

Subcutaneous Uptake on [18F]Florbetaben PET/CT: a Possible Immune-Induced Amyloid-Beta Deposition after COVID-19 Vaccination

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Abstract

Introduction

Large-scale worldwide COVID-19 vaccination programs are being rapidly deployed, and high-risk patients with comorbidity are now receiving the first doses of the vaccine. Physicians should be, therefore, aware of new pitfalls associated with the current pandemic vaccination program, also in case of [¹⁸F]Florbetaben PET/CT.

Case Presentation

We described the first image of [¹⁸F]Florbetaben PET/CT in the evaluation of a 70-year-old male with suspicious Alzheimer disease and unclear history of heart disease. We detailed the diagnostic imaging PET/CT workup with different findings.

Conclusion

In this case, [¹⁸F]Florbetaben PET/CT can demonstrate immune-induced findings associated with the current COVID-19 pandemic vaccination programs.

Introduction

Large-scale worldwide COVID-19 vaccination programs are being rapidly deployed, and high-risk patients with comorbidity are now receiving the first doses of the vaccine. Physicians should be, therefore, aware of new pitfalls associated with the current pandemic vaccination program, also in case of [¹⁸F]Florbetaben PET/CT.

Case Presentation

We report the case of a 70-year-old male who underwent [¹⁸F]Florbetaben PET/CT for suspected Alzheimer disease (AD) with unclear history of heart disease (hypertensive disease and suspicious cardiac amyloidosis) one-day-after the administration of the first dose of Pfizer-BioNTech COVID-19 vaccine in the right arm. A moderate amyloid burden on bilateral frontal and parietal brain cortex and absence of cardiac beta-amyloid deposition were identified; however, subcutaneous uptake on the vaccination site in the right arm's deltoid region and focal uptake next to an ipsilateral axillary lymph node were noted. Tracer injection was via the left antecubital fossa, hence not a potential cause.

[¹⁸F]Florbetaben MIP (A), PET (axial-B, coronal-G), CT (axial-C, coronal-E), PET/CT (axial-D, coronal-F) images demonstrated ill-defined uptake in the right arm's subcutaneous tissues (SUVmax 5.6; white-arrows) and next to a possible right-axillary lymph node (SUVmax 4.75; yellow-arrows) evident on low-dose CT scan without breathing control (red-arrows). We assume that the subcutaneous and the potential lymph node uptake might be due to induced inflammation with peptides deposition, as amyloid-beta peptides are involved in the systemic inflammatory process such as in the physiopathology of AD, and

chronic, low-level systemic inflammation may exacerbate the A β deposition [1–4]. Similar findings with other radiopharmaceuticals were recently described [5, 6], but this is the first case to show that also [^{18}F]Florbetaben PET/CT can demonstrate immune-induced findings associated with the current COVID-19 pandemic vaccination programs, being a potential finding on whole-body protocols for the assessment in cardiac amyloidosis evaluation.

Conclusion

In this case, [^{18}F]Florbetaben PET/CT can demonstrate immune-induced findings associated with the current COVID-19 pandemic vaccination programs.

Declarations

Ethics approval and informed consent

All procedures performed involving the human participant were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from the patient.

Competing interests

The authors declare no competing interests.

Availability of data and material

Contact the corresponding author for data requests.

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Figures

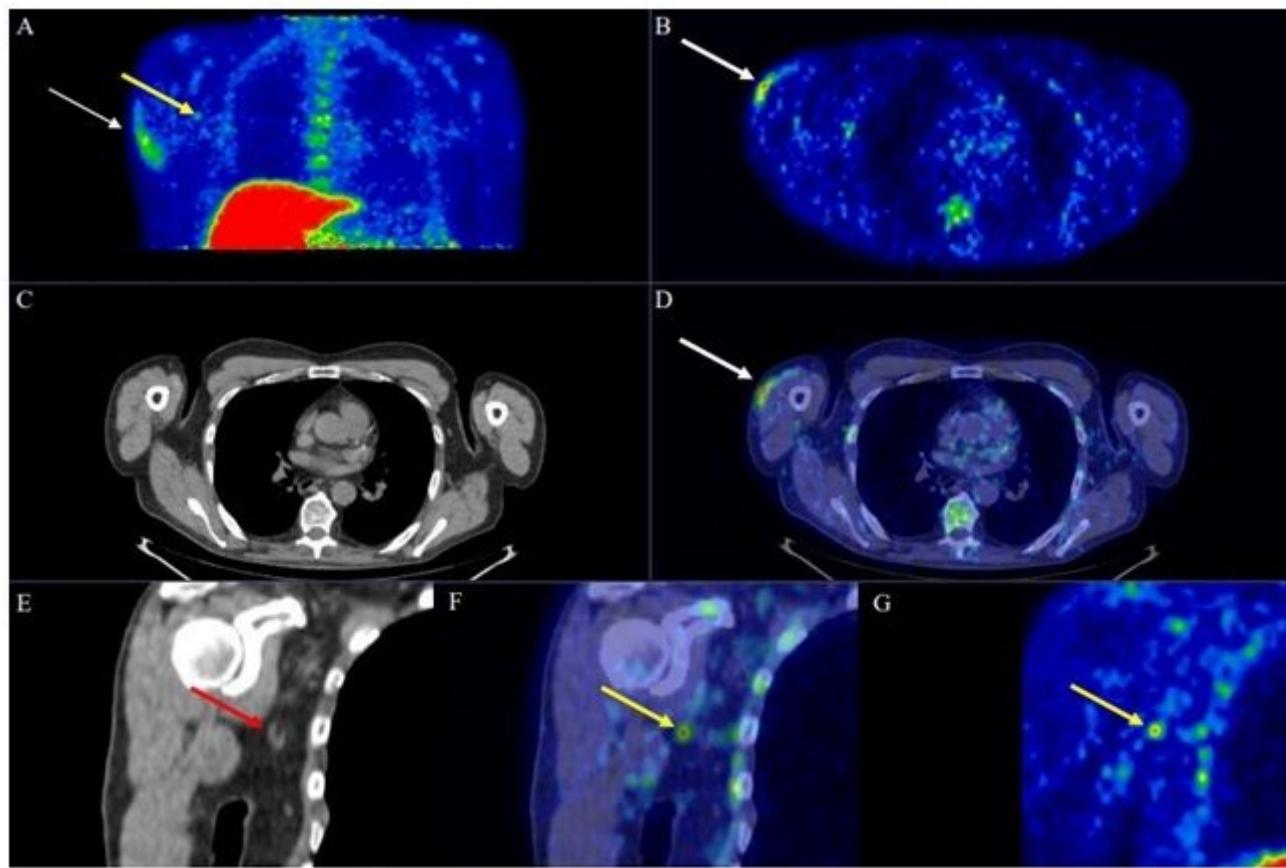


Figure 1

[18F]Florbetaben MIP (A), PET (axial-B, coronal-G), CT (axial-C, coronal-E), PET/CT (axial-D, coronal-F) images demonstrated ill-defined uptake in the right arm's subcutaneous tissues (SUVmax 5.6; white-arrows) and next to a possible right-axillary lymph node (SUVmax 4.75; yellow-arrows) evident on low-dose CT scan without breathing control (red-arrows).