

A Case of Radial Scar: Findings of Mammography and MRI

Bir Radyal Skar Olgusu: Mamografi ve MRG Bulguları

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ABSTRACT Radial scar is an idiopathic entity that represents a diagnostic challenge due to its similarity with breast cancer radiologically. The screening mammography of a 65-year-old female patient revealed asymmetrical parenchymal distortion. Breast ultrasound showed minor cysts and magnetic resonance imaging detected adjacent nodules with no contrast enhancement. Then, the lesion was excised with the help of mammography-guided needle localization method. Pathologic diagnosis was moderate ductal epithelial hyperplasia and radial scar. Although radial scar is a benign breast lesion, it mimics breast cancer mammographically and sonographically.

Key Words: Ultrasonography; magnetic resonance imaging; breast neoplasms

ÖZET Radyal skar radyolojik olarak meme kanserine benzemesi nedeniyle tanısal güçlüklerle yo-
laşabilen bir durumdur. Altmış beş yaşındaki bayan hastanın tarama mamografisinde asimetric pa-
rankim bozukluğu saptandı. Meme ultrasonografisinde minor kistler ve manyetik rezonans
görüntülemelede kontrastlanmayan lezyona bitişik nodüller saptandı. Ardından kitle mamografi eş-
liğinde iğne işaretleme metoduyla eksize edildi. Patolojik tanı orta derecede duktal epitelyal hi-
perplazi ve radial skar idi. Radial skar benign bir lezyon olmasına rağmen, mamografik ve sonografik
olarak meme kanserinin taklit edebilir.

Anahtar Kelimeler: Ultrasonografi; manyetik rezonans görüntüleme; meme tümörleri

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Radial scar is a benign breast lesion that represents a diagnostic chal-
lenge due to its similarity with breast cancer radiologically. Radial
scars are not actual scars. They are idiopathic entities and are not as-
sociated with previous surgery or trauma. Potential suggested etiologic fac-
tors include localized inflammatory reaction and infarction following
ischemic process.¹

We present mammography, ultrasound (US) and breast magnetic reso-
nance imaging (MRI) findings of the radial scar lesion detected in the left
breast and confirmed by histologic examination.

CASE REPORT

The screening mammography of the 65-year-old female patient revealed an
asymmetrical parenchymal distortion region in the upper external quadrant
of the left breast. On physical examination, no palpable mass or nipple disc-

harge was detected in either breasts. No lymphadenopathy was detected in either axillary regions. The patient had no history of trauma or surgery of this region. There was no family history for breast carcinoma. US investigation did not reveal an apparent mass in this region. There were minor cysts in the breast. MRI was performed to investigate the presence of any masses in the parenchymal distortion region on mammography. TSE T2 weighted transverse images and pre-contrast FLASH 3D T1-weighted transverse MR images were acquired. Then, post-contrast FLASH 3D T1 weighted transverse MR images were obtained between 1 and 7 minutes after the administration of contrast medium and subtracted from the pre-contrast images. Breast MRI investigation revealed adjacent nodules with mean diameters of 4-7 mm and with a total size of 2 x 1.5 cm. The lesion exhibited no contrast enhancement in the middle and was arranged in an order of circle, and its location was consistent with the parenchymal distortion region in the upper external quadrant (Figure 1). The contrast enhancement had a rapid initial rise followed by a plateau in the delayed phase (type 2), and was considered in favor of a benign pathology (Figure 2). Although the lesion had a benign enhancement pattern on MRI, the lesion was excised with the help of mammography guided needle localization method (Figure 3) because of malign features on mammography and the probability of malignancy. The lesion was removed using excisional biopsy technique. Then, a specimen graphy was performed (Figure 4) and the removal of the lesion was proven. The pathologic examination of the specimen revealed a moderate ductal epithelial hyperplasia and radial scar.

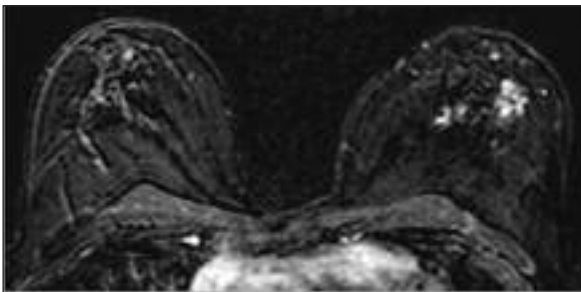


FIGURE 1: Breast MR imaging showed small nodules with a mean diameter of 4-7 mm on the parenchymal distortion region in the left side. Total size of the lesion was 2 x 1.5 cm.

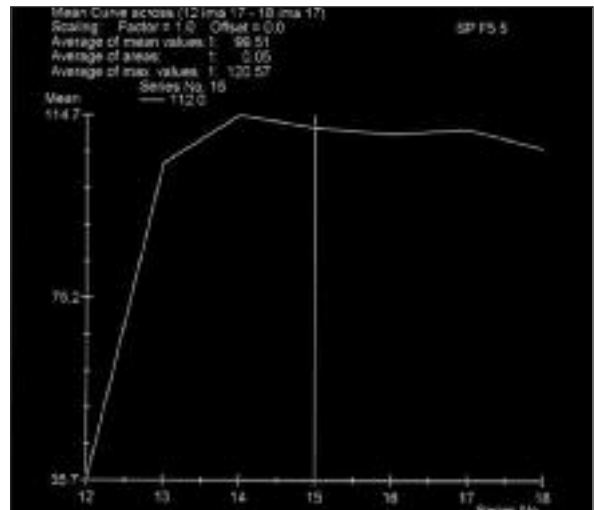


FIGURE 2: The lesion showed type II enhancement pattern and was considered as benign pathology.

DISCUSSION

Radial scar is a benign breast lesion that occurs as a result of the development of neoplastic focal tubular adenosis around a fibrous elastoid center. The importance of radial scar lesion results from the fact that it mimics invasive carcinoma on the diagnostic imaging and macroscopically due to its spicular shape. Within the radial scar tissue, atypical hyperplasia regions, tubular, ductal or lobular carcinomas may develop.²

Radial scars are generally diagnosed mammographically or microscopically. Most of the lesions are not palpable. There's no correlation between mammographical size and palpability.³ Recently, the rate of radial scar diagnosis has increased. The reason is increased availability of screening mammography investigations.⁴ Radial scars are idiopathic entities and are not associated with previous surgery or trauma. Potential suggested etiologic factors include localized inflammatory reaction or indolent infarction following ischemic process.¹

Although literature suggests that radial scars cannot be demonstrated with US, Cohen et al.⁵ detected that radial scars were sonographically irregular, hypoechoic and poor-bordered lesions and exhibited decreased posterior acoustic transmission. In our case, the lesion could not be demonstrated with US.

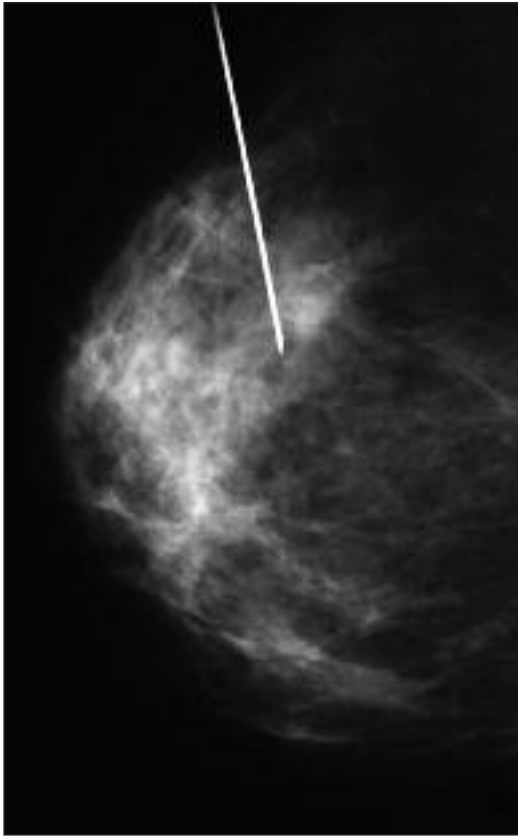


FIGURE 3: Mammogram of the lesion, excised with the help of mammography guided needle localization method.

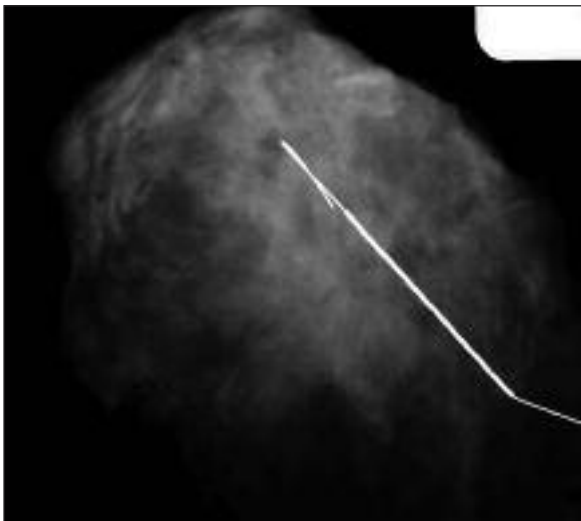


FIGURE 4: Specimen graphy showed that lesion was removed.

Mammographically, radial scars appear as asymmetric density or parenchymal distortion areas; lucency reflecting the fatty content is observed.⁶

Typically, no central mass is observed.¹ Spiculations are thin and the nucleus/spicule ratio is < 0 . Microcalcifications may be detected within the lesion.³ However microcalcification was not present in our case.

Spicular lesions may be confused with a number of other pathological entities and a follow-up mammography, fine needle aspiration biopsy and sometimes excisional biopsy may be necessary to establish the diagnosis. For differential diagnosis, primarily fatty necrosis, post-surgical scar and breast tuberculosis should be considered.³ However, cancer is the most important disease in the differential diagnosis.

Although radial scar is a benign breast lesion, it has a malignant potential. There is an increased potential for malignancy, particularly after 50 years of age and in lesions greater than 2 cm.³ The most common cancer observed within the radial scar tissue is the lobular carcinoma in situ. Adenosquamous and tubular carcinomas may also develop.³ In addition, studies report an increased risk of breast cancer in cases of radial scar. Independent of the histological type, the breast cancer risk increases two fold in patients with radial scar.⁷ Diagnosis of radial scar lesion is important in this respect as well. Although mammography findings of radial scar are well-defined, that is not the case for MRI findings.

A study reported that cases of radial scar were spicular masses and did not take up contrast or contrasted weakly (6%) or exhibited moderate or good contrast uptake (6%). Another study performed in radial scar patients did not mention contrast uptake on MRI in any patient with a pure radial scar.⁸ However, contrast uptake was reported in patients with malignancy or additional pathology within or near the radial scar lesion.⁹ In addition, other studies reported that false positive results might be obtained with malignancy.¹⁰ It is often not possible to establish diagnosis of radial scar on breast MRI results. In our case, benign type contrast uptake was observed.

In conclusion, although radial scar is a benign breast lesion, it mimics breast cancer mammog-

raphically and sonographically. Surgical excision is required for the definitive diagnosis. Although MRI can not exactly differentiate malignant and benign lesions in cases with suspected distortion

on mammography, it may demonstrate the presence of lesions by showing contrast uptake, and may assist in establishment of a biopsy planning.

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