The Canadian Society of Breast Imaging and Canadian Association of Radiologists' Recommendations for the Management of Axillary Adenopathy in Patients with Recent COVID-19 Vaccination – Update

Unilateral axillary lymphadenopathy (UAL) has been rarely reported following Bacille Calmette-Guerin (BCG), smallpox, tetanus, H1N1 influenza A, and human papillomavirus vaccines (1-3). However, higher rates of UAL have been reported after COVID-19 vaccinations using either the Moderna or Pfizer-BioNTech (4-6). 11.6% of recipients who received the Moderna vaccine experienced this after the Dose 1 and 16% of recipients experiencing this after the Dose 2 in the 18–64 year age group (4). With ongoing COVID vaccinations, radiologists will increasingly encounter UAL. This is important for the assessment of both healthy asymptomatic women undergoing screening mammography and symptomatic women with a clinically suspicious palpable breast lump with ipsilateral or contralateral UAL.

Considerations for the management of axillary adenopathy in patients with recent COVID-19 vaccination, updated:

1. **Information collected at time of examination**: In addition to the usual patient data collected in any breast imaging site, we recommend obtaining the following supplementary information on the patient intake forms that are specific to COVID-19 vaccine: vaccination status: date(s) of vaccination(s), type of vaccine, injection site (left or right; arm/thigh), and any history of recent palpable axillary adenopathy. To minimize patient anxiety, consider including this introductory statement in cases when the patient's concerns are the presence of UAL: "*Vaccines of all types can result in temporary swelling of the lymph nodes, which may be a sign that the body is making antibodies in response as intended.*"
2. **Management of non-palpable UAL**: In the settings of screening mammography, screening breast MRI, screening breast ultrasound, and no imaging findings beyond UAL ipsilateral to recent (< 6 weeks) vaccination, the adenopathy is considered benign with no further imaging indicated provided that no nodes are palpable six weeks after the most recent dose (7). Note that incidental UAL may also be detected in non-breast imaging tests in women and men such as screening lung CT, and any CT or ultrasound or nuclear medicine study including the arm and neck.
3. **Management of palpable UAL**: For patients with palpable axillary adenopathy in the setting of ipsilateral recent (< 6 weeks) vaccination, clinical breast exam is required to be performed by the most responsible physician and if negative, clinical follow-up of the axilla is recommended. An axillary ultrasound is recommended for further evaluation if the clinical concern persists for longer than six weeks after the most recent vaccination dose. In cases of clinically suspicious breast examination with palpable adenopathy, diagnostic imaging should not be delayed regardless of vaccination status. In patients with palpable adenopathy that persists for more than 6 weeks after an ipsilateral vaccination, diagnostic breast imaging should be performed to include mammography and axillary ultrasound. Further investigation will be made based on the interpreting radiologist's level of clinical suspicion.

Considerations for patients and providers scheduling breast and lung screening exams:

If possible and when it does not unduly delay care, consider scheduling screening exams prior to the first dose or 6 weeks following either dose in average risk patients. Women who are overdue for screening due to pandemic delays or are symptomatic should proceed to mammography irrespective of the timing of the vaccination dose.

If a patient attends for a scheduled exam and provides a history of recent (< 6 weeks) COVID-19 vaccination, the information should be documented by the technologist and made available to the reporting radiologist. The exam should proceed as scheduled.

These recommendations align with the ACR BI-RADS Atlas (8) and aim to:

1. Reduce patient anxiety and unnecessary evaluation of enlarged nodes in the setting of recent vaccination, and
2. Avoid further delays in vaccinations and breast cancer screening during the pandemic.

As more information about the incidence and appearance of UAL following COVID-19 vaccination becomes available, it may be appropriate to change the duration of follow up or final assessment recommendations. Furthermore, recommendations for additional COVID-19 vaccinations will be incorporated when they are approved for distribution.

Take home points (8):

1. UAL may be commonly observed after COVID-19 vaccination.
2. Communicate clearly to patients and providers to avoid delays in breast cancer diagnosis and COVID-19 vaccination.
3. Adequate documentation of pertinent COVID-19 vaccination information is important e.g. each vaccination dose date, type of vaccine, body part location (left/right; arm/thigh) and should be readily available to the radiologist at the time of exam interpretation including history of whether or not there is palpable axillary adenopathy.
4. Ipsilateral UAL after recent (< 6 weeks) COVID-19 vaccination is usually a benign imaging finding and clinical follow-up, rather than additional imaging or biopsy, is recommended.
5. Consider adding to the report the phrase "*The patient provides a history of COVID-19 vaccination [DATE – DDMMYY]. Ipsilateral lymphadenopathy can be benign in this setting. Clinical follow up is advised. If a palpable lymph node persists for more than 6 weeks post-vaccination, further evaluation with ultrasound should be requested by the referring physician.*"
6. Women with prior lumpectomy, lymph node dissection, post treatment lymphedema, melanoma, any cancer that can metastasize to the axilla or recent breast cancer diagnosis awaiting treatment should consider getting the vaccine on the unaffected side or thighs to avoid false positives and unknown implications on SLNB (9).

Approved by the Canadian Society of Breast Imaging and Canadian Association of Radiologists
March 23, 2021

Acknowledgements

The Canadian Society of Breast Imaging and Canadian Association of Radiologists recognize the following authors for their contributions to this statement: Christie Barbesin, MRT, Dr. Supriya Kulkarni, Dr. Wyanne Law, Sandra Leslie, Dr. Yves Loisel, Dr. Anabel Scaranelo, Dr. Jean Seely, Dr. Nancy Wadden, Dr. Tong Wu, Dr. Charlotte Yong-Hing.

This statement was originally published online by the CAR and CSBI in February 2021. This version presents updated text based on information available as of March 2021.

References

1. Newfield L, Naschitz JE, Yeshurun D. [BCG-induced axillary lymph-adenitis in the adult]. Harefuah. 1990;119(7-8):199-200, Available from: https://pubmed.ncbi.nlm.nih.gov/2258094/

2. Studdiford J, Lamb K, Horvath K, Altshuler M, Stonehouse A. Development of unilateral cervical andsupraclavicular lymphadenopathy after human papilloma virus vaccination. Pharmacotherapy. 2008;28(9):1194-7, Available from: https://pubmed.ncbi.nlm.nih.gov/18752390/

3. Shirone N, Shinkai T, Yamane T, et al. Axillary lymph node accumulation on FDG-PET/CT after influenza vaccination. Ann Nucl Med. 2012;26(3):248-52, Available from: https://wwww.unboundmedicine.com/medline/citation/22271546/Axillary_lymph_node_accumulation_on_FDG_PET/CT_after_influenza_vaccination_

4. Local Reactions, Systemic Reactions, Adverse Events, and Serious Adverse Events: Moderna COVID-19 Vaccine. Centers for Disease Control and Prevention; [January 16, 2021]; Available from: https://www.cdc.gov/vaccines/covid-19/info-by-product/moderna/reactogenicity.html.

5. Local Reactions, Systemic Reactions, Adverse Events, and Serious Adverse Events: Pfizer-BioNTech COVID-19Vaccine. Centers for Disease Control and Prevention; [January 16, 2021]; Available from: https://www.cdc.gov/vaccines/covid-19/info-by-product/pfizer/reactogenicity.html.

6. Mehta, Sales, Bagabemi, et al. Unilateral axillary Adenopathy in the setting of COVID-19 vaccine. ClinicalImaging, Volume 75, July 2021, Pages 12-15, Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7817408/

7. Lehman CD, D'Alessandro HA, Mendoza DP, Succi MD, Kambadakone A, Lamb LR. Unilateral Lymphadenopathy After COVID-19 Vaccination: A Practical Management Plan for Radiologists Across Specialties, Journal of the American College of Radiology, 2021, ISSN 1546-1440, https://doi.org/10.1016/j.jacr.2021.03.001

8. D'Orsi C, Sickles E, Mendelson E, Morris E, al. e. ACR BI-RADS® Atlas, American College of Radiology, Reston, VA. Breast Imaging Reporting and Data System. 2013. Available from: https://www.acr.org/Clinical-Resources/Reporting-and-Data-Systems/Bi-Rads

9. Becker AS, Perez-Johnston R, Chikarmane SA, et al. Multidisciplinary recommendations regarding post-vaccine adenopathy and radiologic imaging: radiology scientific expert panel. Radiology. Radiology. 2021 Feb 24:210436. https://pubs.rsna.org/doi/10.1148/radiol.2021210436