Dermatology Practical & Conceptual

Lymphadenopathy After COVID-19 Vaccine Mimicking Lymph-Node Progression in a Patient With Metastatic Melanoma

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Introduction

COVID-19 vaccination has been rapidly implemented worldwide, especially among patients with cancer. Local reactions with ipsilateral lymphadenopathy are among the most common side effects. A few cases of false-positive 18-fluorodeoxyglucose (^{18}FDG) PET/computed tomography (CT) scan after COVID-19 vaccination have been reported [1,2]. This is especially important in oncologic patients, such as in cutaneous melanoma, where these findings might pose difficulties during their follow-up and management.

Case presentation

A 47-year-old male with BRAF mutant melanoma of the back and right axillar adenopathies underwent wide excision and lymphadenectomy and started adjuvant treatment with nivolumab. One month later, he presented disease relapse with satellitosis and a contralateral adenopathy in the left axilla, the latter detected by PET-CT. Treatment was changed to targeted therapy (dabrafenib and trametinib), reaching complete remission. An FDG-PET/CT from February 2021 showed no active disease. In May 2021, after eight months of targeted therapy, a

routine FDG-PET/CT showed substantial ^{18}F-FDG avidity in the left axilla, with multiple malignant-appearing lymph nodes; no other foci were identified (Figure 1A). Given this finding, up to two ultrasound-guided biopsies were performed on the left axilla, describing at least one clearly malignant-appearing adenopathy in the ultrasound examination (Figure 1, B and C), and showing histologically lymphoid hyperplasia with no evidence of microscopic disease. Further questioning of the patient revealed that he had received the second dose of the COVID-19 mRNA vaccine (Moderna) in the left deltoid muscle 5 days prior to the routine PET/CT scan. Finally, a new PET/CT was performed 4 months later and revealed complete resolution of the hypermetabolic left axillary nodes (Figure 2), suggesting the diagnosis of reactive lymphadenopathy due to COVID-19 vaccine.

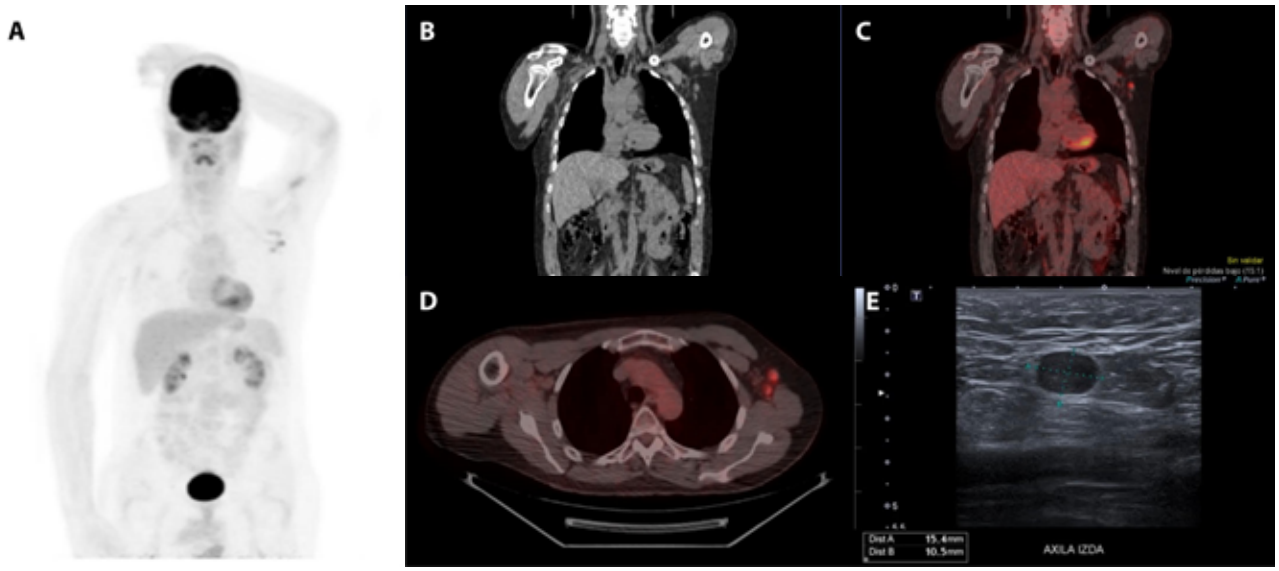

Figure 1. Imaging tests performed in May 2021. (A-D) Routine ^{18}F-FDG-PET/TC: hypermetabolic lymphadenopathy in the left axillary region, the largest and with most metabolism of 13 mm (SUVmax: 3.9), suggestive of malignancy. (E) Sonographic exam of the left axilla after PET/CT findings: left axillary lymphadenopathy of rounded morphology with displacement of the central fatty hilum at the expense of great hypoechoic cortical thickening, sonographically suspicious. Core needle biopsy was taken from it.

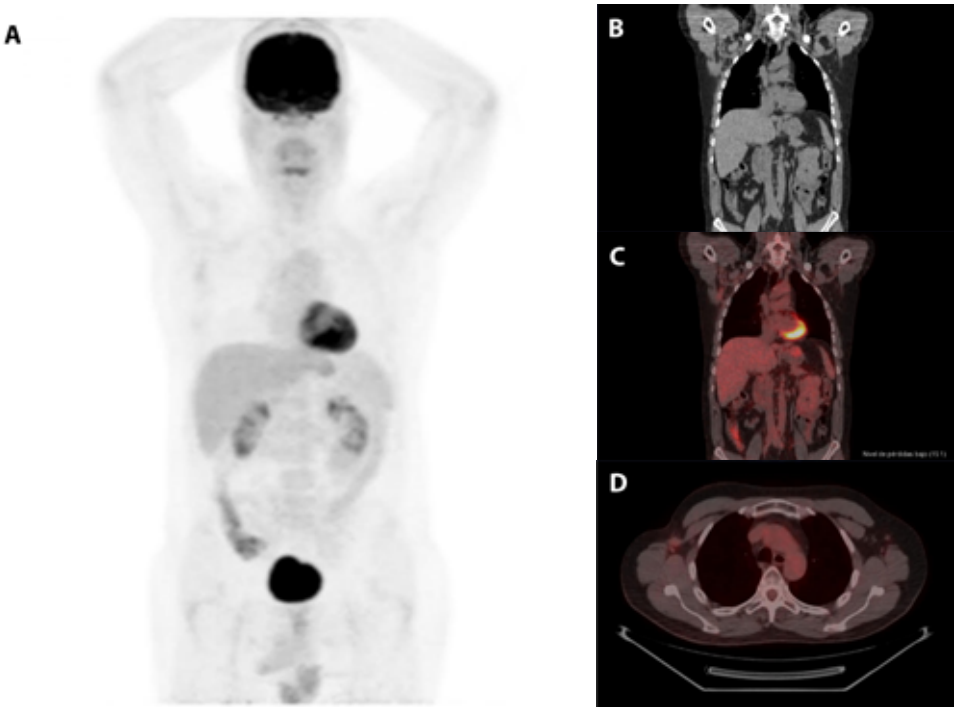

Figure 2. (A-D) 4-month control ^{18}F-FDG-PET/TC, September 2021: normalization of hypermetabolic lymphadenopathies in the left axillary region: resolution of the pathologic nodal uptake.

Discussion

Transient FDG uptake in normal or enlarged lymph nodes (mainly axillary, supraclavicular and cervical nodes) has already been described after administration of several types of vaccines [3,4]. This issue has also been observed now with the COVID-19 vaccination [1,2], being more frequently seen in patients vaccinated with Moderna, compared to Pfizer-BioNTech (72% versus 43%), and more intensely after the booster administration. Furthermore, it has been most frequently seen on day 1–7 after vaccination (71% of patients) and showed a negative correlation with time after vaccination [2].

This FDG avid axillary lymphadenopathy may confound interpretation in oncologic patients and change patient management (eg excessive follow-up imaging studies, unnecessary biopsies, treatment delays), besides causing additional patient anxiety [2]. This is the case of cutaneous melanoma, where misinterpretation in tumor staging or disease response during treatment may lead to deeply important differences in terms of disease prognosis and treatment algorithm.

In order to avoid misinterpretation, it is therefore important in oncologic patients to perform vaccination contralateral to the tumor expected nodal drainage, to ask patients about recent vaccination, and to perform FDG PET/CT before or at least 2 weeks after (optimally 4–6 weeks after) vaccine administration, if possible [2,4,5].

Conclusions

As COVID-19 vaccination has been rapidly implemented worldwide, clinicians should be aware of the transient appearance of hypermetabolic regional lymph nodes after its injection. Keeping this etiology in mind and following some recommendations for scheduling the PET-CT is especially important when evaluating oncologic patients to avoid misinterpretation.

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