Case Report
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대한영상의학회지

Ductal Carcinoma *In Situ* within a Fibroadenoma: Microcalcifications Identified on Mammography Play a Crucial Role in Diagnosis

유방의 섬유선종 안에서 발생한 상피내암: 유방촬영에서 보이는 미세석회화가 진단에 결정적인 역할을 한 예

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Fibroadenoma is a common, benign tumor of the breast, which is rarely associated with an increased risk of carcinoma. We report a case of ductal carcinoma *in situ* within a fibroadenoma in a 38-year-old woman. The lesion was a 1 cm, circumscribed, ovoid mass with internal calcifications evident on mammography and ultrasound, which is commonly found in fibroadenoma, but the calcifications were fine and linear, which is uncommon. This type of calcification is classified as suspicious by the American College of Radiology Breast Imaging-Reporting And Data System, and it is often correlated with comedo necrosis of ductal carcinoma, and, so, requires immediate pathologic confirmation. In our case, careful analysis of the unusual calcifications led to appropriate intervention and diagnosis. Radiologists should be aware that fibroadenomas can be malignant, and they should look for suspicious microcalcifications within a fibroadenoma.

Index terms
Breast Neoplasms
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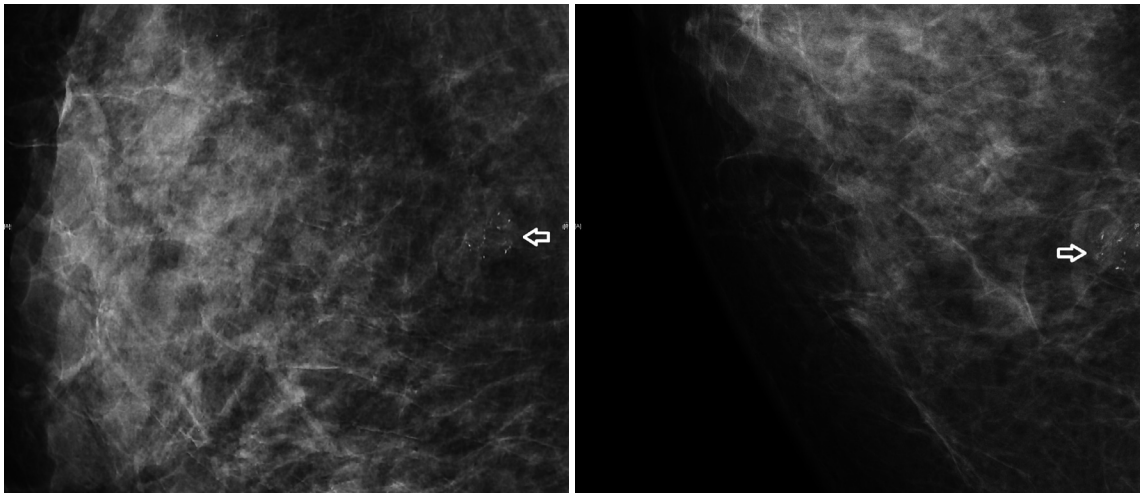
INTRODUCTION

Fibroadenoma is the most common benign tumor of the breast, and is very rarely associated with carcinoma. The prevalence of carcinoma within fibroadenomas in a screened population was reported to be 0.02% by Deschênes et al. (1). Buzanowski-Konakry et al. (2) identified 5 cases of carcinoma in a review of 4000 fibroadenomas examined over a 43-year period. The pathologic features of carcinomas within fibroadenomas were reported by Diaz et al. (3). Those authors evaluated 105 cases; *in situ* carcinoma was the predominant type of malignancy (95%) and lobular and ductal types occurred with equal frequency. Because ductal carcinoma *in situ* often forms microcalcifications consisting of dead and sloughed tumor cells within the ductal lumen, mammography can identify the pathology. We present a case of suspicious microcalcifications within a nodule identified on mammography, which correlated well with ductal carcinoma *in situ* within a fibroadenoma.

CASE REPORT

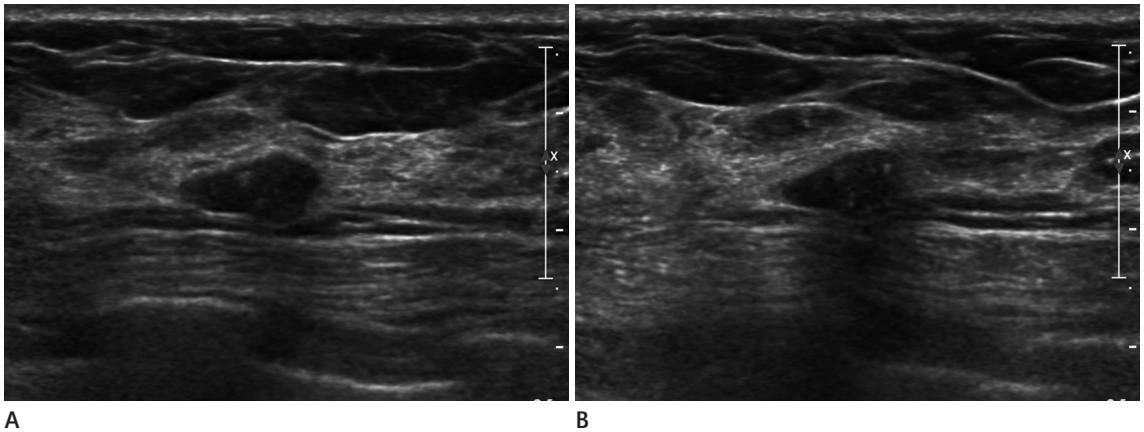
A previously healthy 38-year-old woman presented with a calcified nodule in her right breast, which was detected during routine mammography at a local clinic. She had no family his-

tory of breast cancer. On examination, no palpable lump was found in either breast or axillary region. A magnified image of the right breast revealed a 1 cm, circumscribed, isodense ovoid mass containing microcalcifications which were fine and linear in shape in the upper medial quadrant (Fig. 1). Ultrasound revealed an ovoid, well-circumscribed, parallel, hypoechoic nodule (Fig. 2). Multiple echogenic dots were present within the nodule, which correlated with the microcalcifications observed on mammography. Even though the shape, margins, and orientation of the nodule appeared benign, the microcalcifications within the mass suggested malignancy, and we diagnosed the lesion as category 4 by American College of Radiology Breast Imaging-Reporting And Data System (ACR BI-RADS) criteria. An ultrasound-guided 14-G core needle biopsy was obtained and pathology revealed atypical ductal cells in fibroadenomatous stroma. The radiologist and the pathologist agreed that the possibility of underestimation of ductal carcinoma *in situ* was high, and therefore, excisional biopsy was recommended. Wide excision was performed under ultrasound-guided localization of the mass. On gross examination, the cut surface of the specimen showed a hyalinized, small, round mass. Microscopic examination revealed ductal carcinoma *in situ* in a fibroadenoma (Fig. 3). The tumor was 0.8 × 0.6 cm in size, confined to the fibroadenoma, had a high nuclear grade with necrosis (Van Nuys group 3), and showed calcification. The immunohistochemical staining results were: ER, 3+; PR, 2+; p53, 1+; Ki-67, 2+; and C-erbB-2, -. The surgical margin was free of carcinoma. The patient was given tamoxifen and has been monitored for 4 years



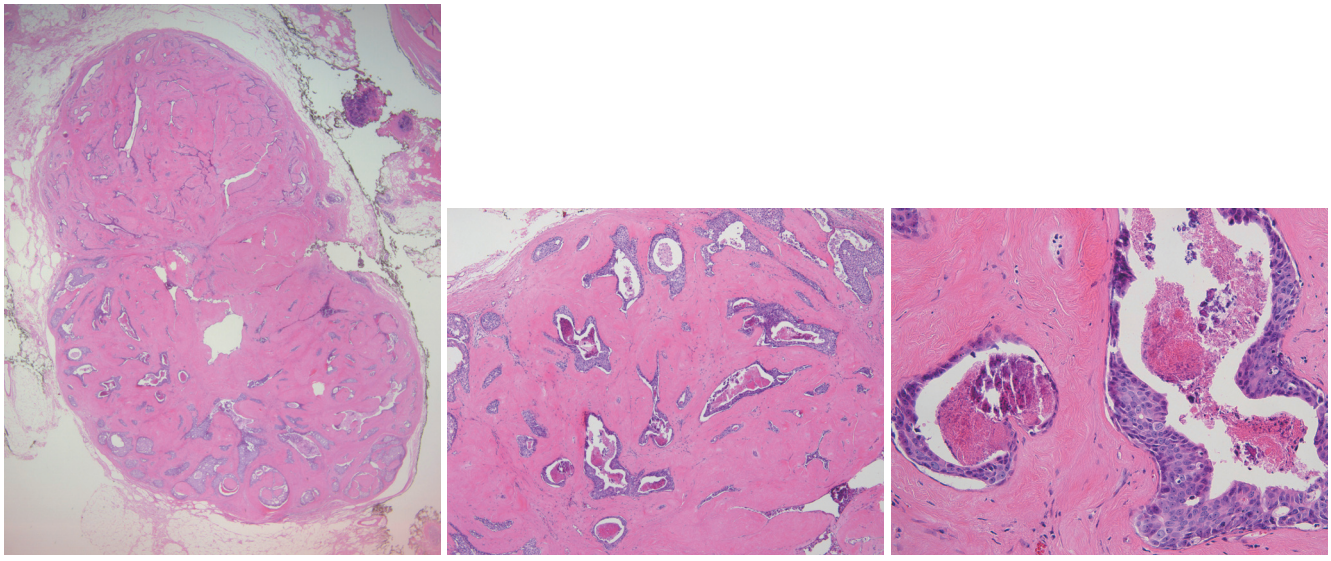
A B

Fig. 1. Mammography, magnification view (**A**: mediolateral oblique view, **B**: craniocaudal view). A 1-cm, circumscribed, isodense mass with internal fine, linear microcalcifications is evident in the upper medial quadrant of the right breast (arrow).



A B

Fig. 2. Ultrasound findings. Ultrasound (**A**: transverse view, **B**: longitudinal view) shows a circumscribed ovoid mass with internal echogenic dots in the right breast, 6 cm from the nipple.



A B C

Fig. 3. Microscopic findings of ductal carcinoma *in situ* within a fibroadenoma.
A. Histologic examination shows a well-demarcated fibroadenoma with ductal carcinoma *in situ* in the lower half (H&E stain, × 12.5).
B, C. Comedo-type ductal carcinoma *in situ* with central necrosis and calcification in a background of hyalinized fibroadenoma. H&E stain, × 40 **(B)**, H&E stain, × 200 **(C)**.
H&E = hematoxylin and eosin

and 4 months without any recurrence of the carcinoma.

DISCUSSION

Because carcinoma arising within a fibroadenoma is so rare, there are few reports on its radiologic features. The largest study to date was performed by Baker et al. (4), who reported the mammographic features of carcinomas originating within fibroadenomas in 24 patients. According to that study, three out of the 24 patients showed microcalcifications within the mass that suggested malignancy. On histologic examination, only one of these patients had microcalcifications associated with intraductal carcinoma in the fibroadenoma. Several cases of ductal carcinoma *in situ* within a fibroadenoma with suspicious microcalcifications have been reported, in which the microcalcifications were shown to be malignant (5-7). In our case, the microcalcifications within the fibroadenoma were fine and linear in shape; these types of microcalcifications are known to be correlated with a high grade of ductal carcinoma *in situ* (8, 9). In high-grade ductal carcinoma *in situ*, known as the comedo type of intraductal carcinoma, calcifications are made up of necrotic debris from dead and sloughed tumor cells within the ductal lumen.

Microcalcifications seen on mammography provide valuable information about the pathologic features of the lesion. Fibroadenoma typically involves coarse and popcorn-like calcifications during involution. According to the ACR BI-RADS, this type of calcification is classified as a typical benign finding (10), and does not warrant concern. In our case, the unusual nature of the microcalcifications within the fibroadenoma raised the possibility of malignancy and immediate pathologic confirmation was needed (10). Physicians may associate a well-defined ovoid nodule with benign fibroadenoma but should not disregard the microcalcifications within the nodule. Careful analysis and classification of microcalcifications can be very useful in making an accurate diagnosis.

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유방의 섬유선종 안에서 발생한 상피내암: 유방촬영에서 보이는 미세석회화가 진단에 결정적인 역할을 한 예

유재경[1]* · 김의정[2] · 김보미[1] · 김은경[3]

섬유선종은 유방에 생기는 흔한 양성종양이며 악성의 위험이 거의 없다고 알려져 있다. 본 증례는 섬유선종 내부에 상피내암이 있었던 38세 여자의 예로 병변은 초음파와 유방촬영술에서 1 cm 크기의 경계가 좋은 난원형의 결절로 보였고, 내부에 석회화가 동반되어 있었다. 섬유선종은 흔히 전형적인 양성 석회화를 동반하지만 본 증례에서 보였던 석회화는 유방확대촬영상 미세한 선상형으로 섬유선종과 연관된 소견이 아니었다. 이러한 선상형 미세석회화는 American College of Radiology Breast Imaging-Reporting And Data System에 따르면 바로 조직검사가 필요한 고위험도 소견으로 상피내암에 동반되는 관내 세포 괴사와 종종 관련이 있다. 본 증례는 유방촬영을 통해 섬유선종 내부에 동반된 미세석회화의 모양을 분석하여 조기유방암을 진단하고 적절한 치료를 할 수 있었던 예로 영상의학과 의사는 섬유선종도 악성과 연관될 수 있음을 알고 이에 대해 주의를 기울여야 하겠다.

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