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^{18}F-FDG PET findings of pericardial lymphangiohemangioma

Short title: Pericardial lymphangiohemangioma on FDG PET

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CASE PRESENTATION

An 80-year-old hypertensive man was admitted for the evaluation of cough and shortness of breath. Physical examination showed pitting edema of the lower extremities. Non-contrast computed tomography (CT) demonstrated a marked cardiomegaly with large pericardial and pleural effusions (Figure 1A). The cytological examination of hemorrhagic fluid by pericardiocentesis showed no evidence of malignancy. Contrast-enhanced CT revealed a low-density mass in the right atrioventricular groove (Figure 1B). Cardiac magnetic resonance imaging (MRI) showed the multilocular cystic mass on cine images (Supplementary movie). T1-weighted images showed the heterogeneous isointense mass (Figure 1C). T2-weighted fat-suppressed images (Figure 1D) and diffusion-weighted images (Figure 1E) showed hyperintensity of the mass. The apparent diffusion coefficient map demonstrated a high value in the mass (Figure 1F), suggesting that the mass contained low cellularity. Fluorine-18 fluorodeoxyglucose (FDG) positron emission tomography/CT showed very low tracer accumulation in the mass (Figure 1G and 1H), indicating low probability of malignant tumors such as lymphoma, sarcoma, and metastases. To confirm histological diagnosis., a surgical biopsy was performed. The mass appeared a multilocular cyst with old hemorrhage on gross pathology and predominant lymphangiomatous tissue surrounded by adipose tissue on histological examination (Figure 2A and 2B). In the immunohistochemistry evaluation, the endothelium was positive for CD31 (Figure 2C) and D2-40 (Figure 2D), which were

consistent with a lymphangiohemangioma.

Lymphangiohemangioma is a rare benign vascular malformation in adults. Two cases of a pericardial lymphangiohemangioma, both located in the right atrioventricular groove, have been reported.[1,2] As in the previous cases, the mass was isointense to myocardium on T1-weighted images and hyperintense on T2-weighted images, whereas these findings are common in malignant cardiac tumors. Low FDG uptake has the potential to distinguish a rare benign tumor in pericardium from malignant tumors.

Disclosure

None.

References

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2. Heffron SP, Alviar CL, Towe C, Geisler BP, Axel L, Galloway AC, et al. Dyspnea and Chest Pain in a Young Woman Caused by a Giant Pericardial Lymphohemangioma: Diagnosis and Treatment. Can J Cardiol 2015 Dec 9. doi: 10.1016/j.cjca.2015.12.001.

Figure legends

Figure 1. Non-contrast computed tomography (CT) on admission (**A**) shows large pericardial and pleural effusions. Contrast-enhanced CT (electrocardiogram-gated) after pericardiocentesis (**B**) shows a low-density mass in the right atrioventricular groove (**B**, arrows). Cardiac magnetic resonance imaging (Achieva 1.5T; Philips Medical Systems, Best, The Netherlands) depicts the mass characteristics (**C–F**, arrows). T1-weighted images (**C**) showed the heterogeneous isointense mass. T2-weighted fat-suppressed images (**D**) and diffusion-weighted imaging using the b-value 500 s/mm^2 (**E**) showed hyperintensity of the mass. The apparent diffusion coefficient (ADC) map (**F**) demonstrated a high value in the mass. Fluorine-18 fluorodeoxyglucose positron emission tomography (FDG PET) imaging (**G**, fusion image; **H**, maximum intensity projection image) showed very low tracer accumulation (maximum standardized uptake value 2.4) in the mass (**G–H**, arrows).

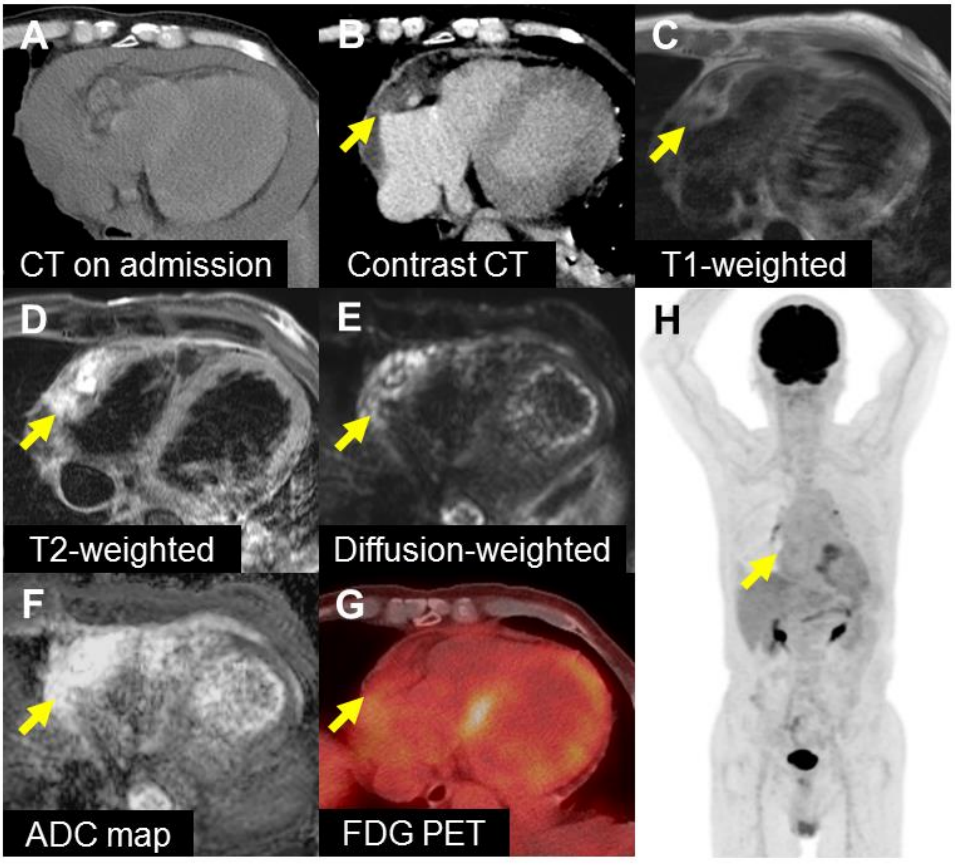
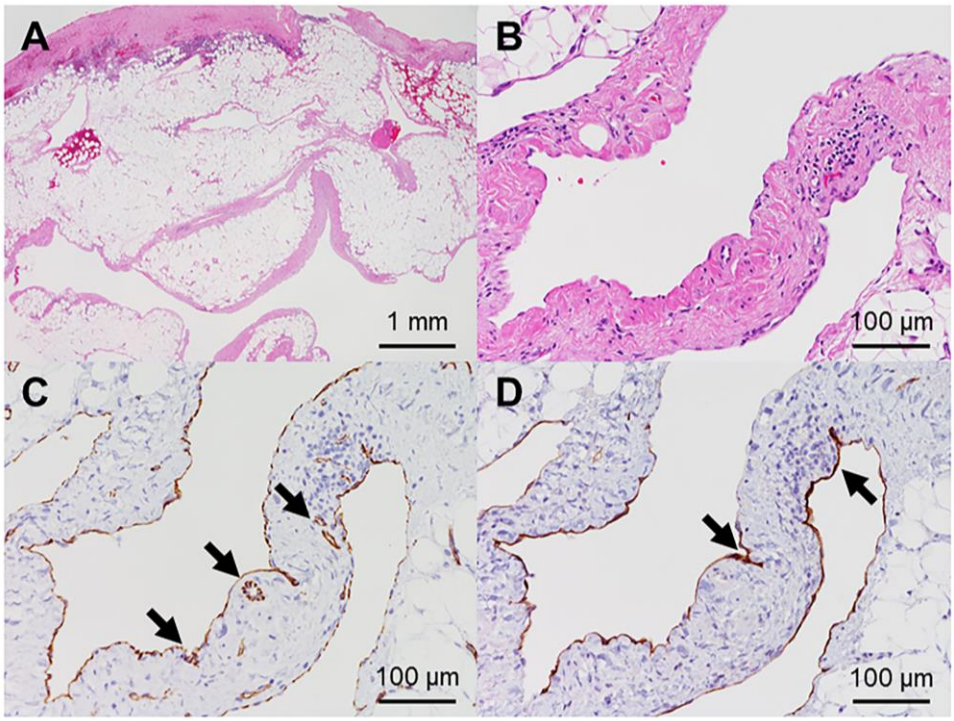


Figure 2. Photomicrograph (**A**, original magnification, ×20; **B**, original magnification, ×200, hematoxylin and eosin stain) showed predominant lymphangiomatous tissue surrounded by adipose tissue. Immunohistochemical stains showed that the endothelium was positive for CD31 (**C**, arrows) and D2-40 (**D**, arrows) while negative for CD 34, AE1/AE3, and calretinin, which were consistent with a lymphangiohemangioma.



Supplementary Files

Movie. Cardiac magnetic resonance cine imaging (2D steady-state free precession, field of view 380×380 mm^2, slice thickness 10 mm, repetition time 3.1 msec, echo time 1.53 msec, acquisition matrix 192×132 mm^2, flip angle 60°) show a multilocular cystic mass in the right atrioventricular groove.