Cardiac fibroma with high ^{18}F-FDG uptake mimicking malignant tumor

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We here present a case of cardiac fibroma mimicking a malignant tumor due to the ^{18}F-fluorodeoxyglucose (FDG) high accumulation. A 23-year-old woman was found asymptomatic bradycardia by a health checkup. Echocardiography detected the wall thickening in the basal septal portion of the left ventricle (LV) (supplementary movies). As cardiac tumor was suspected, further evaluations including FDG positron emission tomography (PET)/computed tomography (CT) and enhanced magnetic resonance imaging (MRI) were performed. To suppress physiological myocardial uptake, this patient fasted for 18 h with unfractionated heparin (50 IU·kg^{-1}) i.v. injected 15 minutes prior to FDG administration.[1] FDG PET/CT showed focal tracer accumulation in the entire mass (Figure 1A, B). Cardiac MRI showed iso-intense on T1-weighed image (T1WI) (Figure 1C), hypo-intense on T2-weighed image (T2WI) (Figure 1D), and hyper-intense on late gadolinium enhancement (LGE) (Figure 1E) in the mass.

Endo-myocardial biopsy pathologically revealed a benign intracardiac fibroma (Figure 2). Cardiac fibroma is a benign connective tissue tumor derived from fibroblasts. It occurs predominantly in infants and young children, typically found as a large tumor, more frequently in the anterior or septal LV wall. The MRI findings could clarify the tissue characteristics of a well-circumscribed tumor with low iso-intense on T1WI, low intense on T2WI because of their dense, fibrous nature, and hyper-intense on LGE that reflects the characterization of a great extracellular space, which was consisted of fibroblasts interspersed among large amounts of collagen, for gadolinium accumulation.[2]

It remained unclear why the fibroma indicated high FDG accumulation in this case. However, there was a case report of nonossifying fibroma that showed high FDG accumulation similarly to our study.[3]

FDG PET/CT is a powerful tool to differentiate the malignant cardiac lesion from benign ones.[4] However, this case suggests that even the focal increased FDG uptake was detected in the mass, the specific MRI findings could lead to the correct diagnosis of the cardiac fibroma.

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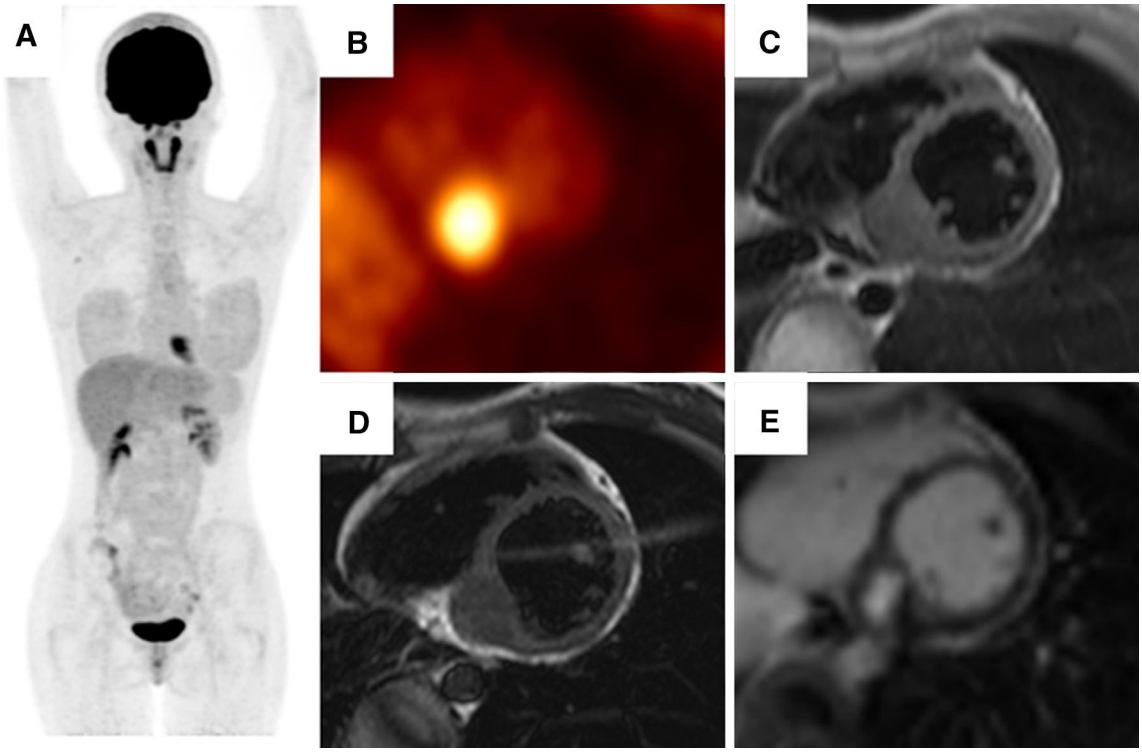

Figure 1. [18]F-fluorodeoxyglucose (FDG) positron emission tomography (PET)/computed tomography (CT) and MRI images. Maximum intensity projection (**A**), cardiac short-axis image (**B**) of the PET/CT, T1-weighed image (T1WI) (**C**), T2-weighed image (T2WI) (**D**), and late gadolinium enhancement (LGE) (**E**) image of the MRI are shown. FDG PET/CT showed focal tracer accumulation in the entire mass (maximum standardized uptake value was 6.8). There was no other abnormal FDG uptake. Cardiac MRI showed iso-intense on T1WI, hypo-intense on T2WI, and hyper-intense on LGE in the mass.

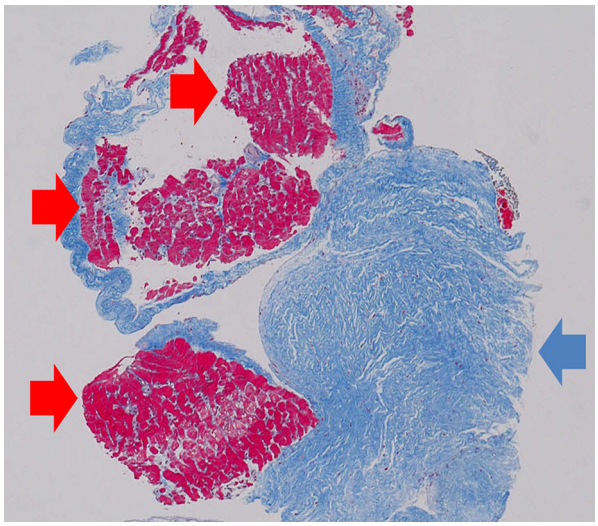

Figure 2. Pathological finding. Pathological slide showed the proliferation of collagenous fiber which was positive staining for Masson trichrome stain (*blue arrow*) and the normal myocardial fiber (*red arrows*).

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