Fibroadenoma of the axillary accessory breast: diagnostic value of dynamic magnetic resonance imaging

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Abstract Accessory breast is synonymous with polymastia or supernumerary breast tissue. An accessory breast without a nipple or areola is rare. We report a case of fibroadenoma of an accessory breast with no nipple or areola in a 41-year-old woman who presented with a right axillary mass associated with five small nodules in the normally situated breast. Magnetic resonance imaging (MRI) showed the accessory breast surrounding the tumor. We ignored the presence of the component surrounding the mass and made a preoperative diagnosis of an axillary mass of possible metastases from multiple breast cancers or breast cancer of unknown origin associated with multiple breast fibroadenomas. From a retrospective view, based on the histological results, MRI and dynamic MRI demonstrated a tiny component of breast-like tissue surrounding the axillary mass and an enhancement pattern typical of fibroadenoma for the axillary mass. For the later diagnosis of the axillary mass, the interpretation whether the component of breast tissue surrounding the axillary mass was present is crucial. If the component exists, a tumor that originated from the accessory breast should be foremost in the differential diagnosis. Dynamic MRI appears to contribute to the diagnosis of fibroadenoma of an accessory breast before biopsy or surgical resection.

Key words Magnetic resonance imaging · Fibroadenoma · Accessory breast · Supernumerary breast

Introduction

At 5 weeks' gestation, primitive mammary ridges are formed bilaterally in the embryo along the milk line, extending from the axilla to the inner thigh. They disappear soon afterward, except the pair on the anterior chest, which develop into normal breasts. Accessory breasts are therefore considered to be a remnant of embryonic mammary tissue. They are most commonly present along the embryonic milk line but may occur in the sternal, infraclavicular, or epigastric areas as ectopic breast tissue. According to Iwai, the frequency of accessory breast was 5.19% in females and 1.68% in males. The axilla is the most common site, accounting for approximately 60%–70% of accessory breasts. These data, however, are based on the presence of a nipple or areola. Accessory breast without a nipple or areola is difficult to diagnose before biopsy or surgical resection. When an axillary mass is noted, the differential diagnosis commonly includes lymphadenopathy, lymph node metastasis, malignant lymphoma, and lipoma or apocrine gland tumor. We contend that despite its rarity an accessory breast should also be listed. We present a rare case of fibroadenoma of an axillary accessory breast, together with a review of previously reported cases. We also describe the usefulness of dynamic magnetic resonance imaging (MRI) for diagnosing this condition.
Case report

A 41-year-old woman noticed a palpable mass associated with tension in the right axilla in November 2005. The family doctor surveyed both axillae and breasts using mammography and ultrasonography (US). The findings were consistent with five probable fibroadenomas in the lateral segments of the bilateral normal breasts and lymphadenopathy with possible malignancy in the right axillary region. The patient was advised to undergo surgical resection of the enlarged lymph node and attended our hospital for a second opinion in May 2006.

Her mother had died from breast cancer. The patient’s obstetric history included one normal delivery and one abortion during her twenties. Laboratory data were unremarkable. Mammography showed the axillary mass with no calcification. US of the right axilla demonstrated a hypoechoic mass measuring 38 mm in longitudinal dimension with distinct margins.

Breast MRI was conducted on a 1.5-MR unit (Magnetom Symphony; Siemens, Erlangen, Germany) with commercially available breast coils. The protocol included precontrast and dynamic contrast imaging based on the methods of Buadu et al. Dynamic MRI scans were obtained sequentially at intervals of 1, 2, and 6 min. For the dynamic MRI, gadopentetate dimeglumine (Gd, Magnevist; Schering, Berlin, Germany) was administered intravenously at a rate of 1 ml/s (total dose 0.1 mmol/kg) using an automatic power injector, followed by a 10-ml saline flush. MRI of the right axillary mass revealed low signal intensity on T1-weighted images (T1WI) and inhomogeneous high signal intensity including low signal intensity of septum-like structures on fat suppression T2-weighted images (T2WI). On T1WI and T2WI, a tiny soft tissue component whose signal intensity was similar to that of the breast gland was seen to surround the right axillary mass (Fig. 1). The early phase of dynamic MRI showed rapid contrast uptake in most of the mass except for the internal septum-like structures. A delayed rise in enhancement, including the septum-like structures, was observed in the delayed phase (Fig. 2). The enhancement pattern of the tiny component surrounding the axillary mass was similar to that of the normally situated breast tissue. Breast US and MRI revealed two masses of 12 × 10 mm and 12 × 8.5 mm, respectively, in the right breast and three masses of <10 mm diameter each in the left breast. These masses had appearances similar to that of the right axillary mass on US, T1WI, suppression T2WI, and Gd enhancement.

Despite the MRI findings of a possible benign nodule, the preoperative differential diagnosis of the axillary mass on MRI was as follows: lymph node metastasis from possible multiple breast cancer or breast cancer of unknown origin with multiple fibroadenomas, malignant lymphoma, and reactive lymphadenopathy. Furthermore, we ignored the presence of the component surrounding the mass. The patient underwent tentative surgical resection of the right axillary mass because of possible malignancy.

Histological examination showed proliferation of connective tissue with an adenoma component of single or fused glandular ducts (with no lymph nodes involved), yielding a diagnosis of fibroadenoma (Fig. 3). The presence of connective tissue corresponded to the inner septum-like structures demonstrated on dynamic MRI and T2WI. The surrounding accessory breast tissue was