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Transient ipsilateral breast edema following COVID-19 vaccination

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ABSTRACT

While ipsilateral lymphadenopathy following COVID-19 vaccination is a relatively common finding on mammography and breast ultrasound transient ipsilateral breast edema is rare with only a few published case reports. Radiologists should be aware of this potential imaging appearance of the breast and axilla following COVID-19 vaccination given the imaging features of edema such as trabecular thickening, skin thickening, and increased echogenicity can overlap with benign and malignant breast conditions such as mastitis and inflammatory breast cancer. We describe a case of transient ipsilateral breast edema after COVID-19 vaccination followed by a discussion summarizing the current understanding and management of transient ipsilateral breast edema following COVID-19 vaccination.

While ipsilateral lymphadenopathy following COVID-19 vaccination is a relatively common finding on mammography and breast ultrasound,[1,2] transient ipsilateral breast edema is rare with only a few published case reports. Radiologists should be aware of this potential imaging appearance of the breast and axilla following COVID-19 vaccination given the imaging features of edema such as trabecular thickening, skin thickening, and increased echogenicity can overlap with benign and malignant breast conditions such as mastitis and inflammatory breast cancer. We describe a case of transient ipsilateral breast edema after COVID-19 vaccination followed by a discussion summarizing the current understanding and management of transient ipsilateral breast edema following COVID-19 vaccination.

1. Case

A 60-year-old asymptomatic woman presented for screening mammography two days after receiving the 2nd booster dose of the Moderna COVID-19 vaccination in the left deltoid. Screening mammography demonstrated a new global asymmetry in the left axillary region, comprised of trabecular thickening, suggestive of edema (Fig. 1). Concurrent whole breast screening ultrasound demonstrated diffuse increased echogenicity of the axillary adipose tissue, corresponding to the mammographic asymmetry. Prominent left axillary lymph nodes were also visualized with diffuse cortical thickening measuring up to 0.6 cm (Fig. 2). Although the findings were thought to be likely inflammatory in response to recent ipsilateral vaccination, the screening mammogram and ultrasound exams were assessed as incomplete (BI-RADS 0) with the need for additional diagnostic imaging. The patient returned for diagnostic evaluation approximately 13 days later, at which point the mammographic and sonographic findings had resolved, including the lymphadenopathy (Figs. 1 and 2). At the time of diagnostic evaluation, the patient disclosed that, in retrospect, she had a palpable fullness and tenderness in her left axilla at the time of screening.

2. Discussion

Transient ipsilateral breast edema is a rare but known phenomenon following COVID-19 vaccination. It appears to be unique to COVID-19 vaccination, unlike ipsilateral lymphadenopathy which has been reported with the influenza, human papillomavirus, and bacilli Calmette-Guerin vaccines.[3] Pfizer-BioNTech and Moderna COVID-19 vaccines are novel in their use of messenger RNA, which is highly immunogenic and known to lead to local and systemic side effects.[3] Local inflammation and injection site edema in the deltoid muscle from these vaccines has been documented on MRI as hyperintense T2 and STIR signal.[3] The etiology of the edematous changes is likely due to increased capillary leak and/or poor lymphatic drainage.[4] Imaging features include trabecular thickening, skin thickening, increased echogenicity, and subtle haziness of the adipose tissue.[3,5,6] These local edematous changes can present as a global asymmetry or focal asymmetry involving the axilla, axillary tail, or upper outer quadrant of the breast.[5,6] Rarely it can present with diffuse edema involving the entire breast and axilla.[3]

Transient ipsilateral breast edema appears to be an acute process of

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Fig. 1. A 60-year-old woman presented for screening mammogram and breast ultrasound two days following the 2nd booster dose of the Moderna COVID-19 vaccination in the left deltoid. (A) Mediolateral oblique view of the left breast obtained during screening mammogram demonstrated a new global asymmetry with trabecular thickening in the axillary region. (B) Mediolateral oblique view of the left breast thirteen days later at the time of diagnostic imaging demonstrated complete resolution of the asymmetry.

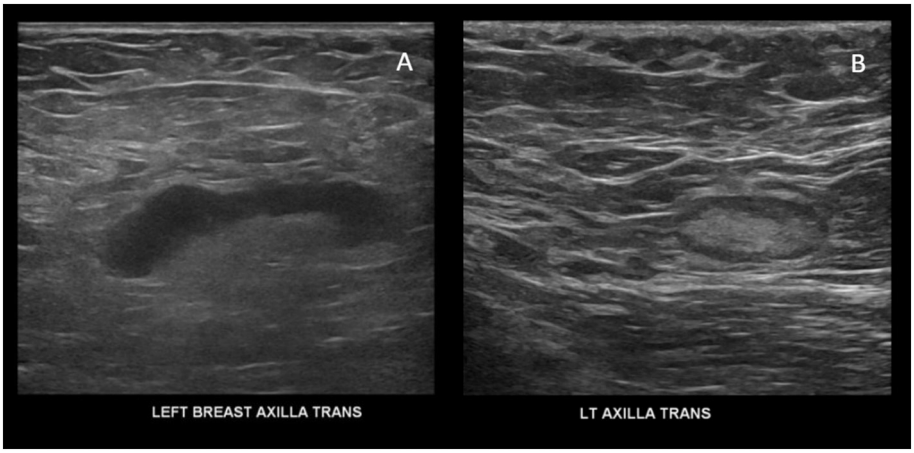

Fig. 2. (A) Static ultrasound images of the left axilla from screening breast ultrasound demonstrated diffuse increased echogenicity axillary adipose tissue, and prominent lymph nodes with diffuse cortical thickening measuring up 0.6 cm. (B) Static ultrasound image of the left axilla thirteen days later at the time of diagnostic imaging demonstrated complete resolution of the edema and lymphadenopathy.

short duration. All seven existing case reports had an onset of edema 1–12 days following vaccination, and all resolved within 4–8 weeks, some within a matter of days.[3,5–7] It may be incidentally detected on screening examinations, or present symptomatically as a palpable area of concern or tenderness. Most cases had concurrent ipsilateral lymphadenopathy visualized at the time of the edema,[3,6,7] and it is possible the onset of edema may precede the onset of lymphadenopathy.[7] Transient ipsilateral breast edema tends to occur and resolve on a shorter timeframe than its associated lymphadenopathy, which may persist for up to 10 weeks or longer.[8]

Currently, there are no guidelines for transient ipsilateral breast edema following COVID-19 vaccination. Short-term follow-up to confirm resolution may be appropriate, particularly if the underlying breast parenchyma is obscured. Hao et al. reported a case of diffuse breast and axillary edema, skin thickening, and adenopathy following COVID-19 vaccination which obscured an underlying invasive lobular carcinoma with metastatic adenopathy that was subsequently diagnosed at the 6-week follow-up examination.[3] Given the overlapping imaging features with mastitis and inflammatory breast cancer, radiologists should be aware of this phenomenon following COVID-19 vaccination. Similar to cases of suspected mastitis, short-term follow-up at 4–6 weeks may be appropriate to ensure resolution of findings as

well as reduce false positive biopsies.

Declaration of competing interest

None.

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