: Ultrasonografi; mamografi; meme kisti; meme neoplazileri

Cystic breast lesions are generally detected with ultrasonography (US) and may be defined as simple, complicated or complex. Cysts with thick walls, thick septa, intracystic masses, or other discrete solid components are defined as complex cysts. Complex cystic breast masses can be the result of a wide range of pathological entities, including benign, atypical (high-risk), and malignant lesions.[1] Interventional radiological applications are the solution to detect the origin of these lesions.[2] A rare case was presented here where the sonographic, mammographic and histopathological findings were mimicking a malignancy.

CASE REPORT

A 47-year old premenopausal female was referred for mammographic and sonographic breast examination with the complaint of a palpable mass in the left breast which had been present for 3 months. On mammography, the breast was classified as type 3 (heterogeneously dense). In the left breast, a heterogeneous dense mass was determined filling nearly the entire breast. The mass was observed to be lobular with the posterior margins obscured by surrounding glandular tissue, and circumscribed anterior margins (Figures 1a and 1b). On US, a cystic mass was detected measuring 64x18x70 mm, with thick septations and solid components contained in the wall and septa. The solid components were seen to be highly vascularized on Doppler US
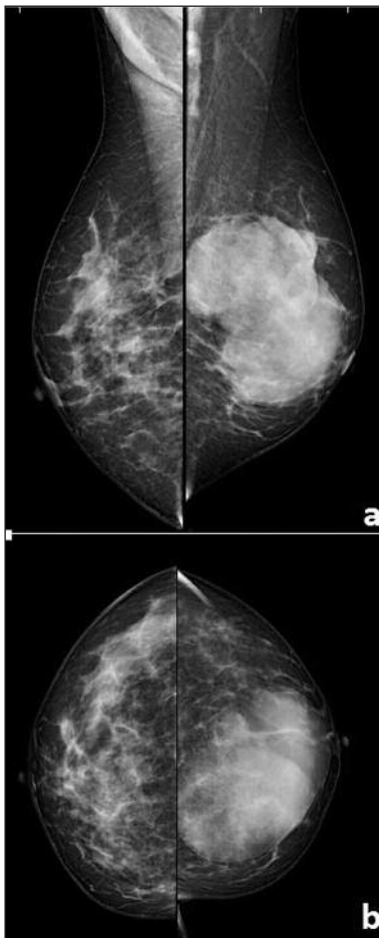

FIGURE 1: Mediolateral oblique **(a)** and craniocaudal mammograms **(b)** show huge, macrolobulated opacity which can be hardly distinguished from surrounding breast tissue in left breast.

(Figures 2a, 2b). The mass were considered to be American College of Radiology Breast Imaging Reporting and Data System (BI-RADS) 4B, type 2 complex cystic mass, possibly papillary cancer. No pathological lymph node was determined in the axillary region.

Ultrasound-guided fine needle biopsy was taken from the cystic part and a core-needle biopsy from the solid components and the materials were sent to the pathology department. The pathological diagnosis was benign apocrine metaplasia (Figures 3a, b). Although there were benign findings in the pathology results, a possible malignancy could not be ruled out due to the high vascularization of multiple solid components and the thick septations of cyst. Therefore, the mass was surgically excised. Pathology revealed papillary apocrine metaplasia, atypical ductal hyperplasia and fibrocystic changes (Figures 4 a, b and 5).

DISCUSSION

Complex cystic breast masses can be categorised in four classes on the basis of the sonographic findings. Type 1 masses have a thick outer wall, thick internal septa or both, Type 2 masses contain one or more intracystic masses, Type 3 masses contain mixed cystic and solid components and are at least 50% cystic and Type 4 masses are predominantly (≥50%) solid with eccentric cystic foci.

A sonographically simple cyst (anechoic and have a well-defined wall and posterior acoustic enhancement) can be classified as a BI-RADS 1 lesion. BI-RADS category 2 for simple cysts and category 3 for probably benign cystic lesions. Complex cystic masses containing vascularised solid components are generally classified BI-RADS 4 and require biopsy.[3] The BI-RADS 4 category is generally indeterminate and its outcome varies highly (probability of malignancy is approximately between 3%–94%.). In order to inform both the clinician and pathologist better about the degree of concern, cathegory 4 is divided into three subgroups (BI-RADS 4 A, B, C).

BI-RADS 4A includes lesions with a low suspicion for malignancy. Generally complicated cysts
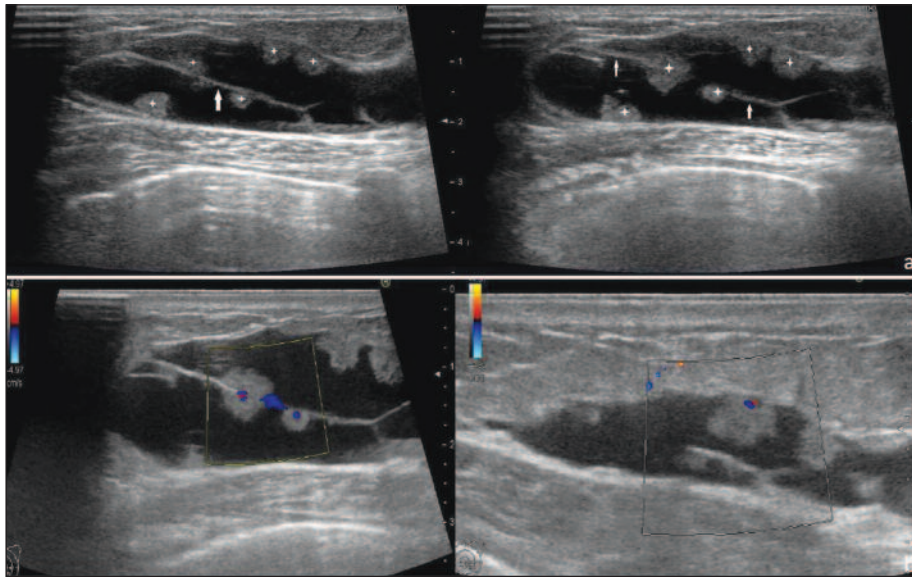
FIGURE 2: Thick septas (arrows) and solid components (asterisks) are seen on Ultrasound images **(a)** and vascularization in solid components was demonstrated on Color Doppler images **(b)**.
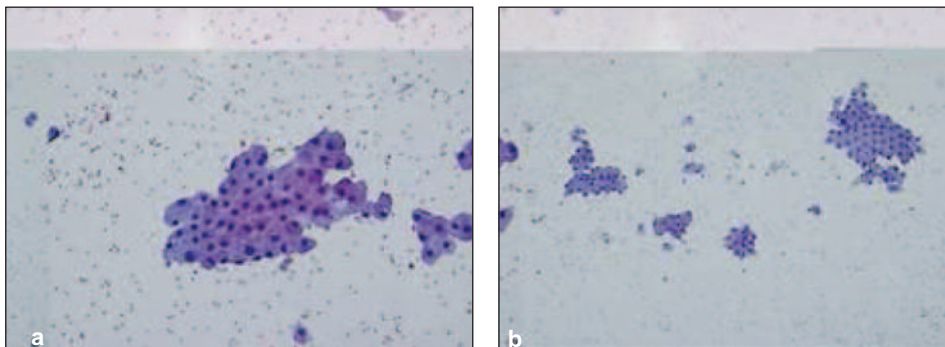

FIGURE 3: In IIAB, there are a lot of cells apocrin cells in groups and sheets (MGGx40) **(a)**. There is no atypia in apocrin cells (MGG x200) **(b)**.
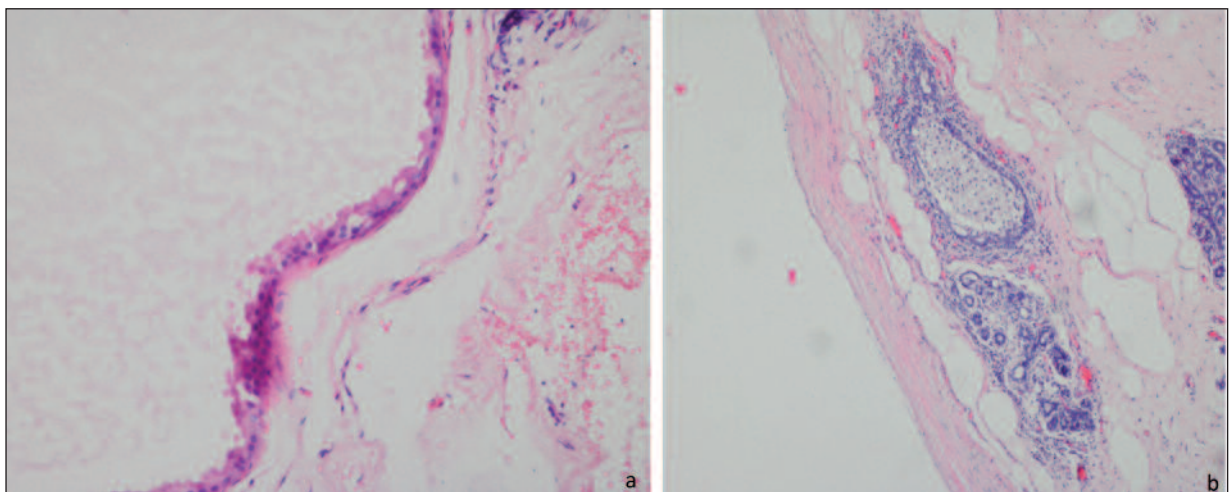

FIGURE 4: (a) (b) In breast parenchyma there is cystic changes in ducts (HE x200)
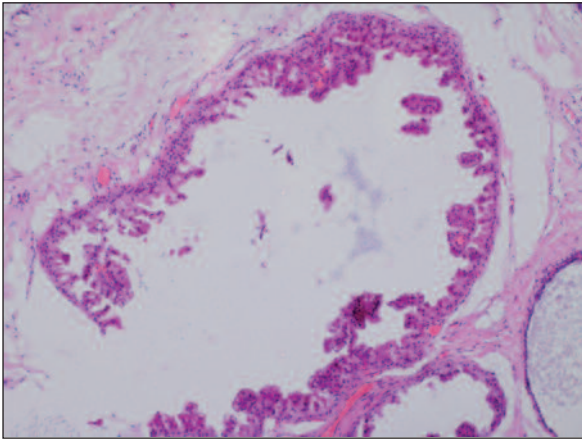
FIGURE 5: In some ducts there is cystic apocrin papillary changes (HE x200).

are included in this group. Category 4B lesions have an intermediate suspicion for malignancy. Follow-up sonographic-mammographic examinations and pathologic correlation are very important for this subgroup. For instance, as in our case, large dimentios , obscured-circumscribed margins, thick and vascularized solid components can be considered as signs of malignancy. Category 4C lesions have more tendency to be malign in comparison to BI-RADS 4B lesions, but they do not have classic findings of malignancy.[4]

Fibrocystic changes (adenosis, sclerosing adenosis, apocrine metaplasia, cyst formation with or without rupture, and ductal ectasia), intraductal or intracystic papilloma without atypia and fibroadenoma are some of the benign lesions that may be encountered as a complex cystic breast lesion. However, some malignant processes such as ductal carcinoma in situ (DCIS), infiltrating ductal carcinoma or papillary carcinoma might also be the cause of a complex cystic mass.[1,5]

Apocrine metaplasia occurs in the lobular part of the terminal duct lobular unit. The incidence increases with age and is mostly seen in the 4th-5th decades. Pathologically, it is described as ectatic or cystically dilated acini lined by columnar cells with granular eosinophilic cytoplasm and round basally located nuclei.[6,7]

Apocrine metaplasia itself is not regarded as a premalignant lesion but there are studies reporting that it can be a predictor for a slightly increased

risk of development of cancer in either breast. The papillary apocrine metaplasia (PAM) subgroup in particular has been reported to have a slightly increased risk of subsequent carcinoma, although the elevated risk, approximately 3.1 fold, is mainly related with the presence of atypical hyperplasia in highly complex papillary apocrine changes.[6,8]

Papillary carcinoma accounts for approximately 0.5% of invasive breast cancers. It generally presents in postmenopausal patients. Pathologically, the term papillary carcinoma includes a morphologically heterogeneous group of lesions, all of which share a growth pattern characterized by the presence of arborescent fibrovascular stalks lined by epithelial cells.

If the tumour has a cystic component it is described as an intracystic papillary carcinoma. In the absence of an apparent cyst, the diagnosis of solid papillary carcinoma is appropriate.[3]

Sonographically, papillary carcinomas may present as a hypoechoic and solid mass, often with posterior acoustic enhancement; alternatively, complex cystic and solid masses may also be evident. As they are generally vascular, color flow components are often detected on Doppler examination.[7]

In the current case, as the sonographic appearance of the lesion showed thick septations and multiple internal solid components, it was consistent with type 2 complex cystic mass. The solid components of cyst are highly vascularised on Doppler images. Therefore, the interpretation of this case was consistent with malignant processes such as papillary carcinoma. Although there were benign findings according to the results of fine needle and core-needle biopsies, possible malignancy could not be ruled out due to examination of only a small part of the lesion. Therefore, excisional biopsy was applied and the histopathological and final diagnosis proved that the initial diagnosis was incorrect, which can be attributed to the nature of complex cystic masses.

In the management of a complex cystic mass, imaging-pathology correlation plays an important

role. The pathology findings of the biopsies of complex cystic masses should be correlated with the imaging features to determine whether they are concordant. To provide concordance, the specific imaging features such as thick-walled cyst or intracystic mass should be able to be explained by the pathology findings. Pathology, imaging, and clinical correlation is indispensable to ensure that the lesion is appropriately sampled. In cases of discordance, a repeat core-needle biopsy or surgical excisional biopsy could be applied.[1]

It is important to bear in mind that a complex cystic mass can be the reason for various pathologies, both benign and malignant. To determine the exact cause, interventional radiological practices such as tru-cut biopsies play a crucial role. Moreover, imaging-pathology correlation is the ideal method to correctly diagnose a complex cystic mass.

In this paper, the case has been presented of a cystic breast lesion mimicking papillary cancer. A wide range of pathologies, either benign (such as fibrocystic changes, fibroadenoma, sclerosing adenosis, apocrine metaplasia) or malignant (such as papillary cancer or DCIS) may present as a complex cystic mass. Papillary apocrine metaplasia is a benign lesion which slightly increases the risk of breast cancer. Otherwise, a papillary cancer is a malignant lesion which needs to be treated more aggressively. Unfortunately, mammographic or sonographic methods are insufficient to differentiate these lesions from one another. Therefore, biopsies and imaging-pathology correlation are necessary for final diagnosis.

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