Impact of ^{18}F-fluorodeoxyglucose Positron Emission Tomography computed Tomography Imaging in a Case of Pericardial Cavernous Hemangioma

Abstract

Hemangiomas are extremely rare tumors of the heart that may present with pericardial effusion, dyspnea, chest discomfort, palpitations, or syncope. Few published reports have highlighted the utility of ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography (^{18}F-FDG PET-CT) in the evaluation of cardiac lesions. We report a case demonstrating the utility of ^{18}F-FDG PET-CT in a young man who presented with gross pericardial effusion and suspicion of metastatic carcinoma on fluid cytology.

Keywords: *^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography, cavernous hemangioma, pericardial hemangioma*

Harmandeep Singh, Vaishnavi Dasagrandhi, Rajender Kumar, Rupesh Kumar[1], Bhagwant Rai Mittal

Departments of Nuclear Medicine and [1]Cardiothoracic and Vascular Surgery, Post Graduate Institute of Medical Education and Research, Chandigarh, India

A 41-year-old male presented with history of weight loss and epigastric discomfort for 6 months. His electrocardiogram revealed sinus tachycardia, Chest X-ray showed money-bag appearance of the heart and two-dimensional echocardiography revealed gross pericardial effusion. He underwent pericardiocentesis and 500 ml straw-colored fluid was drained. Fluid cytology examination showed atypical cells with suspicion of metastatic carcinoma. Contrast-enhanced computed tomography of the chest and abdomen revealed gross pericardial effusion with hyperdense content within the effusion, which was attributed to hemorrhagic content. ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography (^{18}F-FDG PET/CT) done for localizing primary tumor [Figure 1] revealed FDG-avid pericardial thickening (SUVmax 5.5) along with mild FDG uptake in the periphery of a soft-tissue lesion within the pericardial cavity (SUVmax 3.3, arrowhead). Mild left pleural effusion was also noted. No abnormal FDG-avid lesion was noted elsewhere in the body and PET/CT findings were suggestive of the primary pericardial tumor with pericardial effusion and thickening.

Resection of the pericardial mass was done and gross examination revealed yellowish-brown well-encapsulated mass measuring 6 cm × 5 cm × 3 cm showing hemorrhagic and solid areas on cut section. The histopathological analysis of the resected specimen showed tumor with large blood-filled cavernous spaces with outer dense fibrinous exudate suggestive of cavernous hemangioma. No areas of atypia, mitosis or necrosis were noted. The patient recovered uneventfully from the surgery and is on follow-up.

Hemangiomas are extremely rare tumors of the heart that may present with pericardial effusion, dyspnea, chest discomfort, palpitations or syncope.[1] Hemangiomas can be capillary, cavernous, or arteriovenous type. High-contrast enhancement is the typical feature on CT and MRI. Pericardial hemangiomas are extremely rare. Few reports on findings of cardiac hemangioma on ^{18}F-FDG PET/CT have been published.[2-8] Being benign tumors, cardiac hemangiomas show relatively low FDG uptake while malignant cardiac tumors show higher FDG uptake. In a study by Rahbar *et al*., SUVmax cutoff of 3.5 was able to differentiate between malignant and benign cardiac tumors with a sensitivity of 100% and specificity of 86%.[3] In addition, in patients with hemorrhagic pericardial effusions, after exclusion of tuberculosis, ^{18}F-FDG PET-CT scan can

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Address for correspondence:
Dr. Harmandeep Singh, Department of Nuclear Medicine, Post Graduate Institute of Medical Education and Research, Chandigarh - 160 012, India. E-mail: drharmandeepsingh@gmail.com

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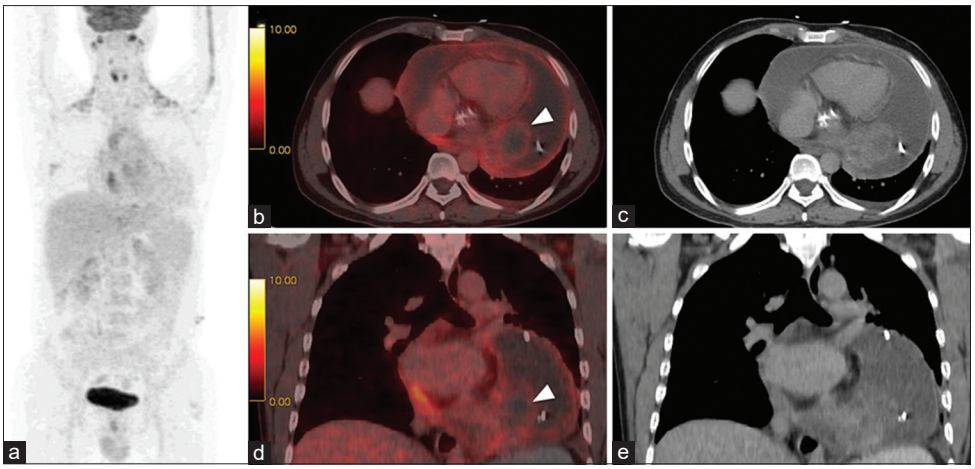

Figure 1: ^{18}F-fluorodeoxyglucose positron emission tomography-computed tomography done for localizing primary tumor in a case with suspected metastatic pericardial effusion revealed mild fluorodeoxyglucose uptake in the region of the heart (Maximum Intensity Projection (MIP); a) with fluorodeoxyglucose-avid diffuse pericardial thickening (SUVmax 5.5) along with fluorodeoxyglucose uptake in periphery of a soft-tissue lesion within the pericardial cavity measuring 6 cm × 4.5 cm (SUVmax 3.3, arrowhead) on trans-axial and coronal fused positron emission tomography-computed tomography (b and d) and computed tomography (c and e) images. Mild left pleural effusion was also noted. Excision of the pericardial lesion revealed cavernous hemangioma

be of great assistance to exclude metastatic tumors and PET-CT findings can guide toward the diagnosis of cardiac hemangioma, especially when CT findings are equivocal as in the present case.[5]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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