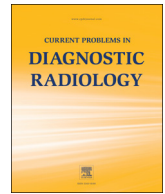




Current Problems in Diagnostic Radiology

journal homepage: www.cpdjournal.com



Spectrum of Pregnancy- and Lactation-related Benign Breast Findings



Scott Parker, MD^{a,*}, Megan Saettele, MD^b, Matthew Morgan, MD^a, Matthew Stein, MD^a, Nicole Winkler, MD^a

^a Department of Radiology and Imaging Sciences, Huntsman Cancer Institute, University of Utah, Salt Lake City, UT

^b Department of Radiology, Saint Luke's Hospital Breast Center, Kansas City, MO

Introduction: Extensive physiologic changes occur in the breasts during pregnancy and lactation. Additionally, several specific benign lesions are also common in pregnant and lactating patients. These changes and lesions have characteristic imaging appearances and findings.

Objective: This article provides an image-rich educational review of typical and atypical benign imaging findings in pregnant and lactating patients. The discussion also includes basic imaging protocol considerations and explores management options.

Conclusion: An understanding of the typical and atypical imaging appearance of physiological changes and specific benign lesions occurring in pregnancy and lactation is essential for appropriate patient care and management.

© 2017 Elsevier Inc. All rights reserved.

Background

The breast is a dynamic organ that undergoes substantial changes throughout a woman's life. Extensive changes are manifested during pregnancy and lactation that makes evaluation of the breast challenging in these gravid and postpartum patients. This article provides imaging protocol considerations for pregnant or lactating patients, reviews the benign physiological changes that occur during pregnancy and lactation, and discusses several associated specific benign breast abnormalities.

Imaging Considerations

Ultrasound (US) should be initially performed in pregnant or lactating patients presenting for breast imaging. US is an excellent modality to provide quick, real-time diagnostic information with no radiation exposure. The proliferation of breast tissue during pregnancy leads to a general hypoechoic appearance on US.¹ Although in lactating patients, the breast tissue generally appears hyperechoic with increased vascularity and prominent ducts.^{1,2} The sensitivity of US for breast masses during lactation and pregnancy is reported to be from 87%–100%.^{2,3}

Mammography has a limited role and should be reserved for abnormalities that are unclear or suspected to be malignant after US. Mammograms are often less useful because breasts show diffuse increase in glandular density that often obscure lesions. When indicated, mammograms are generally considered safe during pregnancy. Only the necessary views should be obtained and lead abdominal shielding should be offered to pregnant patients. The

standard craniocaudal and mediolateral oblique projections of both breasts with abdominal shielding delivers an approximate dose of 0.004 Gy to the fetus, less than 100 times below a dose concerning for fetal malformations.^{4,5} Two specific situations where mammography may be helpful are lesions suspicious for malignancy or lesions suspected to contain fat. In these situations a skin marker should be placed over the palpable or US finding and tangential view obtained. When mammographic features are characteristically benign, a definitive BI-RADS 2 diagnosis can be given and therefore mammography should be considered as part of the work up to eliminate follow-up and biopsies.

Breast magnetic resonance imaging (MRI) is generally not performed for pregnant patients as the required gadolinium is contraindicated in pregnancy. Gadolinium crosses the placenta and has been shown to retard fetal growth in animal studies when administered in high doses.^{4,5} Gadolinium can be given to lactating women and they do not need to suspend breastfeeding according to the American College of Radiology (ACR).³ However, MRI has a limited role in lactating patients secondary to the markedly increased vascularity and background enhancement, which significantly reduces the sensitivity of MRI. Breast MRI can be performed if needed for recent diagnosis of malignancy in these patients. For patients undergoing high-risk screening MRI, we recommend delaying the MRI for at least 6 weeks after cessation of lactation, though there are no evidence-based recommendations. For patients with known genetic mutations such as BRCA 1 or 2 and Li-Fraumeni that want to pursue screening, but plan to continue breastfeeding, MRI may be considered.

Physiological Changes of the Breasts

Extensive anatomical and physiological changes occur in the breasts during pregnancy and lactation. In pregnancy, rising levels of estrogen cause vascular proliferation, increased blood flow, and

* Reprint requests: Scott Parker, MD, Huntsman Cancer Institute, University of Utah, 30 N 1900 E 1A071, Salt Lake City, UT 84132.

E-mail address: scottjparker@gmail.com (S. Parker).

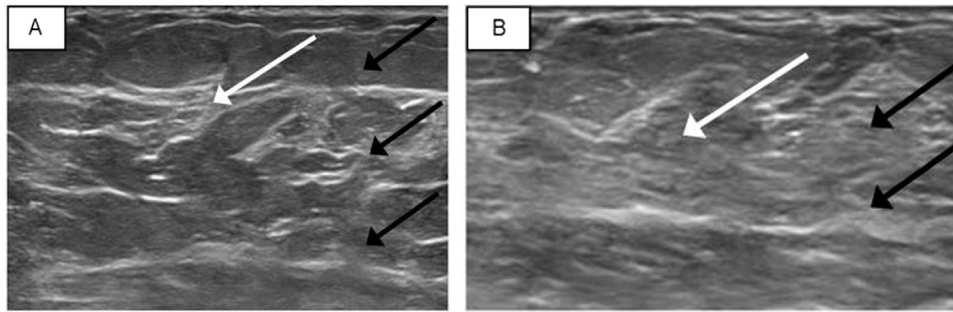


Fig. 1. Breast tissue in pregnancy on US. (A) Breast tissue may not change at all, for example, this pregnant patient at 24 weeks gestation with preserved fibroglandular (white arrow) and parenchymal architecture (black arrows). (B) Alternatively, benign changes including expanded fibroglandular tissue (white arrow) and indistinct architecture (black arrows) with mixed echogenicity are seen in this pregnant patient at 24 weeks gestation.

Table

Summary table. Overview of physiological changes and benign lesions in pregnancy and lactation

Condition	Signs and symptoms	Typical imaging	Atypical imaging	Management consideration
Physiological changes	Increased breast size with or without tenderness	Expanded mixed echogenicity of fibroglandular tissue with increased vascularity and increased density	Unilateral or markedly asymmetric changes, or clogged engorged ducts	BI-RADS 2, clinical management
Galactocele	Painless palpable mass in lactating women	Cyst with a fat-fluid level or complex fluid but no internal Doppler flow	Solid appearing mixed echogenic mass	BI-RADS 2 if uncomplicated, aspiration for symptomatic relief, diagnostic uncertainty, or concern for abscess
Fibroadenoma	New or enlarging painless, firm, mobile, and rubbery mass	Unchanging solid circumscribed mass, or slight increase size and echogenicity	Lactational change with marked increase echogenicity or cystic change and overall size increase or both	BI-RADS 3, short-term follow-up, biopsy depending on the presence of concerning features
Lactating adenoma	Painless, soft, and compressible palpable mass	Hypervascular, solid, and circumscribed mass	Large bilateral hypoechoic mass or mixed cystic and solid mass	BI-RADS 3, short-term follow-up, should regress, biopsy if concerning features
Mastitis and abscess	Tender, edematous, erythematous breast, with systemic symptoms	Dermal thickening and edema with an irregular thick-walled fluid collection	Mixed solid and cystic mass or a solid appearing mass with surrounding increased vascularity	Aspiration for culture and sensitivities followed by appropriate antibiotics or core biopsy if fluid cannot be aspirated

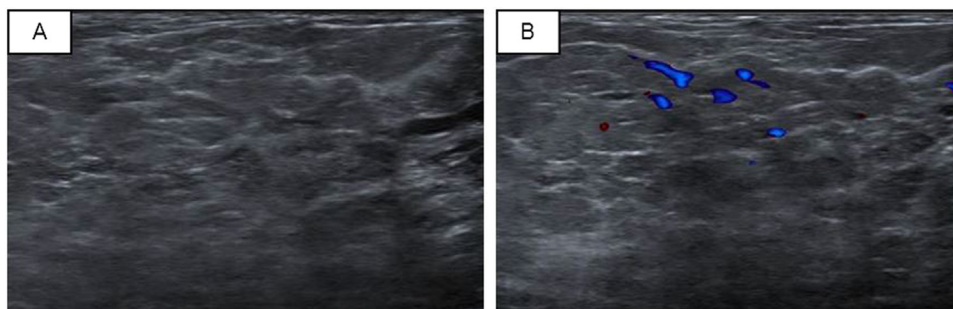


Fig. 2. Breast tissue in lactation on US. A 35-year-old lactating woman with normal lactation changes on US. (A) Diffuse mixed echogenicity of the fibroglandular tissue. (B) Global increased vascularity due to increased blood flow. (Color version of figure is available online.)

new duct formation and branching. Progesterone dominates later in pregnancy and induces lobular hyperplasia and involution of the breast's fibrofatty tissue.⁶ Histologically, this manifests as rapid proliferation of luminal cells and increased number of lobules followed by distension of acini with colostrum. On US these changes are manifest by expanded mixed echogenic fibroglandular tissue and disruption of the layered architecture, but are variable depending on patient and fetal gestational age (Fig 1). Mammography is not typically performed on pregnant patients, but would show increased density starting in the later first trimester (Table).

In lactation, the hormone prolactin dominates and is responsible for milk production.³ Histologically, this results in dilated

acini within terminal ductal lobular units. Typical sonographic changes include a frothy appearing echogenic fibroglandular tissue with increased vascularity on color Doppler and an enlarged subareolar ducts (Fig 2). Mammograms of lactating women demonstrate markedly increased breast size and density, beyond that of pregnancy (Fig 3). On MRI typical changes consist of bilateral overall increased vascularity and marked parenchymal enhancement, dilated fluid-filled ducts, and diffusely increased T2 signal within fibroglandular tissue related to fluid (Fig 4).

Palpable axillary enlargement may occur in both pregnant and lactating patients with accessory axillary breast tissue due to hormonal stimulation. This may be unilateral or bilateral and can wax and wane with engorgement (Fig 5).

Download English Version:

<https://daneshyari.com/en/article/5725882>

Download Persian Version:

<https://daneshyari.com/article/5725882>

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