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Case Report

Trabecular thickening on mammography post-COVID vaccine and RSV vaccine: Case report ☆

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ABSTRACT

Ipsilateral axillary adenopathy post-COVID mRNA vaccine has been widely reported and guidelines for management have been established. Isolated changes of axillary tail trabecular thickening without associated adenopathy in the breast present a diagnostic dilemma and no official guidelines have thus far been reported. This finding has been reported after COVID mRNA vaccine and has never been reported with any other vaccine. We report on a patient with such changes on screening mammography 1.5 months after the fifth dose of a COVID-mRNA vaccine and 1 week after RSV vaccine. This raises the possibility that such changes can be seen with vaccines other than the COVID mRNA series of vaccines. The main differential diagnosis includes mastitis and inflammatory breast cancer. The transient nature of this finding with spontaneous resolution at diagnostic mammography and the vaccination history helps to establish the diagnosis and exclude breast cancer.

Introduction

Transient trabecular thickening has been reported post COVID mRNA vaccine and has not been reported with any other vaccine to date. We describe a unique case of transient axillary tail trabecular thickening seen on screening mammography in an asymptomatic patient 1.5 months post COVID-19 mRNA vaccine and 5 days post RSV vaccine.

Case report

Screening mammogram demonstrated axillary tail trabecular thickening of the right breast and was designated as BI-RADS 0 (Figs. 1A and B). The main differential diagnoses included inflammatory process and neoplastic process. The patient returned 11 days later for diagnostic mammography which demonstrated spontaneous resolution of the findings

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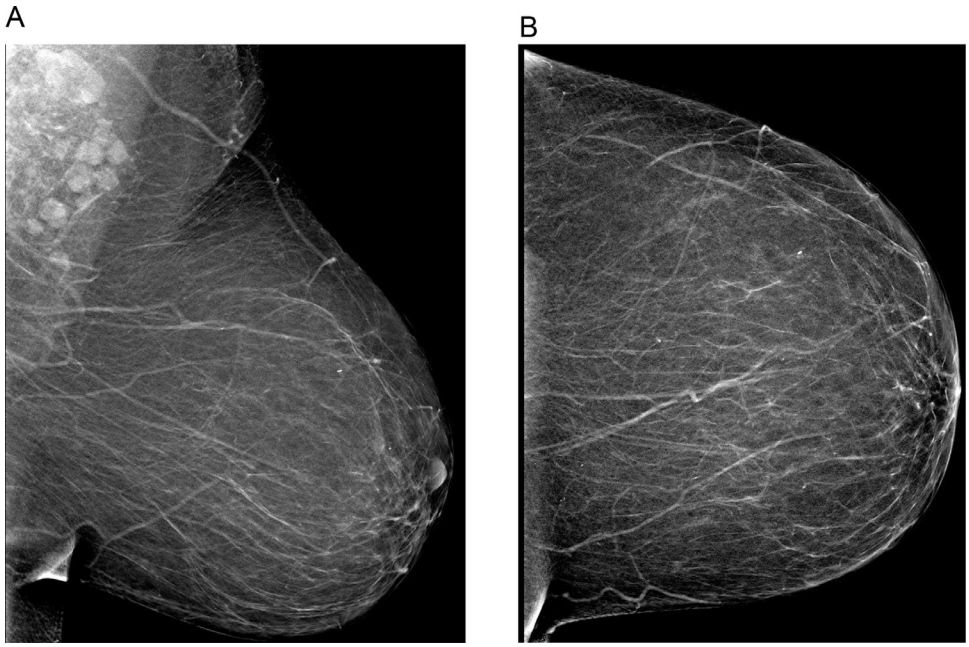

Fig. 1 – MLO (A) and CC (B) views of the left breast from screening mammogram demonstrate marked trabecular thickening of the left axillary tail on the MLO view.

(Figs. 2A and B). The patient was asymptomatic. As the findings demonstrated spontaneous resolution, there was no need for therapeutic intervention or follow-up. Relevant history included the receipt of ipsilateral COVID vaccine (fifth dose) 1.5 months prior to screening mammogram and RSV (Abrysvo) vaccine 5 days prior to screening mammogram. Other pertinent medical history includes obesity, hypercholesterolemia, and history of testing positive for COVID 5 months prior to screening mammogram.

Discussion

Several case reports on transient trabecular thickening post-COVID-19 vaccination describe an acute transient process with mammographic findings appearing 1-12 days postvaccination and spontaneous resolution within 4-8 weeks [1–7]. Our patient manifested axillary tail trabecular thickening 1.5 months post COVID-19 mRNA vaccine, similar in appearance on mammography to those of prior reports [1–7]. A case of this duration after vaccination has never been previously reported. In addition, the patient received RSV vaccine (protein subunit vaccine) 5 days prior to screening mammography, raising the possibility that the changes were the result of post-RSV vaccine reaction, making this the first ever reported such case.

The largest post vaccination case series of trabecular thickening to date reports on 5 such cases post-COVID mRNA vaccine [7]. Three of these cases were isolated findings without associated axillary adenopathy, where proinflammatory comorbidities associated with severity of COVID-19 infection were noted, and implicated as possible predisposing factors to the trabecular thickening [7–9]. This led to the hypothesis that the trabecular thickening is caused by an immune-mediated mechanism heightened by underlying proinflammatory comorbidities [7]. Similarly, systemic proinflammatory conditions (obesity and hypercholesterolemia) were also present in our patient. Such proinflammatory conditions also increase the risk of breast cancer, which is an important differential diagnosis [10]. Therefore, follow-up imaging to confirm resolution and transience of the finding has been recommended [7]. Our patient also showed resolution of findings at diagnostic exam, confirming post-vaccination etiology. To further complicate matters, both scenarios could coexist, as described in one report where a breast cancer became evident on follow up imaging once the trabecular thickening cleared [5].

It is of interest that while axillary lymphadenopathy has been observed with other types of vaccinations, changes isolated to the breast up until now have only been reported post COVID-19 vaccination. In our patient, the proximity of the RSV vaccine to the screening mammogram makes this a plausible cause. We hypothesize that the proinflammatory conditions of obesity and elevated cholesterol levels in our patient could potentially predispose to a heightened immune response to the RSV vaccine or to a prolonged heightened immune response to the more remote COVID vaccine received by the patient, giving rise to the trabecular thickening. Populations with more comorbidities, such as those in lower socioeconomic areas, who are also more negatively impacted by health care disparities and therefore at higher risk, would be more prone to manifest these findings. As a public health issue, recognition of these findings in the context of postvaccination will help to guide appropriate management and to mitigate unnecessary biopsies and unnecessary anxiety.

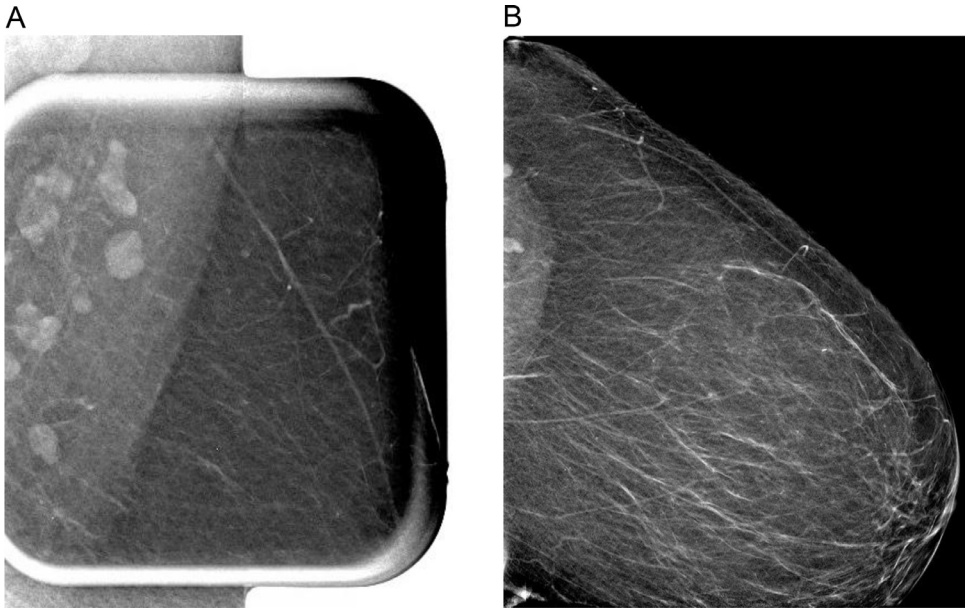

Fig. 2 – Spot compression MLO (A) and XCCL (B) views from diagnostic mammogram of the left breast performed 11 days after screening mammogram demonstrate spontaneous resolution of axillary tail trabecular thickening.

Conclusion

We present mammographic findings of transient axillary tail trabecular thickening occurring 1.5 months post COVID mRNA vaccine and 5 days post RSV vaccine. This is the first reported case to occur at such a delayed timepoint post COVID mRNA vaccine and the first reported case to occur post RSV vaccine. Proinflammatory conditions may predispose to this finding, and potentially heightened the immune response to RSV vaccine or prolonged a heightened immune response to the more remote COVID vaccine in our patient. The primary differential diagnoses are mastitis and inflammatory breast cancer. Spontaneous resolution of the finding and vaccination history support the diagnosis of postvaccination changes.

Patient consent

Written informed consent was obtained from the patient in this case report prior to publication.

REFERENCES

[1] Kim E, Reig B. Breast inflammatory change is transient following COVID-19 vaccination. Radiology 2022;304(3):533. doi:10.1148/radiol.220321.

[2] Locklin JN, Woodard GA. Mammographic and sonographic findings in the breast and axillary tail following a COVID-19 vaccine. Clin Imaging 2021;80:202–4.

[3] Woodard S, Zamora K. Axillary edema one day after COVID-19 vaccination. J Breast Imaging 2021;3(4):522–3.

[4] McGrath AL, Drotman MB, Dodelzon K. Transient ipsilateral breast edema following COVID-19 vaccination. Clin Imaging 2022;89:89–91 Epub June 23, 2022. doi:10.1016/j.clinimag.2022.06.006.

[5] Hao M, Edmonds CE, Nachiappan AC, Conant EF, Zuckerman SP. Management strategies for patients presenting with symptomatic lymphadenopathy and breast edema after recent COVID-19 vaccination. AJR Am J Roentgenol 2022;218(6):970–6 Epub December 29, 2021. doi:10.2214/AJR.21.27118.

[6] Adam R, Hodges L, Duong TQ, Maldjian T. Mammographic findings of diffuse axillary tail trabecular thickening after the second booster of COVID-19 vaccination. Cureus 2022;14(10):e29993. doi:10.7759/cureus.29993.

[7] Adam R, Duong T, Hodges L, Staeger-Hirsch C, Maldjian T. Mammographic findings of diffuse axillary tail trabecular thickening following immunization with mRNA COVID-19 vaccines: case series study. Radiol Case Rep 2022;17:2841–9.

[8] Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet 2020;395:1054–62.

[9] Grasselli G, Zangrillo A, Zanella A, et al. Baseline characteristics and outcomes of 1591 patients infected with SARS-CoV-2 admitted to ICUs of the Lombardy Region, Italy. JAMA 2020;323:1574–81.

[10] Schairer C, Gadalla SM, Pfeiffer RM, Moore SC, Engels EA. Diabetes, abnormal glucose, dyslipidemia, hypertension, and risk of inflammatory and other breast cancer. Cancer Epidemiol Biomarkers Prev 2017;26:862–8.