



Review Articles

Extra-mammary findings on breast MRI: a pictorial review



Norna L. Karp, Elissa R. Price*, Dorota J. Wisner, C. Belinda Chang, Nola M. Hylton, Bonnie N. Joe

University of California, 1600 Divisadero, Room C-250, San Francisco, CA, 94115

ARTICLE INFO

Article history:

Received 6 November 2013

Received in revised form 22 December 2014

Accepted 22 January 2015

Keywords:

Breast

Magnetic resonance imaging

Incidental

Extra-mammary

ABSTRACT

Recent improvements in breast coil performance have made detection of extra-mammary findings increasingly common. Some of these findings have important clinical implications. The radiologist should be aware of the spectrum of extra-mammary pathologies found on breast magnetic resonance imaging (MRI) and be able to distinguish clinically significant findings from those that are inconsequential. The purpose of this essay is to demonstrate various common and uncommon extra-mammary findings encountered while interpreting breast MRI and to detail appropriate management recommendations.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

Magnetic resonance imaging (MRI) has become a powerful tool in breast imaging. Although breast MRI is usually confined to a small field of view and is mainly focused on assessing the mammary glands, pectoralis muscles, skin, and locoregional nodal basins, other visible structures include portions of the lungs, mediastinum, chest wall, spine, and upper abdomen. With recent improvements in breast coil performance and the shift to bilateral axial imaging, detection of findings in such extra-mammary locations has become increasingly common. Some of these findings have important clinical implications, both in patients with known breast cancer and in those undergoing screening MRI [1]. The radiologist should be aware of the spectrum of extra-mammary findings found on breast MRI and be able to distinguish findings that are clinically significant from those that are benign and incidental [2]. The purpose of this pictorial essay is to demonstrate common and uncommon extra-mammary findings encountered while interpreting breast MRI in our daily practice and to detail appropriate management recommendations.

2. Discussion

It is useful for radiologists to have an approach to extra-mammary findings on breast MRI; structures to review include the bony thorax and spine, soft tissues of the chest wall, mediastinum, lung, vascular structures, and the upper abdomen. While reviewing these structures, it is helpful to keep the patient context in mind. Women with breast

cancer are at particular risk for metastatic disease, infection, and vascular thromboses. In addition, women with breast cancer can develop benign processes related to treatment for breast cancer, such as hepatic pseudocirrhosis. Also, women in this patient cohort may carry genetic predispositions to develop other malignancies (such as ovarian cancer). Evidence of these pathologies should be specifically sought during the extra-mammary review.

2.1. Extra-mammary findings that should be specifically conveyed to the referring clinician

Patients with breast cancer are commonly treated with chemotherapy and frequently undergo port-a-catheter placement to assist in treatment administration. Chemotherapy, the presence of a central venous catheter, and the hypercoagulable state of malignancy all increase the risk of central venous thrombosis. The annual incidence of venous thrombosis in a cohort of cancer patients is approximately 1 in 200 [3]. Heit et al. have demonstrated that malignancy alone is associated with a 4.1-fold risk of thrombosis, whereas chemotherapy increases the risk 6.5-fold [4]. Therefore, the vascular structures should be carefully evaluated for evidence of thrombosis when reviewing breast MRI in this setting.

Case 1: 40-year-old female with breast cancer and a recently placed port-a-catheter undergoes MRI to assess response to neoadjuvant chemotherapy and incidentally noted are findings compatible with brachiocephalic vein thrombosis (Fig. 1a and b). As in this patient, most cases of central venous catheter-related venous thrombosis are asymptomatic. Symptomatic patients can present with pain, erythema, edema, and/or visible collateral circulation[5]. Possible central venous thrombosis is a significant finding to communicate to the referring clinician. As there are no randomized controlled trials evaluating treatment

* Corresponding author.

E-mail address: elissa.price@ucsf.edu (E.R. Price).

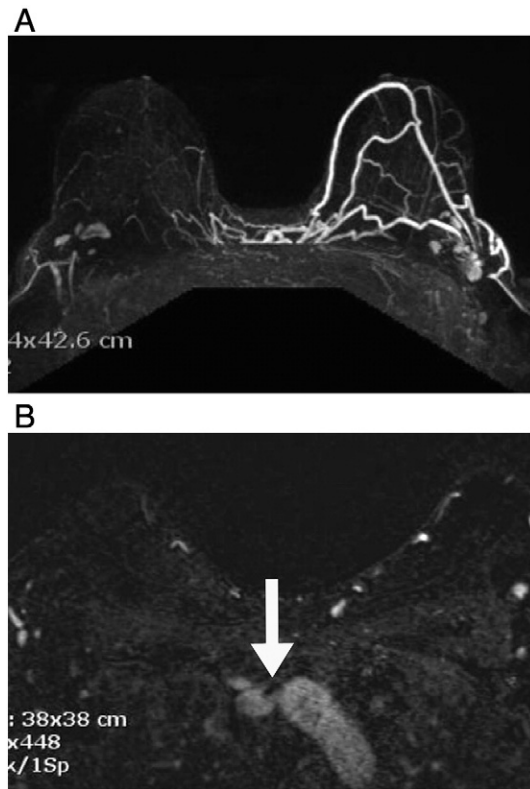


Fig. 1. Brachiocephalic vein thrombosis. (1a) Subtraction maximum intensity projection image demonstrates multiple collateral vessels throughout the left breast, new since the prior study that was obtained at the time of diagnosis. (1b) Subtraction T1 fat-saturated postcontrast image demonstrates signal void from the catheter (arrow) entering the superior vena cava. There is no contrast opacification of the left brachiocephalic vein (bcv). Nonopacification of the left bcv and diffuse new collateralization of the left breast raise concern for bcv thrombosis, which was confirmed on ultrasound.

options, treatment of catheter-related thrombosis is controversial. However, in most cohort studies, patients undergo anticoagulation. The necessity to remove the catheter depends on the need for vascular access and the underlying diagnosis[5].

In addition to venous thrombosis, chemotherapy can also lead to the development of pseudocirrhosis. This benign condition is typically seen in breast cancer patients with liver metastases treated with chemotherapy. The radiographic features of pseudocirrhosis are similar to liver cirrhosis: hepatic surface nodularity, decreased liver size, and enlargement of the caudate lobe [6]. Evidence of portal hypertension such as ascites, splenomegaly, and varices can also be seen in both conditions [6].

Case 2: 62-year-old woman undergoes screening MRI. Incidentally detected are a nodular shrunken liver, splenomegaly, and varices (Fig. 2a and b). Top differential considerations include cirrhosis, treated lymphoma, Budd-Chiari, and sarcoidosis. In this case, the patient does not have a history of breast cancer but her chart does reveal a known diagnosis of hepatic cirrhosis secondary to Wilson's disease. Wilson's disease is an autosomal recessive disorder of copper transport[7]. Prominent clinical features include neurological/psychiatric and hepatic symptoms[7]. Treatment is chelation therapy, aimed at removing excess copper from the body[8]. Without a known history of cirrhosis or treated liver metastases, it is important to notify the referring clinician of these findings.

It is also important to evaluate for evidence of metastatic disease in women with breast cancer. Distant metastases are present in 5–10% of women with breast cancer at the time of diagnosis, and a significant proportion of patients with only local disease at diagnosis ultimately develop metastatic disease [9]. The presence of metastatic disease can

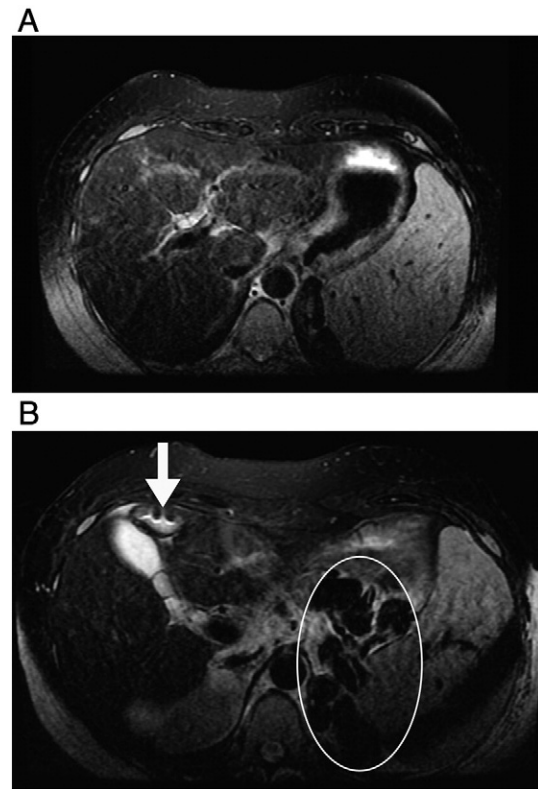


Fig. 2. Wilson's disease and cholelithiasis. (2a) T2 fat-saturated images demonstrate a nodular shrunken liver and splenomegaly. (2b) Large varices (circle) from a splenorenal shunt are also present. Cholelithiasis noted (arrow).

dramatically alter prognosis, with the 5-year survival rate dropping from 72–100% in patients without distant metastases to 22% in patients with distant metastases [10]. Therefore, detecting metastases not only affects treatment strategies but also helps patients, oncologists, and surgeons set appropriate goals and expectations. The most common sites of metastases are bone, lung, and liver [11]; thus, particular attention should be paid to evaluating these anatomic structures.

Case 3: 36-year-old female with invasive ductal carcinoma. Breast MRI obtained for extent of disease evaluation demonstrates a T2 hyperintense, markedly enhancing sternal lesion (Fig. 3a–c). The appearance is highly concerning for a metastasis, which would substantially change the staging of this patient. Therefore, this is an important extra-mammary finding and the referring clinician should be contacted. Follow-up PET-CT showed diffuse bony lesions consistent with metastases.

Case 4: 39-year-old female with invasive ductal carcinoma obtains breast MRI for extent of disease evaluation. Incidentally detected is an enhancing, T2 hyperintense mass abutting the left anterolateral chest wall (Fig. 4a–c). Diagnostic considerations include metastasis and sarcoma. Therefore, this is an important extra-mammary finding and the referring clinician should be contacted. Cytopathology from fine needle aspiration demonstrates nodular fasciitis. Nodular fasciitis is a benign mesenchymal neoplasm that often begins as a rapidly growing subcutaneous mass[12]. Although the upper extremities are the most common site, nodules may arise from the subcutaneous tissue, muscle, or fascia at any location[13]. The clinical presentation and radiologic appearance can mimic sarcoma[12,14], and surgical excision is the mainstay of treatment[14].

Case 5: 40-year-old patient with invasive ductal carcinoma who is incidentally found to have a lung lesion on breast MRI (Fig. 5a). Top differential diagnostic considerations include metastasis, infection, and lung cancer[15]. The finding should be discussed with the referring clinician and additional evaluation with dedicated site-specific imaging or general imaging with CT or PET-CT recommended. CT confirms a cavitary

Download English Version:

<https://daneshyari.com/en/article/4221144>

Download Persian Version:

<https://daneshyari.com/article/4221144>

[Daneshyari.com](https://daneshyari.com)