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Incidental Focal Myocardial ¹⁸F-FDG Uptake Indicating Asymptomatic Coronary Artery Disease

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Short title: Incidental FDG Uptake of CAD

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Case Report

Oxidation of fatty acids is suppressed and glucose uptake is increased in the ischemic myocardium with translocation of glucose transporter-4 molecules in the plasma membrane.¹ Fluorine-18 fluorodeoxyglucose (¹⁸F-FDG) imaging has been widely used for detecting ischemic myocardium as a “hot spot”.^{2,3} We report a case of 60-year-old woman with malignant melanoma of the left lower leg. For monitoring the progression of disease, she underwent ¹⁸F-FDG positron emission tomography (PET)/ computed tomography (CT) after 14 hours fasting. Her plasma glucose level was 106 mg/dL (5.8 mmol/L), and then 4.5 MBq/kg of ¹⁸F-FDG was infused. ¹⁸F-FDG PET/CT showed a focally abnormal uptake in the left ventricular anterior wall (Figure 1, Figure 2A). CT revealed calcified lesions in the proximal left anterior descending coronary artery (LAD) (Figure 1A), and coronary artery disease was suspected. Her risk factors for cardiovascular disease were hypertension and dyslipidemia; however, she did not experience anginal chest pain either during exercise or at rest. Electrocardiography was normal and transthoracic echocardiography demonstrated normal contraction of the left ventricle. By contrast, dobutamine stress echocardiography induced akinesis of the left ventricular anteroseptal wall. Coronary angiography revealed severe organic stenoses in the LAD (Figure 2B). Percutaneous coronary intervention

(PCI) with two drug-eluting stents was successfully performed in the LAD stenosis (Figure 2D). After 5 months of PCI, abnormal ^{18}F -FDG uptake was diminished (Figure 2C) under the same fasting condition, indicating that the incidental ^{18}F -FDG uptake in the heart was indicative of the myocardial ischemia. Incidental focal ^{18}F -FDG uptake in myocardium with calcification at coronary artery suggests a high likelihood of coronary artery disease;³ therefore, we need cardiac screening for these findings.

Conflict of interest

There is no conflict of interests for all.

References

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Figure legends

Figure 1. Fluorine-18 fluorodeoxyglucose (^{18}F -FDG) positron emission tomography (PET)/ computed tomography (CT) scan. Axial image (A) and cardiac short-axis images (B) are shown. A focally abnormal uptake (maximum standardized uptake value 5.8) was detected in the left ventricular anterior wall (*blue arrowheads*). CT revealed calcified lesions in the proximal left anterior descending coronary artery (LAD) (*yellow arrowheads*).

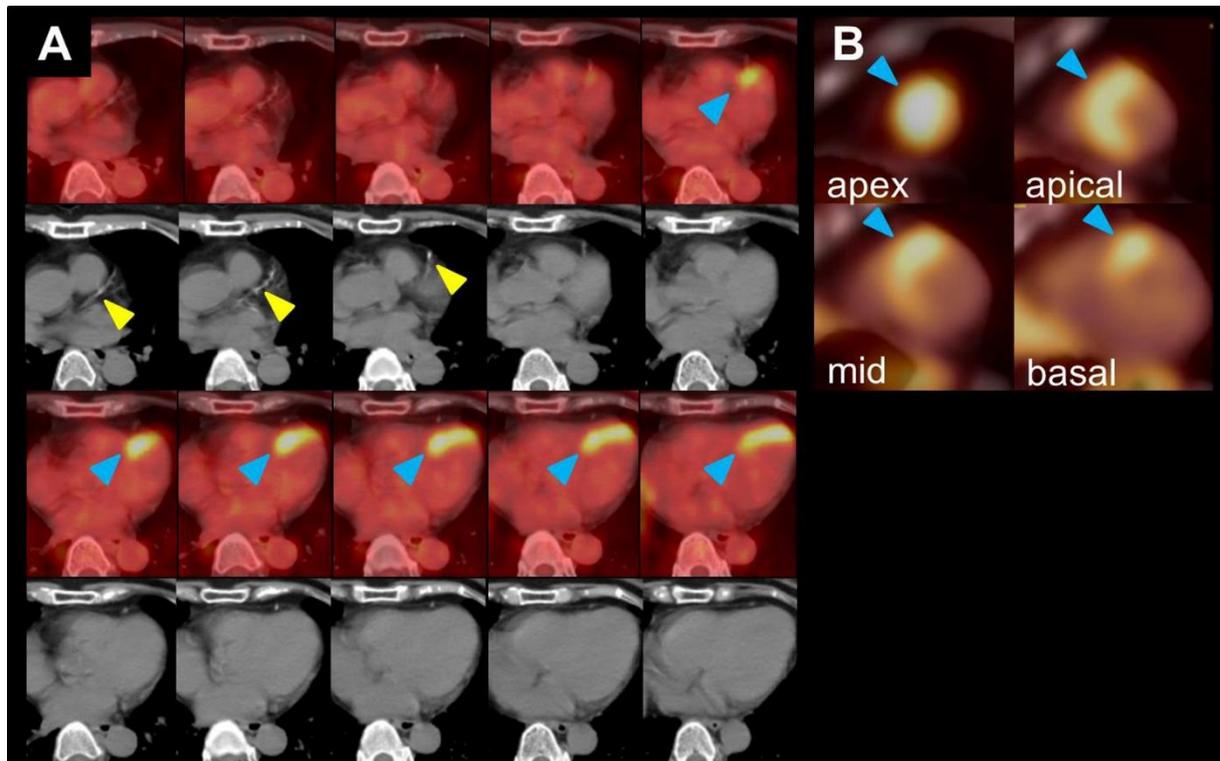


Figure 2. Maximum intensity projection image (MPI) of ^{18}F -FDG PET (A) showed a focally abnormal uptake in the heart (*blue arrowhead*). Coronary angiography (B) revealed severe organic stenoses in the LAD (*yellow arrowheads*). Percutaneous coronary intervention (PCI) was successfully performed for the LAD stenosis (D). After 5 months of PCI, ^{18}F -FDG PET MPI (C) showed that abnormal uptake was diminished in the heart.

