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IMAGE OF THE MONTH

^{68}Ga-DOTATOC digital-PET imaging of inflammatory cell infiltrates in myocarditis following COVID-19 vaccination

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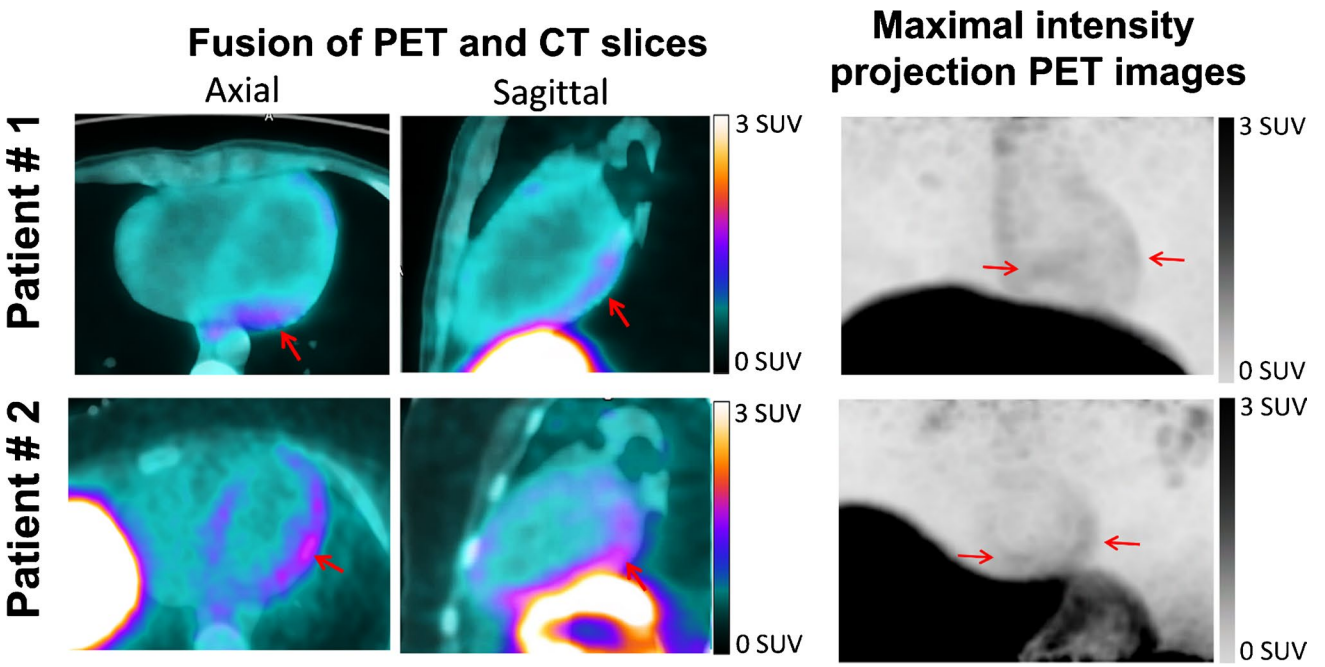

Acute myocarditis was recently reported after mRNA COVID-19 vaccination. Here we present images from two male (18 and 21 years old) patients that were recorded with a digital-PET/CT system (Vereos, Philips) 1 h after the injection of 2 MBq/kg of ^{68} Ga-DOTATOC, as part of an ongoing clinical study (NCT03347760 on ClinicalTrials.gov). Both patients experienced myocarditis 2 to 3 days after the second dose of an mRNA COVID-19 vaccine (Moderna and Pfizer, respectively) and fulfilled the cardiovascular magnetic resonance 2018 Lake Louise criteria for myocarditis, associated with increased plasma troponin (peak troponin: 771 ng/L and 10 830 ng/L) but normal plasma fibrinogen. Plasma C-reactive protein was increased in the 21-year-old patient (41 mg/L).

This article is part of the Topical Collection on Image of the month

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The DOTATOC-PET images, recorded at 1 to 3 days from peak troponin, showed an increase in myocardial uptake relative to blood activity, predominantly in the lateral and inferior walls (red arrows) and which are even better depicted on the gated-PET cine-loops in the online supplement. Myocardial/blood SUVmax ratio was > 2.2 in both cases and, thus, higher than what we commonly observe in non-myocarditis patients. This likely reflects a myocardial infiltrate of inflammatory cells overexpressing somatostatin receptors (lymphocytes, macrophages, activated monocytes) [1–4], presumably within specific antigenic sites.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s00259-021-05609-4.

Data availability All data are available on request.

Declarations

Informed consent A written informed consent for the procedure and for the publication of images was obtained from all participants.

Conflict of interest The authors declare no competing interests.

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