

COVID-19 vaccination-related [¹⁸F]FDG-avid lymph node in a patient with marginal zone B-cell lymphoma

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Abstract

The [¹⁸F]FDG PET/CT is a crucial tool in the diagnostic process and monitoring of neoplastic diseases. Currently, during the global program of vaccination against COVID-19 and the possibility of axillary lymphadenopathy after this injection, the correct interpretation of PET/CT images is vitally significant and may create some difficulties.

We present a case of increased uptake of [¹⁸F]FDG in an axillary lymph node in a PET/CT scan performed 2 days after the Pfizer BioNTech COVID-19 vaccine in a 48-year-old patient newly diagnosed with marginal zone B-cell lymphoma.

KEY words: marginal zone B-cell lymphoma; PET/CT; COVID-19; vaccination; staging

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Case report

A 48-year-old man has been suffering from cervical lymphadenopathy, increased sweating, and weakness since September 2020, when he recovered from bilateral pneumonia (not associated with COVID-19 infection). After two non-diagnostic biopsies of the cervical and axillary lymph nodes (September and October 2020), the patient was eventually diagnosed with marginal zone lymphoma (MZL) based on a surgical biopsy of the right axillary lymph node on February 2021.

The [¹⁸F]FDG PET/CT scan was performed on 12th March 2021 for MZL staging before the treatment initiation. The reference mediastinum blood pool SUV_{max} was 1.8, and the liver background SUV_{max} was 2.6.

Coronal and axial CT scans demonstrated pathological lymph nodes located on both sides of the neck, both axillae, anterior mediastinum, and both inguinal regions. The [¹⁸F]FDG PET/CT (Fig. 1) presented mild uptake in a nodal mass of the neck, right axillary fossa, anterior mediastinum, and both inguinal regions with the SUV_{max} up to 2.0.

In the enlarged lymph nodes of the left axilla, the diffuse [¹⁸F]FDG uptake was also slightly increased (SUV_{max} 2.3), but one axillary lymph node with the size of 13 × 9 mm had higher, focal uptake of the tracer with SUV_{max} reaching 4.1. Furthermore, an area of mild increased [¹⁸F]FDG uptake was found in the left triceps brachii muscle (SUV_{max} 2.2).

Correlating it with the patient's medical history, it was established that the second dose of the Pfizer BioNTech COVID-19 vaccination had been performed two days before the scan. We hypothesize that the significantly higher focal uptake of [¹⁸F]FDG tracer in the region of the left axilla, compared with the remaining enlarged lymph nodes was associated with an overlapping inflammatory reaction to the recent vaccine injection and MZL.

Due to the low glucose metabolism in the baseline examination (typical for MZL), PET/CT scan will not be useful for assessing the response to treatment in this case.

Conclusions

This case shows a new PET/CT image pitfall interpretation associated with the current COVID-19 pandemic vaccination program. To avoid incorrect image interpretation and inadvertent upstaging of the disease we recommend paying special attention to the recent vaccination in the patient's medical history and taking it into account while interpreting the images. We recommend also

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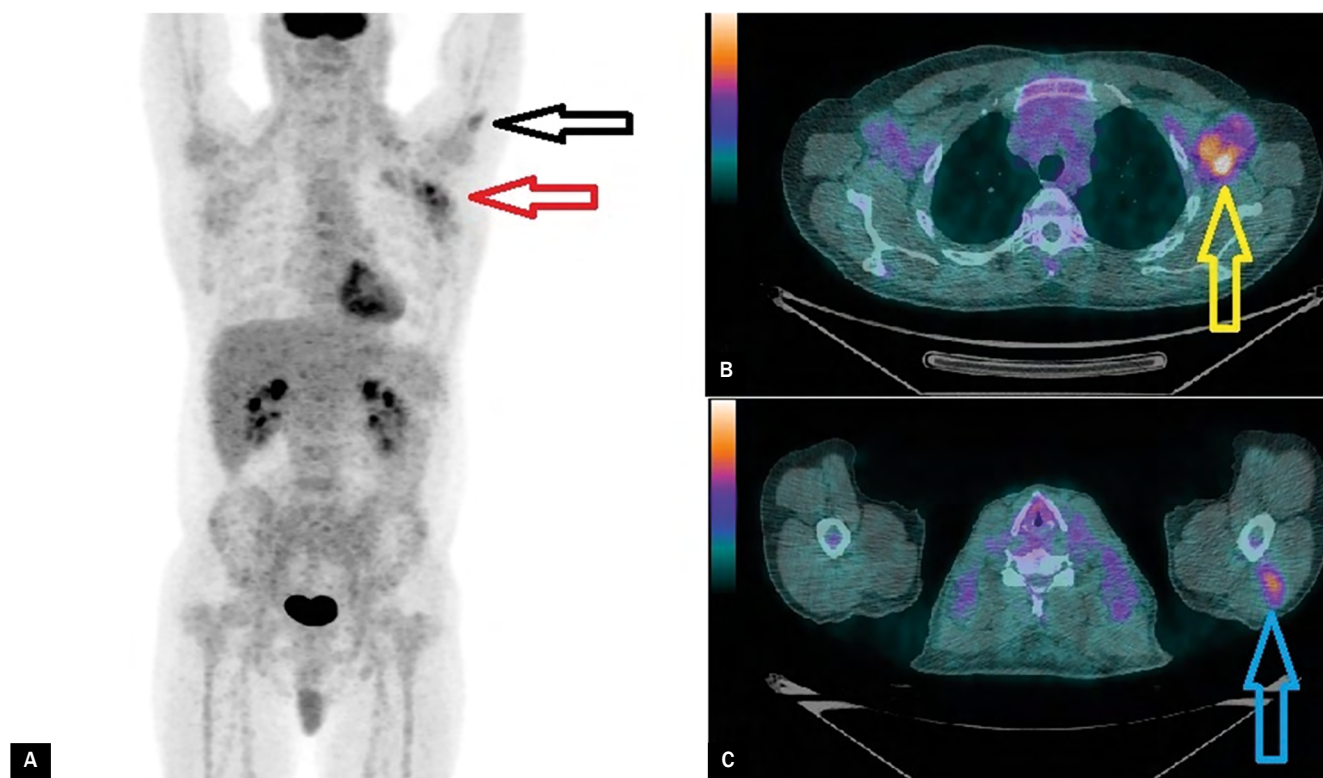


Figure 1. PET/CT images were performed 2 days after the second dose of the COVID-19 vaccine (**A, B, C**). The multiple-intensity projection image (**A**) shows moderately increased [¹⁸F]FDG uptake in the left triceps brachii muscle (black arrow), in the left axillary region (red arrow), and only slight uptake in the enlarged lymph nodes of the neck, right axilla, anterior mediastinum, and both inguinal regions. Fused axial image (**B**) presents the focal uptake in the axillary lymph node (yellow arrow) and (**C**) accumulation of the tracer in the left triceps brachii muscle (blue arrow)

rescheduling PET/CT scan, i.e. delaying it by several days after vaccination as long as the clinical status and management protocol allows it.

Conflict of interest

There is no conflict of interest to declare.