

Spontaneous Infarction of Hyperplastic Breast Tissue: A Case Report

과성장 유방조직의 자발적 괴사: 증례 보고

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Spontaneous breast infarction is a very rare complication of fibroadenoma of the breast. We present an interesting case of a 33-year-old woman with spontaneous infarction of hyperplastic breast tissue related to pregnancy and lactation. Mammography showed an oval, circumscribed, fat-containing mass with microcalcifications. Ultrasonography revealed an oval, circumscribed mass with echogenic dots. Color Doppler imaging revealed presence of minimal vascularity at the periphery of the mass.

Index terms

Breast
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INTRODUCTION

Spontaneous breast infarction is a very rare episode, representing about 0.1% of biopsied (1) and 0.3–1.5% of fibroadenoma cases including the reported cases of pregnant women (2–4). Although several cases of breast infarction have been reported in the literature, we found only two reports that described the mammographic findings of an infarcted breast tumor involving five patients (1, 5). In the present study, we describe a case of spontaneous breast infarction in a postpartum woman and discuss the mammography and ultrasonography imaging findings.

CASE REPORT

A 33-year-old woman with a palpable mass on her right breast visited our hospital four weeks postpartum. She initially discovered the palpable breast mass during her 3rd trimester of pregnancy and reported no change in its size after delivery. She did not experience nipple discharge or pain and had no history of

trauma or use of anticoagulant drugs. The physical examination revealed a hard and non-tender mass in the right breast, without nipple retraction and skin thickening. The patient had no axillary or supraclavicular lymphadenopathy. Mammography revealed a large and oval shaped fat-containing mass with a circumscribed margin and microcalcifications (Fig. 1). On ultrasonography, the mass was seen as an oval shaped structure with a circumscribed margin and heterogeneous echogenicity along with a combined pattern of posterior features (Fig. 2A). A few echogenic dots were observed within the mass. Minimal vascularity was noted at the periphery of the mass on a color Doppler image (Fig. 2B). Considering these radiologic findings as probably benign, the mass was classified as a category 3 lesion. However, the patient wanted to perform biopsy for the fear of malignancy. The mass was pathologically verified as a breast infarction. Three months later, there was no change in size of the mass and the patient underwent excisional biopsy. The specimen was reported as a circumscribed solid mass measuring $4.8 \times 3.6 \times 2.3$ cm with necrosis on the cut surface (Fig. 3A). There was exten-

sive necrosis with adjacent fibrosis and residual epithelium, as well as lactation hyperplasia (Fig. 3B). Microcalcifications and cystic changes were also seen within the mass (Fig. 3C). There was no evidence of malignancy and the histologic examination confirmed the features of infarcted hyperplastic breast tissue.

DISCUSSION

Spontaneous breast infarction is a very rare complication of



Fig. 1. A 33-year-old woman with spontaneous breast infarction of hyperplastic tissue. Craniocaudal mammogram of her right breast shows an oval shaped large fat-containing mass with a circumscribed margin and microcalcifications (arrow).

fibroadenoma of the breast. According to a recent study by Oh et al. (1), 0.1% of all biopsied lesions (9/8310) were spontaneous infarctions. Infarctions in benign lesions may occur in various conditions such as fibroadenoma, intraductal papilloma, and hyperplasia associated with pregnancy and lactation, as well as during anticoagulant therapy and with oral contraceptive use (1-3, 6-8). The malignant etiologies of breast infarction include invasive carcinoma, ductal carcinoma *in situ*, as well as medullary carcinoma, and papillary carcinoma (1, 9). Spontaneous breast infarction may occur as an uncommon complication of fine needle aspiration biopsy (10). The vascular trauma during the needling procedure may induce thrombosis and infarction.

The presenting symptom is most frequently a rapidly growing palpable mass that is sometimes painful and hard. Occasionally, bloody discharge secondary to tissue necrosis can be observed (7). In such patients, the clinical diagnosis of an inflammatory or malignant breast disease may be possible. The cytopathologic features of infarction include necrosis and worrisome nuclear features, which are often confused with inflammation or malignancy (8).

Spontaneous infarction has been mostly described during the third trimester of pregnancy and lactation. In these cases, the proposed pathogenesis includes a relative vascular ischemia during phases of increased metabolic requirements of the breast tissue (3). The possibility of a probable torsion due to the increased mobility of these tumors has been suggested in cases of spontaneous infarction occurring in the absence of pregnancy

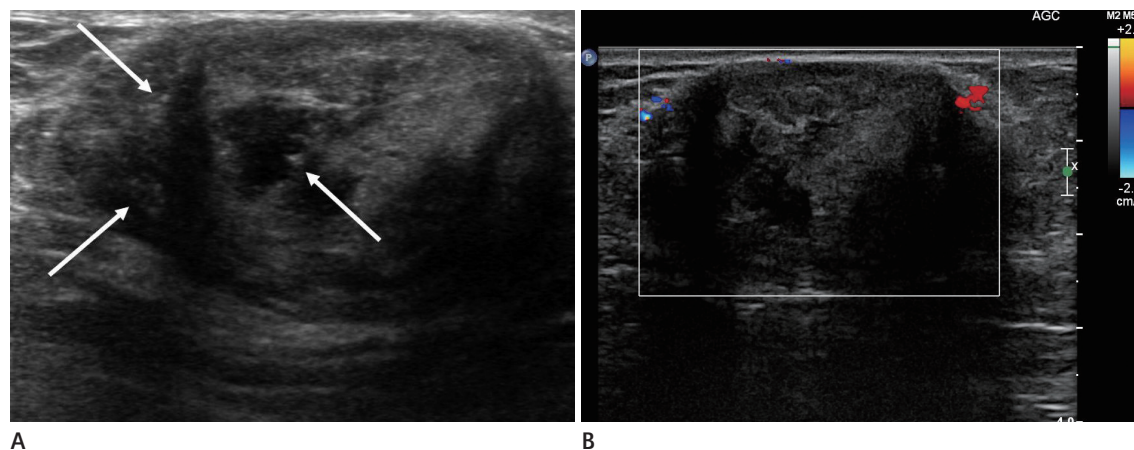


Fig. 2. Ultrasonography findings of infarcted hyperplastic breast tissue.

A. On ultrasonography, the mass appears as an oval shaped structure with a circumscribed margin, and heterogeneous echogenicity with a combined pattern of posterior features. A few echogenic dots can be seen within the mass (arrows).

B. Color Doppler sonogram shows only minimal vascularity at the periphery of the mass.

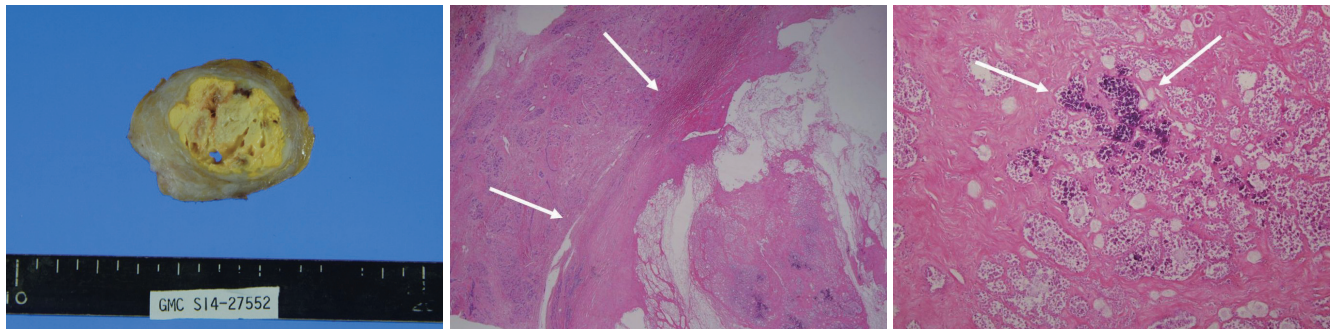


Fig. 3. Histopathology of infarcted hyperplastic breast tissue.
A. Gross examination of the specimen shows a 4.8 × 3.6 × 2.3 cm, well circumscribed yellow colored mass with areas of hemorrhage, which is distinct from the surrounding breast parenchyma.
B. Low-power microscopic view of the lesion shows extensive necrosis of hyperplastic breast tissue (arrows) (H&E, × 10).
C. Higher power photomicrograph shows microcalcifications within the mass (arrows) (H&E, × 100).
 H&E = hematoxylin and eosin

and lactation.

Until date, we were able to locate only two reports that described the mammographic findings of an infarcted breast tumor involving five patients. In one study, an infarcted lactating adenoma presented as a circumscribed mass without additional findings on mammography (5). Two infarcted fibroadenomas and one medullary carcinoma similarly exhibited oval shaped, indistinct, and highly dense masses (1). An infarcted intraductal papilloma presented as a round, circumscribed, equal density mass on mammography. As indicated by these reports, it is evident that no characteristic mammographic findings lead to differentiation between malignant and benign tumor infarctions of the breast.

There are a few reports on the ultrasonographic findings of spontaneous breast infarction. On ultrasonography, the most common reported features include an oval shaped, parallel-oriented, indistinct, heterogeneously hypoechoic mass with or without posterior acoustic enhancement. In addition, these lesions are sometimes irregular shaped and angularly margined mass that can be shown for malignancy.

In conclusion, we report a recent case of infarcted hyperplastic breast tissue in a young postpartum woman. The spontaneous breast infarction presented as a circumscribed mass with microcalcifications on mammography, and a heterogeneous echoic mass with echogenic dots on ultrasonography. There was minimal vascularity observed at periphery of the mass on color Doppler imaging. It is proposed that even though the incidence of a spontaneous breast infarction is very low and it has no specif-

ic radiologic features, it should be included in the differential diagnoses of women with a recent history of pregnancy or lactation.

REFERENCES

- Oh HJ, Kim SH, Kang BJ, Lee AW, Song BJ, Kim HS, et al. Ultrasonographic features of spontaneous breast tumor infarction. *Breast Cancer* 2014 Mar 15 [Epub]. <http://dx.doi.org/10.1007/s12282-014-0525-3>
- Lucey JJ. Spontaneous infarction of the breast. *J Clin Pathol* 1975;28:937-943
- Raju GC, Naraynsingh V. Infarction of fibroadenoma of the breast. *J R Coll Surg Edinb* 1985;30:162-163
- Skenderi F, Krakonja F, Vranic S. Infarcted fibroadenoma of the breast: report of two new cases with review of the literature. *Diagn Pathol* 2013;8:38
- Behrndt VS, Barbakoff D, Askin FB, Brem RF. Infarcted lactating adenoma presenting as a rapidly enlarging breast mass. *AJR Am J Roentgenol* 1999;173:933-935
- Jimenez JF, Ryals RO, Cohen C. Spontaneous breast infarction associated with pregnancy presenting as a palpable mass. *J Surg Oncol* 1986;32:174-178
- Fowler CL. Spontaneous infarction of fibroadenoma in an adolescent girl. *Pediatr Radiol* 2004;34:988-990
- Deshpande KM, Deshpande AH, Raut WK, Lele VR, Bobhate SK. Diagnostic difficulties in spontaneous infarction of a fibroadenoma in an adolescent: case report. *Diagn Cytopathol* 2002;26:26-28

9. Greenberg ML, Middleton PD, Bilous AM. Infarcted intra-duct papilloma diagnosed by fine-needle biopsy: a cytologic, clinical, and mammographic pitfall. *Diagn Cytopathol* 1994;11:188-191; discussion 191-194
10. Pinto RG, Couto F, Mandreker S. Infarction after fine needle aspiration. A report of four cases. *Acta Cytol* 1996;40:739-741

과성장 유방조직의 자발적 괴사: 증례 보고

유은영 · 남상유* · 최혜영 · 홍민지

자발적 유방 괴사는 매우 드문 질환이다. 저자들은 임신과 수유와 관련하여 유방조직이 과성장(hyperplastic tissue)한 33세 여성에서 자발적 괴사(spontaneous infarction)로 진단된 1예의 영상 소견을 보고하고자 한다. 유방촬영술에서 난원형의 경계가 좋은 지방을 함유한 종괴로 보였고 석회화를 동반하였다. 초음파에서는 고에코성 점들을 동반한 난원형의 경계가 좋은 종괴로 보였으며, 색도플러에서 종괴의 주변부를 따라 혈관이 보였다.

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