Case Report

INTRODUCTION

Rhabdomyosarcoma (RMS) is a common malignancy in the pediatric age group, and its primary sites of origin are usually the trunk, neck, orbit, retroperitoneal space, and the extremities (1). Distant metastasis from RMS at diagnosis is common in lungs, bone marrow, bones, and distant lymph nodes (2). However, RMS is very rare in adults, and breast metastasis from RMS is very rare, accounting for less than 1% of all breast malignancies (1). There are several reports of imaging findings of breast metastasis from RMS. Here, we report a case of breast metastasis from pleural rhabdomyosarcoma in a 21-year-old woman, presenting as diffuse non-mass involvement and edematous change without a nodular mass.

Index terms
Breast
Breast Neoplasms
Rhabdomyosarcoma
Metastasis

CASE REPORT

A 21-year-old woman presented to our breast unit with a palpable lump in the right breast. She had been diagnosed with alveolar RMS via pleural biopsy one week ago. On physical examination, there was a 60 mm-sized discrete palpable non-tender mass in the upper inner quadrant of the right breast. In the mammogram, global asymmetry with diffuse edematous change and enlarged ipsilateral axillary lymph nodes were observed (Fig. 1A). On US, there was a 56 mm-sized ill-defined hypoechoic lesion without discrete mass contour in the palpable site of the right breast (Fig. 1B). The lesion showed increased vascularity on Doppler US (Fig. 1C). A few enlarged lymph nodes with loss of fatty hilum were noted in levels I and II of the ipsilateral axilla (Fig. 1D). A 14 gauge US-guided core needle biopsy was performed for the palpable hypoechoic lesion of the right breast, and the lesion was confirmed as metastatic RMS. The tumor showed an infiltrative and solid growth pattern microscopically. Tumor cells had hyperchromatic nuclei and abundant cytoplasm (Fig. 1E). Immunohistochemical staining revealed diffuse positivity for desmin and negativity for anti-pan cytokeratin antibody (Fig. 1F).
Fig. 1. Breast metastasis from rhabdomyosarcoma in a 21-year-old female.
A. Mammogram reveals global asymmetry (empty arrow) with diffuse skin thickening (arrowheads) in the right breast and several enlarged lymph nodes in the right axilla (white arrow).
B, C. US reveals an ill-defined hypoechoic lesion (white arrow) with overlying skin thickening (black arrow) in the palpable site of the right breast. Increased vascularity around the lesion is demonstrated.
D. There are a few enlarged lymph nodes with loss of fatty hilum in the right axilla.
E. Microscopic section of the right breast mass. It shows diffuse growth pattern with small round cell composition. Tumor cells have hyperchromatic nuclei and abundant cytoplasm (arrowhead) (hematoxylin-eosin stain, × 400).
F. Tumor cells immunostained for desmin shows a strong reaction (arrow).
DISCUSSION

The breast is an uncommon site for metastasis from extrammary malignancies. In a report by Mun, common radiologic features according to the hematogenous or lymphatic metastasis routes are well known. In case of hematogenous metastasis, it is located superficially due to the need for rich vascularity. Single or multiple hypoechoic masses without calcifications or secondary skin or nipple changes are the most well known US findings. Axillary lymph node metastasis is not a common finding. Lymphatic metastasis to the breast shows diffuse trabecular thickening and dense stroma without a primary mass (3).

RMS is a common primary malignancy with aggressiveness in the pediatric age group. Breast metastasis from RMS is uncommon with an incidence of 6% (4). Most of the cases occur in adolescent females, and the most common primary site is the extremity. Breast metastasis from pleural RMS is extremely rare (5). The longest survival is known to be 16 months from the first diagnosis due to a poor prognosis (6).

Because breast metastasis of RMS is commonly occurred in young women, US is more suitable than mammogram for the initial diagnostic imaging modality. A few previous reports suggested that metastatic RMS commonly show solitary nodular lesion, and less common in diffuse involvement or multiple lesion (7). In a report by Ahn et al. (8), heterogeneous echo pattern with poor vascularity on US was reported. Yang et al. (9) reported diffuse nodular infiltration without normal breast architecture. In our case, however, there was an ill-defined hypoechoic lesion in the palpable site and adjacent diffuse edema in the affected breast on US with no typical imaging feature of metastatic RMS as solitary nodule or discrete mass. In addition, a round and high density mass was reported as a typical mammographic features of metastatic RMS in the breast (10). According to another rarely known reports, circumscribed oval shaped masses with irregular margins are reported (4). It is not common to find microcalcifications, spiculation, architectural distortion or skin thickening (10). However, we report global asymmetry and edematous change along the breast with axillary lymphadenopathy on a mammogram.

In summary, we reported an extremely rare case of breast metastasis from pleural RMS. Various imaging findings of metastatic RMS have been reported (4). However, our case showed another new imaging feature of metastatic RMS in the breast including an ill-defined hypoechoic lesion with adjacent breast edema. Our case report suggests that it is important to be aware of the possibility of breast metastasis in patients with primary RMS although there is no typical discrete mass lesion on US. If there is an ill-defined hypoechoic lesion in the symptomatic area of the breast, pathologic confirmation should be performed to exclude the possibility of breast metastasis in a patient with primary RMS.

REFERENCES

횡문근육종 유방 전이의 특이적 영상소견

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횡문근육종은 소아연령에서 주로 나타나고 몸통, 목, 사지 등에서 발생한다. 유방으로의 횡문근육종 전이는 매우 드문 것으로 알려져 있다. 지금까지 연구들은 횡문근육종 유방전이의 유방촬영술 소견은 불규칙한 경계를 갖는 타원형의 종괴로, 초음파 소견은 고립된 결절형 병변으로 보고하였다. 저자들은 기존에 보고된 소견들과는 달리 비종괴형 병변과 부종을 보인 21세 횡문근육종 유방전이 여자 환자를 경험하였기에 보고하는 바이다.

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