



Case illustrated

Multifocal mycotic aneurysms detected by ^{18}F -FDG PET/CT in fever of unknown origin



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Discussion

A 34-year-old male was admitted with mitral valve vegetation and bacterial endocarditis and subsequently underwent mitral valve repair and resection of valve vegetation. Cultures obtained from mitral valve leaflets were positive for *Rothia mucilaginosa*. Postoperatively, he received vancomycin, ceftriaxone and acetaminophen but continued to spike fevers, with worsening leukocytosis and positive inflammatory markers. Clinical workup including bacterial, fungal and AFB cultures, plain films of the abdomen and pelvis, and spine MRI identified no additional source of infection. A whole body FDG PET/CT followed by a contrast-enhanced CT of the abdomen and pelvis was obtained for further evaluation (Figs. 1 and 2).

FDG PET/CT and contrast-enhanced CT identified infected splenic and femoral artery mycotic aneurysms with intense FDG uptake. The patient subsequently underwent an open splenectomy as well as a right femoral mycotic aneurysm repair, right groin washout, sartorius muscle flap and

deep popliteal vein bypass. Final histopathology showed suppurative inflammation, necrosis, and abscess formation in both the splenic and femoral tissues. Bacterial and fungal tissue cultures were negative.

Mycotic aneurysm is a rare entity comprising less than 1 % of arterial aneurysms [1] and could lead to life-threatening complications such as sepsis or rupture [2]. Clinical features are usually non-specific and dependent on the site of the aneurysm [3]. Imaging is essential for diagnosis, localization and characterization of infected aneurysms, treatment planning, and assessment of treatment response [1,4].

Definitive clinical management of mycotic aneurysms depends on the location, characteristics, and number of infected aneurysms and includes antibiotics, surgical resection, and endovascular treatment [4,5]. PET/CT has been a useful addition to anatomic imaging and can lead to early diagnosis, effective management, and reduced relapses and hospitalization costs [5]. In the setting of infection work-up, FDG PET is a clinically useful tool that can significantly alter management and improve outcomes.

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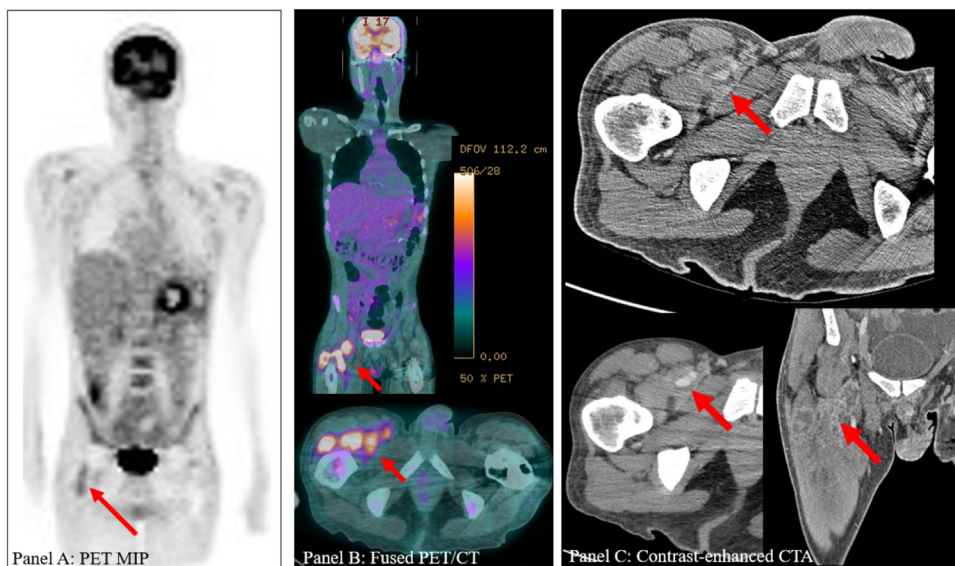


Fig. 1. ¹⁸F-FDG PET/CT images of a right thigh mycotic aneurysm with perivascular abscesses. PET MIP (A) image demonstrates a hypermetabolic linear focus in the proximal right thigh (arrow). An additional peripherally hypermetabolic focus is seen in the abdomen in the left upper abdomen (see Fig. 2). Axial/coronal PET/CT fusion (B) images demonstrate intensely hypermetabolic foci (arrows) associated with vasculature and musculature of the anterior right thigh. Axial/coronal contrast-enhanced CTA (C) images demonstrate rim-enhancing fluid collections in the anterior right thigh with irregular focal outpouchings originating from the right profunda femoral artery (arrows), consistent with mycotic aneurysm and abscesses.

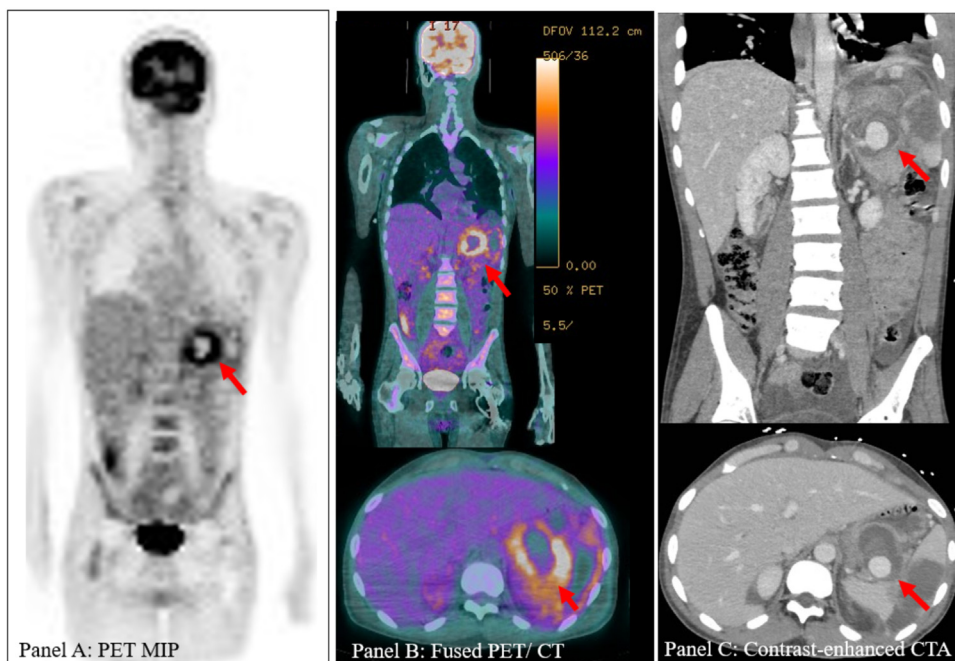


Fig. 2. ¹⁸F-FDG PET/CT images of a splenic artery mycotic aneurysm. PET MIP (A) and axial/coronal PET/CT fusion (B) images demonstrate an intensely peripherally hypermetabolic lesion with central photopenia within the left upper abdomen, adjacent to the spleen. This was favored to be an abscess but difficult to characterize on low-dose CT without IV contrast. Axial/coronal contrast-enhanced CTA (C) images demonstrate a fluid collection between the stomach and spleen with internal enhancement that communicated with the splenic artery. This was new compared to a CT from one month earlier.

Declaration of Competing Interest

No conflicts of interest to disclose.

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Consent

N/A.

Ethical approval

N/A.

Author contribution

AM – manuscript writing; HC – image retrieval and processing; MPS and PMS – supervision, case selection, manuscript editing.

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