

Incidental Finding of Moderna COVID-19 Vaccination–Related Axillary Lymphadenopathy on ^{201}Tl Myocardial Perfusion Imaging

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Abstract: We presented here a 71-year-old man with a history of thyroid cancer post total thyroidectomy and ^{131}I ablation and right renal cell carcinoma post right partial nephrectomy. He reported persistent chest tightness and pain after the first dose of the Moderna COVID-19 (mRNA-1273) vaccine. Thus, coronary heart disease was suspected, and the patient was referred for MPI (myocardial perfusion imaging). Focal ^{201}Tl uptake in the left axillary region was found incidentally on MPI, and SPECT/CT revealed enlarged benign-looking lymph nodes. The diagnostic is in favor of reactive hyperplasia after the intramuscular injection of vaccine into left deltoid muscle.

Key Words: ^{201}Tl myocardial perfusion imaging, COVID-19, mRNA vaccine, immunization, axillary lymphadenopathy

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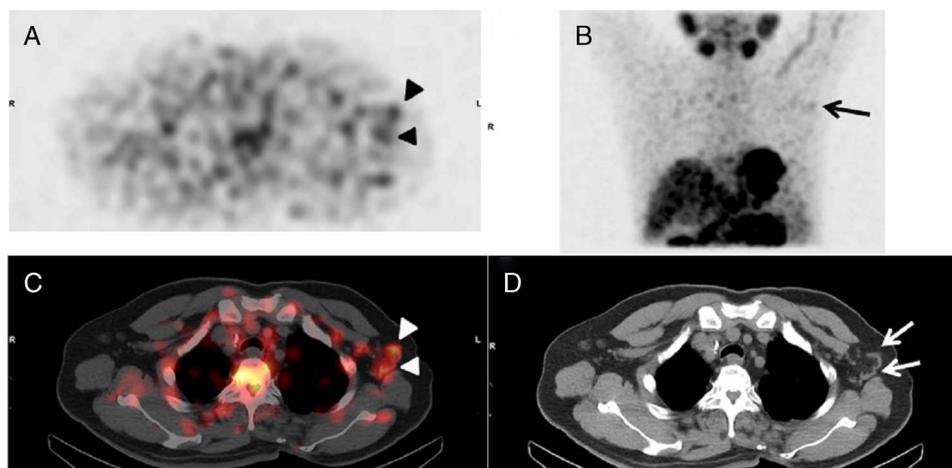


FIGURE 1. A 71-year-old man with known thyroid cancer status post total thyroidectomy and ^{131}I ablation in 2012 and right renal cell carcinoma status post right partial nephrectomy in January 2018 under posttreatment follow-up was presented. He also has hypertension and hyperlipidemia on treatment. He felt persistent chest tightness and chest pain after the first dose of the Moderna COVID-19 (mRNA-1273) vaccine. He was referred for a myocardial perfusion imaging (MPI) examination due to suspicious coronary heart disease. MPI results showed unlikely myocardial ischemia. However, ^{201}Tl -avid focal uptake was found incidentally over the left axillary region on MPI SPECT (A, black arrowhead) and MIP images (B, black arrow). Because of his previous cancer history, SPECT/CT was arranged, which revealed a cluster of lymph nodes in the left axilla (C, transaxial slice, white arrowhead; D, transaxial slice, white arrows), the largest one is 1.5 cm in diameter. Because the patient received a Moderna COVID-19 vaccine in the left upper arm 6 days ago, reactive axillary nodes ipsilateral to the intramuscular injection site are more favored than lymph node metastasis. COVID-19, caused by SARS-CoV-2 infection, is a global pandemic. The course of the disease could range from asymptomatic to death. Moderna, using mRNA biotechnology, is one of COVID-19 vaccines with Emergency Use Authorization. According to SNMMI statement, reactive lymphadenopathy has been reported approximately 16% of the patients who received COVID-19 mRNA vaccines.¹ Previous reports have showed that axillary lymphadenopathy was found on FDG PET/CT after various vaccines injection.²⁻⁵ Lymph nodes are mostly affected in an intramuscular site of ipsilateral deltoid vaccination seen on FDG PET/CT; however, contralateral lymph nodes may also show FDG uptake.⁶ Instead of FDG and ^{201}Tl , COVID-19 vaccines can lead mild accumulation of some other tracers that was issued in published articles.⁷⁻⁹ Nevertheless, it is sometimes limited and confused for evaluating between malignancy and inflammatory disease in breast cancer, lymphoma, or melanoma.¹⁰ By this case, we report a very rare imaging on ^{201}Tl MPI of incidental finding axillary lymphadenopathy after 6 days of COVID-19 vaccination. With the increasing rate of COVID-19 vaccination in present day,¹¹ a careful review of the clinical record and raw data of imaging is necessary for interpretation of axillary lymphadenopathy, especially in patients with cancer history.