



# Imaging Findings of Breast Metastasis from Squamous Cell Carcinoma of the Cervix: A Case Report

유방으로 전이된 자궁경부 편평상피암의  
영상의학적 소견: 증례 보고

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Metastasis from extramammary malignancy to the breast is rare, and metastasis of cervical cancer to the breast is quite uncommon. We report atypical sonographic findings of a rapid growing, single, and circumscribed mass with complex cystic and solid echo pattern in a 50-year-old female. The mass confirmed a metastasis from cervical cancer. It is rare, but the possibility of breast metastasis should be considered when a rapidly growing breast mass is located in between the parenchyma and subcutaneous fat layer.

**Index terms** Metastasis; Breast Neoplasms; Uterine Cervical Neoplasms; Ultrasonography

## INTRODUCTION

Metastasis of cervical cancer to the breast is quite uncommon (1-7). Differentiating metastatic breast cancers from benign breast tumors or primary breast cancers is difficult. Breast metastasis may occur years after a known primary cancer or it might be the first manifestation site of malignant disease (2, 8). However, it is important to diagnosis metastatic breast cancer from primary breast cancer, due to the treatment of patient is totally different (1, 2, 8, 9). Therefore, the possibility of metastasis to the breast should be considered in patients with primary malignancy in other organs. Histopathologic diagnosis should be performed (1).

We describe atypical radiologic findings of metastatic mass to the breast from cervical squamous cell carcinoma with pathology.

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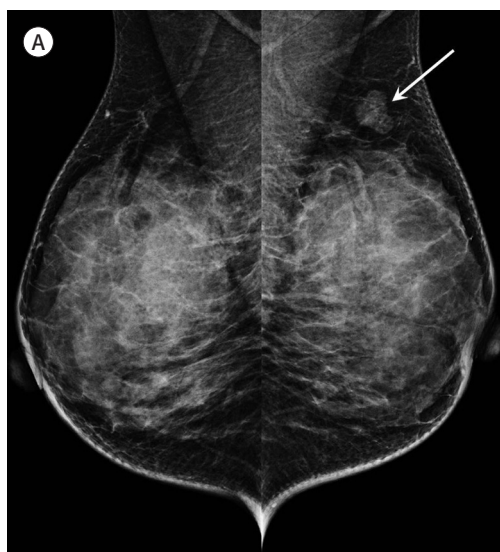
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## CASE REPORT

A 50-year-old woman was referred for examination of abnormal findings on mammography. The patient was diagnosed with invasive cervical squamous cell carcinoma by cervical punch biopsy at an outside hospital. She had a family history of maternal cervical cancer, but had no family history of breast cancer. In mammography, there was an asymmetry on the upper outer portion of left breast which showed an oval, circumscribed, equal-density mass (Fig. 1A). In ultrasonography, an oval, circumscribed, hypoechoic mass was noted at the subcutaneous fat layer approximately 1.76 cm in maximal diameter at the 2 o'clock position on the left breast that matched the asymmetry on the mammography, considered as probably benign mass [Breast Imaging Reporting and Data System (BI-RADS) category 3] (Fig. 1B).

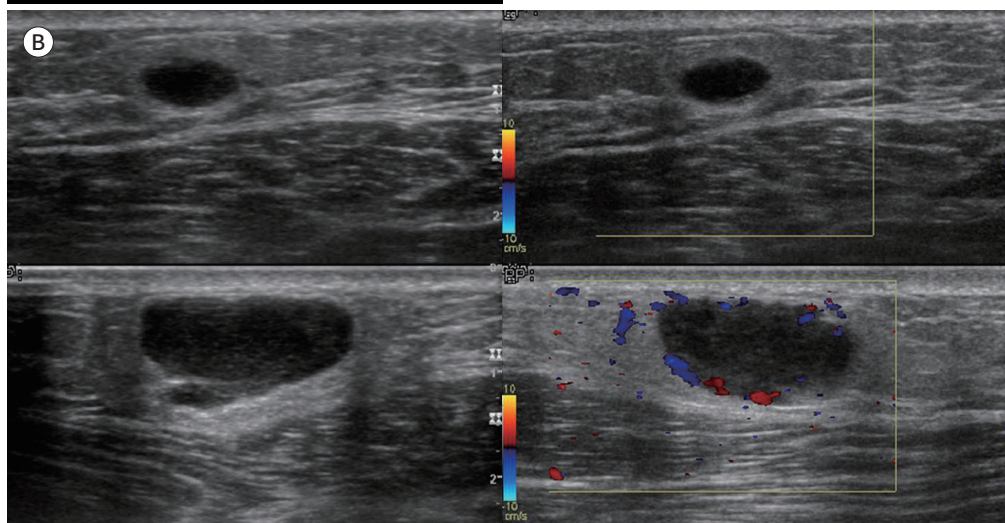
The patient underwent contrast-enhanced pelvic MRI, revealing irregular and heterogeneously enhancing cervical mass with necrotic areas had directly invading the rectum, upper vagina, and left ureter with a pelvic mass (Fig. 1C).



**Fig. 1.** A 50-year-old woman with breast metastasis from squamous cell carcinoma of cervix.

**A.** Mammogram shows an oval, circumscribed, and equal-density mass in the upper portion of the left breast (arrow).

**B.** An oval, circumscribed, hypoechoic mass is noted between the subcutaneous fat layer and parenchyma at the left breast on ultrasonography and no vascularity on color Doppler image (right upper and left upper panel,  $0.97 \times 0.49 \times 1.76$  cm). After 3 weeks, the mass is a larger, oval, circumscribed, complex cystic and solid mass with increased peripheral vascularity (left lower and right lower panel,  $2.14 \times 1.04 \times 2.41$  cm).



Positron emission tomography (PET) - computed tomography (CT) showed hypermetabolism of pelvic masses, lymph nodes at the left paraaortic and left subclavian areas, and a left breast mass (Fig. 1D). Therefore, the patient was diagnosed as having disseminated disease. Ultrasonography for core needle biopsy was done after about 3 weeks later because of exac-

**Fig. 1.** A 50-year-old woman with breast metastasis from squamous cell carcinoma of cervix.

**C.** Enhanced pelvic MRI shows heterogeneous enhancing mass (arrows) at the uterine cervix, invading rectum, upper vagina, and left ureter.

**D.** PET-CT scan shows a hypermetabolic mass at the uterine cervix, invading rectum, upper vagina, and left ureter. Peritoneal seeding nodules and metastatic lymphadenopathy at the left paraaortic and subclavian area are apparently disseminated disease. The breast mass shows hypermetabolism on the PET-CT scan.

U = uterus

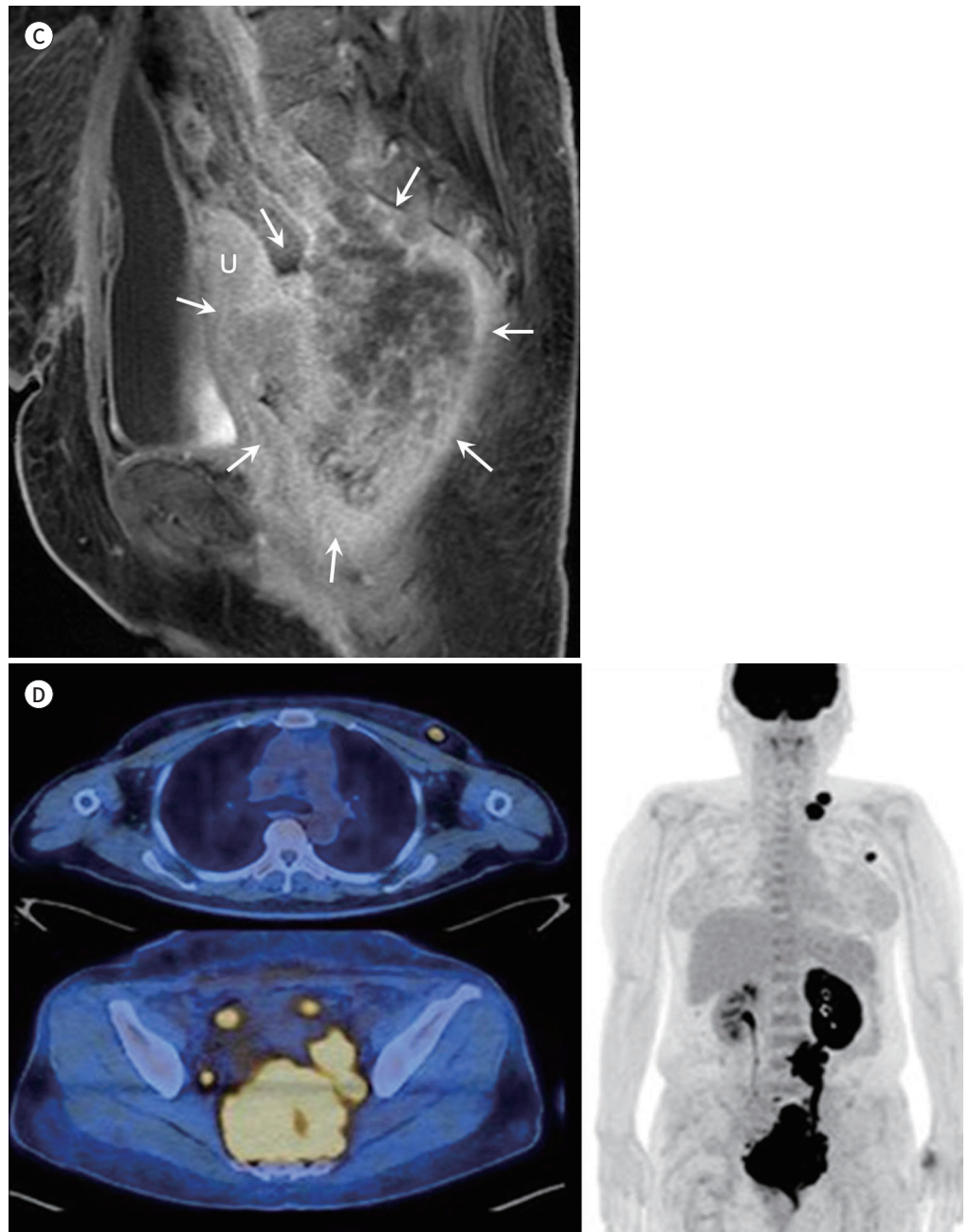
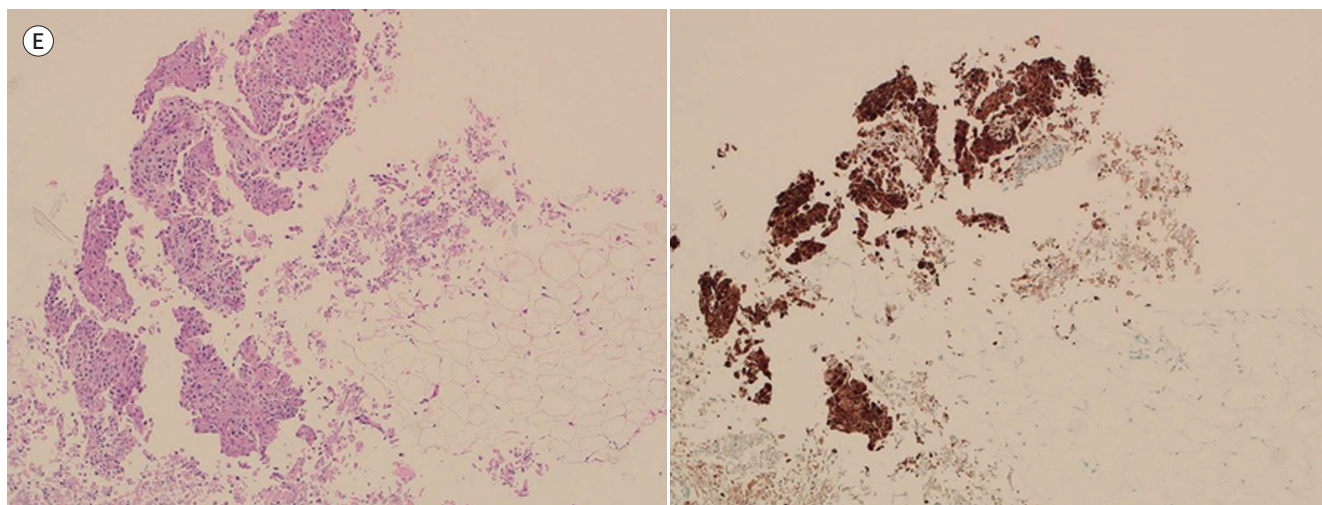




Fig. 1. A 50-year-old woman with breast metastasis from squamous cell carcinoma of cervix.

E. Histopathology shows infiltration of squamous cells to breast tissue (left panel, hematoxylin and eosin stain,  $\times 100$ ). These squamous cells are stained with p16 (right panel,  $\times 100$ ).



erbatation of the patient's general condition, such as by fever and generalized edema. On ultrasonography, the mass changed from hypoechoic mass to complex cystic and solid echo pattern and had grown to 2.41 cm in maximal diameter. On color Doppler study, there was increased vascularity around the rim of mass (Fig. 1B).

Immunohistochemical examination of breast specimen was diagnosed as metastatic squamous cell carcinoma from the cervical cancer (Fig. 1E). Despite palliative chemotherapy, the patient's condition had worsened and discharged for hospice care.

## DISCUSSION

Metastasis from extramammary malignancies to the breast is very rare. The breast metastases from other organ account for 0.5% to 1.3% (4, 6). According to the literature, the most common sources of extramammary metastases to the breast are lymphomas/leukemias and melanomas, followed by lung cancers, ovarian carcinomas, soft tissue sarcomas, renal cell carcinomas, and gastric cancers (1, 2, 4-9). Cervical cancer metastasizing to the breast is rare. So far, 39 cases of breast metastasis from cervical cancer have been reported. More than half of these are squamous cell carcinomas (1).

Metastatic breast cancers from extramammary malignancies have both hematogenous and lymphatic spreading routes. There are some common radiological features according to their routes (1, 4, 7). Typical image findings of lymphatic metastasis are skin thickening, obliteration of subcutaneous fat layer, and a thick trabecular pattern, along with dense and irregular stroma, which finding can be seen by ultrasonography and mammography (1, 4). In a patient with hematogenous metastasis, a round to oval mass, circumscribed or occasionally with ill-defined margins is a typical sonographic feature. The most common location of breast metastases is the upper outer quadrant. The mass may be located in superficial layer, including subcutaneous fat layer, or immediately adjacent to parenchyma (4, 6, 8). It is a clue towards a metastatic deposit that could be associated with a relatively rich blood supply (1,

8). Pathological confirmation is essential for patients with breast metastasis that are sometimes indistinguishable from primary breast cancer (3).

The typical sonographic echo pattern of hematogenous breast metastasis is hypoechogenicity and it is not common complex cystic and solid echo pattern (4). There was a few reports described about their unusual complex cystic and solid imaging features. Mun et al. (4) have reported rapidly growing, well- or microlobulated margined breast masses with some cystic components are metastasis from synovial sarcoma of the thigh, hepatocellular carcinoma, and insular carcinoma of the thyroid gland (4).

In our case, ultrasonography showed an oval, circumscribed, hypoechoic mass in the subcutaneous fat layer of the upper outer quadrant that can be considered to be probably benign mass, BI-RADS category 3. Other baseline image studies showed disseminated disease and the left breast mass showed hypermetabolism on PET-CT scan. This mass showed rapid growth from 1.76 cm to 2.41 cm in maximal diameter within 3 weeks and changed from hypoechoic mass to complex cystic and solid echo pattern. Therefore, the breast lesion was upgraded to BI-RADS category 4 (suspicious). These rapid growing tumors with cystic component are known to undergo intratumoral hemorrhagic change or necrosis with poor differentiation (1, 4).

In conclusion, the possibility of breast metastasis should be considered for patients with primary malignancy in other organs when a rapidly growing breast mass is located immediately adjacent to parenchyma and subcutaneous fat layer. Awareness of typical and atypical sonographic images of such lesions would be helpful, and a histopathological biopsy should be done in suspected cases for confirmation.

### Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

### Acknowledgments

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## 유방으로 전이된 자궁경부 편평상피암의 영상의학적 소견: 증례 보고

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전이성 유방암은 매우 드물며 전이성 유방암 중 자궁 경부암의 유방 전이는 매우 드물다. 저자들은 자궁경부암으로 진단된 50세 여자 환자의 유방 초음파에서 빠르게 자라는 복합 낭성 고형 에코를 보이는 경계가 좋은 단일 종괴가 전이성 유방암으로 확진된 비전형적인 초음파 소견을 보고하고자 한다. 드물지만 급속히 성장하는 유방 종양이 피하지방층이나 유선조직 사이에 있을 때 유방 전이의 가능성을 고려해야 한다.

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