

An Atypical Image Finding of Breast Sparganosis: A Case Report

Kyungran Ko, MD¹, Sung Won Kil, MD¹, Ji Soo Choi, MD¹, Hee Jung Suh, MD^{1,2},
Youngmee Kwon, MD³, Jae Yoon Ro, MD, PhD.^{3,4}, Suk Won Kim, MD⁵

¹Department of Diagnostic Radiology, Center for Breast Cancer, National Cancer Center

²Department of Diagnostic Radiology, Center for Cancer Prevention and Detection, National Cancer Center

³Department of Pathology, Center for Breast Cancer, National Cancer Center

⁴Department of Pathology, The Methodist Hospital, Weill Medical College of Cornell University, Houston, TX, USA

⁵Department of Surgery, Center for Breast Cancer, National Cancer Center

Sparganosis of the breast is rare and most cases have been reported from Korea and China. Typical radiologic findings of breast sparganosis have been described as elongated folded band- or tubular structures in both mammography and ultrasonography (US). A 69-year-old woman with a history of a surgery for right side lung cancer one year ago presented with a painless growing soft tissue mass in her left breast, and was transferred to the breast department with a clinical diagnosis of metastatic lung cancer to the breast. An 18F-fluorodeoxyglucose (FDG) positron emission tomography (PET)/CT showed a mildly increased uptake of the mass. Subsequent US revealed a relatively well circumscribed, heterogeneously high echoic mass at 2 o'clock site in her left breast. And the result of US-guided biopsy, however, demonstrated an abscess cavity containing sparganum. Although increased FDG-PET/CT uptakes in the breast are more frequently noted in the patients with malignancy as primary or metastasis, not all the increased uptake lesions are revealed to malignancies as seen in this case. US could be helpful in both diagnosis and biopsy, if necessary. Here we report a case of breast sparganosis with clinically unusual presentation that was associated with atypical image findings.

Index words: Sparganum; Sparganosis; Breast; Mammography; Ultrasound; PET-CT

Introduction

Sparganosis is a parasitic infestation that is caused by the sparganum, a plerocercoid larva of the tapeworm belonging to the genus *Spirometra*. While a carnivorous mammal such as a dog or cat is the final host, humans are an intermediate host. Humans accidentally acquire the sparganum either by drinking contaminated water

with infected cyclops or by eating raw frogs and snakes (1). The sparganum tends to mainly involve the subcutaneous tissue, and sometimes brain (2), and pleura (3). Because a sparganum tends to migrate within the subcutaneous tissue, a patient might complain of pain (4, 5). Accidentally ingested sparganum cannot mature in the abnormal host such as in humans, a larva tends to migrate to find suitable place to live. Due to this habit, known imaging finding of subcutaneous sparganosis is a mass with serpiginous or tubular structures.

Although breast sparganosis is a clinically rare parasitic disease, a few cases, particularly from Korea and China, have been reported (6-9). Typical imaging find-

Corresponding to: Suk Won Kim, M.D., Department of Surgery, Center for Breast Cancer, National Cancer Center, 323 Ilsan-ro, Ilsandong-gu, Goyang-si, Gyeonggi-do 410-769, Korea.
Tel. 82-31-920-1186 Fax. 82-31-920-1711 E-mail: kokr@ncc.re.kr

ings are elongated folded band- or tunnel-like hypoechoic tubular structures in heterogeneous hyperechoic masses sonographically.

Here we report a case of breast sparganosis which has an atypical imaging finding of oval mass and more confusingly this patient had a history of known lung cancer with interval growth. Therefore, an initial clinical diagnosis of metastatic lung cancer to the breast was made, but US-guided biopsy diagnosed sparganosis of the breast and a subsequent surgical excision was made.

Case Report

A 69-year-old woman was transferred from the center of lung cancer to the center of breast cancer for mild FDG PET/CT uptake (Fig. 1a) in her left breast. She had a history of a lung cancer of right lung and underwent right lower lobectomy about one year ago. The lung mass was 4.2 cm sized (T2) adenocarcinoma without invasion to surrounding visceral pleura and there was no regional lymph node metastasis. Follow up chest CT at 1 year post lobectomy showed a painless growing soft tissue mass in her left breast (Fig. 1b). Based on the clinical information and cross-sectional images, a metastasis was suspected.

For further evaluation, mammography was performed. On left upper outer quadrant, there was an about 1 cm sized mass which had round shaped, partly circumscribed and partly obscured margin, and equal density to the surrounding breast parenchyma (Fig. 1c). The mass did not have microcalcifications. Furthermore, an 18F-fluorodeoxyglucose (FDG)

positron emission tomography (PET)/CT showed a mildly increased uptake in the mass. To exclude the possibility of metastasis to the breast from the known lung cancer, US was performed which showed a relatively well circumscribed, heterogeneously high echoic mass at the 2 o'clock site of the left breast, 5 cm from the nipple (Fig. 1d). No blood flow was seen on the color Doppler US. Because of high echogenicity of the mass a benign nature was favored, however, the possibility of the breast metastasis in this case was not completely excluded. Therefore, US-guided biopsy was performed and a diagnosis of sparganosis was made. A subsequent surgical excision of the inflammatory mass with two viable larvae was performed (Fig. 1e).

She denied eating uncooked frogs or reptiles or drinking contaminated water. She had a good consciousness and nutritive condition, and routine hematological, urinary, and chemical investigations were within normal limit. No other lesion was observed on chest X-ray and no abnormal finding was found on brain MRI.

Discussion

Only a few cases of breast sparganosis with image findings have been reported in the literature. The common imaging findings include soft-tissue mass with serpiginous or tubular equal density on mammography and low echoic tubular structures on US (1, 6, 7, 9). These findings are the reflections of compact aggregated larvae and sometimes migrating tract. In addition to these findings, sparganosis can be confirmed if fine movement of the worm is observed during US (1). In

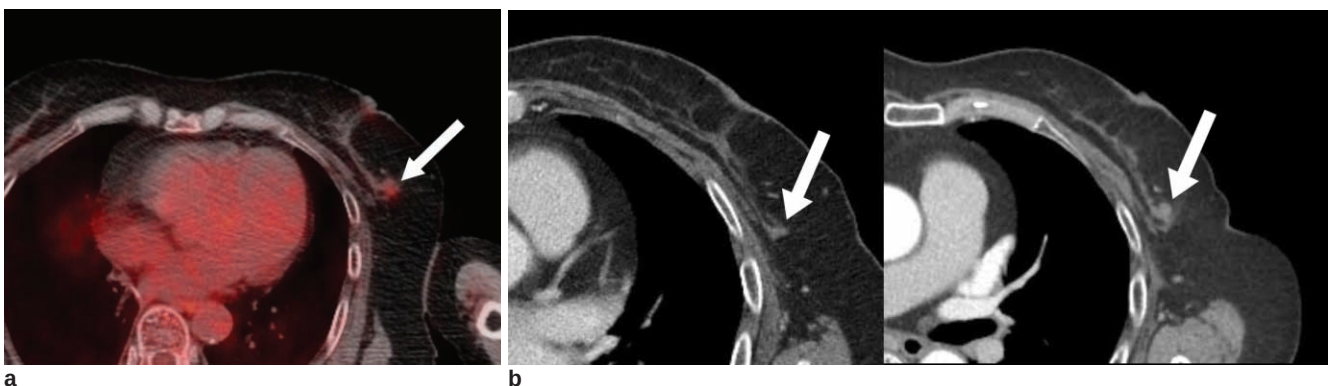


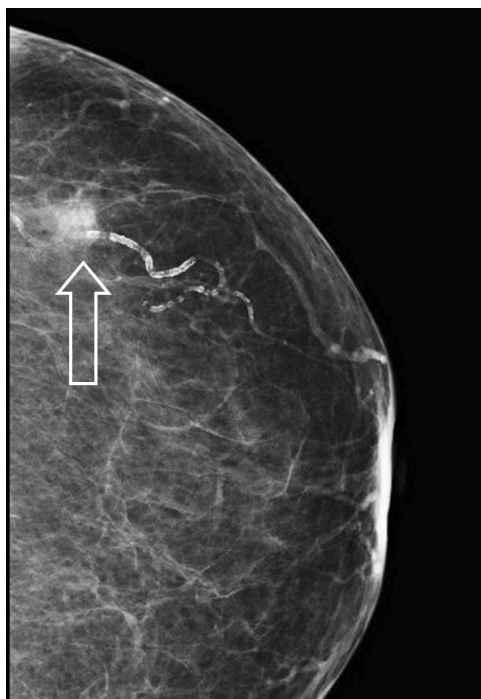
Fig. 1. a. FDG PET/CT scan shows mild uptake in left breast (white arrow).

b. CT images obtained at one year interval demonstrate slightly enlarged soft tissue mass (white arrows), which is compatible with PET-uptake site.

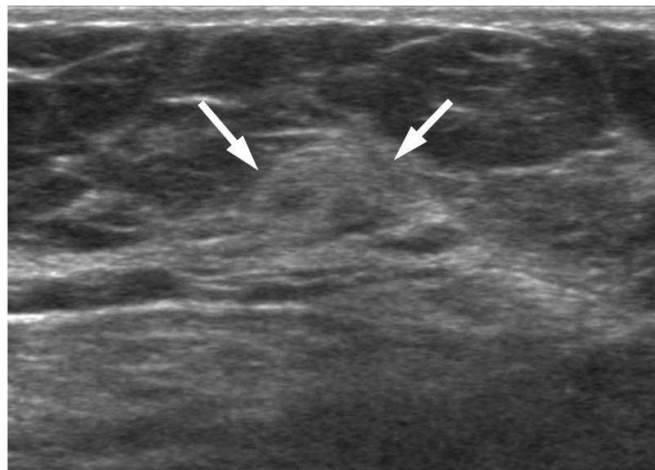
our case, image findings were not typical for breast sparganosis. The mammography showed a round equal dense mass without tubular structure and ultrasound

demonstrated a relatively circumscribed high echoic mass without internal hypoechoic tubular structures. In addition, this mass was enlarged during one year follow-up with mildly increased 18F-FDG PET/CT uptake that suspected a possibility of metastatic lung cancer to the breast in the patient with a known lung cancer and excluded a clinical suspicion of benign conditions including a possibility of breast sparganosis.

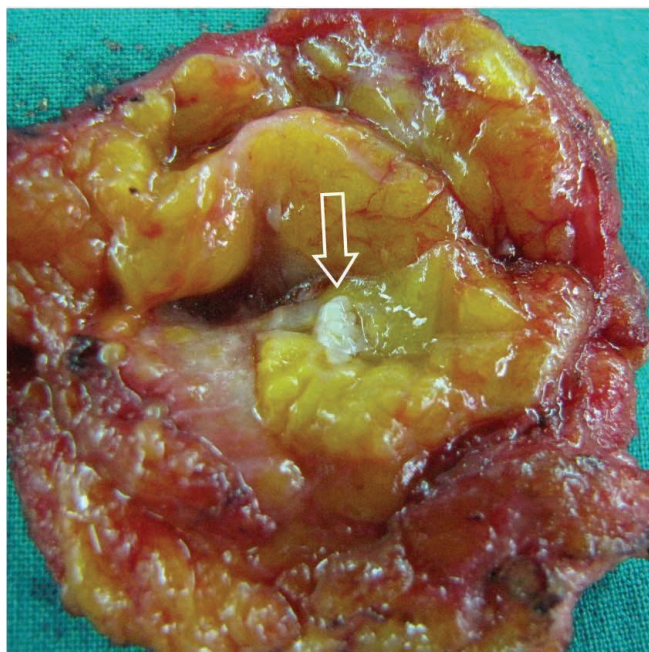
US is known to be useful in diagnosing the



c



d



e

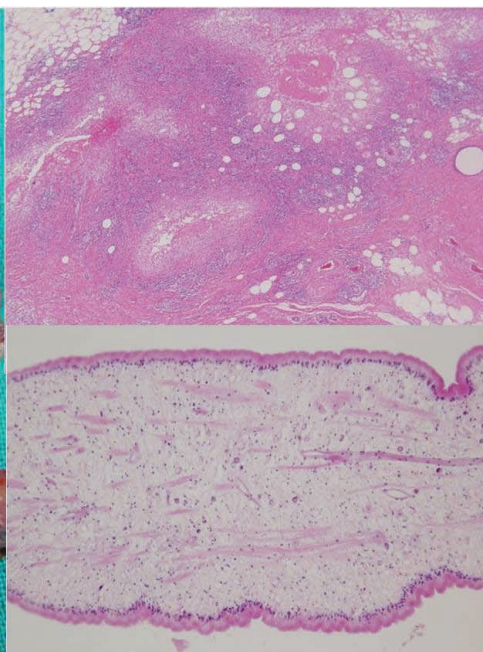


Fig. 1. c. On craniocaudal view of left mammography shows a partly circumscribed and partly obscured equal density mass at outer breast (hollow arrow). There are neither microcalcifications nor tubular structures. d. Ultrasound shows a relatively circumscribed high echoic mass at left breast (white arrows). e. The lump of the breast shows an ill-defined nodular lesion containing two white wrinkled aggregated parasite worms (left). The nodular lesion is composed of several empty tracts surrounded by dense inflammatory cell infiltrate including a few eosinophils and foreign body giant cells (right upper inlet). The parasite worm's (plerocercoid larvae) is also characterized by a stromal network of smooth muscle (right lower inlet).

sparganosis (1), but in our case, ultrasound was not helpful enough because of an atypical ultrasound feature as well as unusual clinical presentation with clinical history of lung cancer and growing. However, a subsequent US-guided biopsy was critical to render a correct diagnosis in our case.

In conclusion, a slow growing mass with soft tissue density in the breast with known primary malignancy is seen, differential diagnosis usually includes a metastasis from the known primary site or a second primary cancer of the breast. However, if the imaging findings are not typical to metastasis or primary breast cancer, such as a high echogenicity, the radiologist should consider the possibility of benign condition including breast sparganosis. Here we present a breast sparganosis with unusual clinical presentation and atypical imaging finding.

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유방 고충증의 비전형적 영상소견: 증례 보고

고경란¹ · 길성원¹ · 최지수¹ · 서희정^{1, 2} · 권영미³ · 노재윤^{3, 4} · 김석원⁵

¹국립암센터 유방암센터 영상의학과

²국립암센터 암예방검진센터

³국립암센터 유방암센터 병리과

⁴Cornell University Well 의과대학 Methodist Hospital 병리과

⁵국립암센터 유방암센터 외과

유방의 고충증은 드물며, 대부분의 증례가 한국과 중국 등 동아시아에서 보고되고 있다. 보고된 유방 고충증의 소견은 주로 길쭉하게 접힌 사행성의 구조물로 기술되어 있다. 1년전 우측 폐암으로 수술한 과거력의 69세 여성이 좌측 유방에 무통성의 만져지는 병변이 있었으며, 환자의 통상적인 추적검사를 위해 시행한 양전자 방사 단층촬영(이하 PET/CT)에서 이 부위에 약간의 흡수를 보이며 이전 컴퓨터 단층촬영(이하 CT)과 비교했을 때 크기가 커진 종괴가 있었다. 과거력과 임상소견으로 미루어 기 폐암의 유방으로의 전이가 의심되어 추가 검사를 위해 본과로 전원되었다. 유방촬영술에서는 좌측유방의 상외측에 둥근 모양을 가진 흐릿한 경계의 등 밀도의 종괴로 보였고, 초음파 검사에서는 비균질한 고에코의 종괴로 보였다. 곧 이어 이 병변에 대해 초음파 유도하 조직검사를 시행하였고, 고충을 포함하는 농양이 확진되었다. 암의 과거력이 있던 환자에서 PET/CT 검사에서 유방에 흡수가 보이고 크기가 커지는 경우 원발성 유방암이나 전이의 가능성을 먼저 생각해야 하고 다음으로 염증 등의 가능성을 생각해야 한다. 본 증례에서는 흡수가 정도가 크지는 않았지만 크기 변화가 있었다는 점에서 그 외의 다른 가능성을 주기는 어려웠다. 그러나 유방고충증의 증례가 우리나라를 포함하는 동아시아에서 주로 보고되고 있으므로 영상소견이 특징적이지 않더라도 그 가능성을 염두해 두는 것이 감별진단을 하는 데 있어 도움이 될 것으로 생각된다.

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