Interesting Image

Mol Imaging Radionucl Ther **DOI:***10.4274/mirt.galenos.2026.90217*

Post-cardiac Injury Syndrome as a Cause of False-positive ^{18}F-FDG PET/CT for Infection

Enfeksiyon Tanısında Yalancı Pozitif ^{18}F-FDG PET/BT Sonucuna Yol Açan Bir Neden Olarak Kardiyak Hasar Sonrası Sendromu

Ayat Mouaden, Imad Ghfir, Hasnae Guerrouj

Mohammed V University, Faculty of Medicine and Pharmacy, Department of Nuclear Medicine, Rabat, Morocco

Abstract

Post-cardiac injury syndrome (PCIS) is an autoimmune inflammatory condition that may occur weeks after cardiac surgery and can closely mimic infection on ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT). We report the case of a 53-year-old woman who presented six weeks after aortic valve replacement and ascending aortic graft implantation, with persistent chest pain, fever, and elevated inflammatory markers, raising the suspicion of infective endocarditis. Whole-body PET demonstrated intense, heterogeneous ^{18}F-FDG uptake along the sternotomy site and the ascending aortic graft, findings typically suggestive of infection, whereas no abnormal uptake was observed at the prosthetic valve. Despite these imaging findings, repeated blood cultures and surgical site samples remained negative. A diagnosis of Dressler syndrome, a form of PCIS, was ultimately established. Treatment with high-dose aspirin led to rapid clinical and biological improvement. This case points to a significant diagnostic pitfall in ^{18}F-FDG PET/CT in the postoperative setting and underscores the importance of integrating imaging findings with clinical and microbiological data to avoid misdiagnosis and unnecessary antibiotic therapy.

Keywords: PCIS, endocarditis, PET/CT, Dressler

Öz

Kardiyak hasar sonrası sendrom (PCIS), kalp cerrahisinden haftalar sonra ortaya çıkabilen ve ^{18}F-florodeoksiglukoz pozitron emisyon tomografisi/bilgisayarlı tomografi (^{18}F-FDG PET/BT) görüntülerinde enfeksiyonu büyük ölçüde taklit edebilen otoimmün enflamatuvar bir tablodur. Bu yazıda; aort kapak replasmanı ve çıkan aort greft implantasyonu işlemlerinden altı hafta sonra, enfektif endokardit şüphesi uyandıran inatçı göğüs ağrısı, ateş ve yüksek inflamatuar belirteçlerle başvuran 53 yaşında bir kadın hasta sunulmaktadır. Yapılan tüm vücut PET incelemesinde, sternotomi hattı ve çıkan aort grefti boyunca tipik olarak enfeksiyonu düşündüren yoğun ve heterojen ^{18}F-FDG tutulumu izlenirken, protez kapak düzeyinde anormal bir tutulum saptanmadı. Bu görüntüleme bulgularına rağmen, tekrarlanan kan kültürleri ve cerrahi bölge örnekleri negatif sonuç verdi. Nihayetinde hastaya, bir PCIS formu olan Dressler sendromu tanısı konuldu. Yüksek doz aspirin tedavisi ile hızlı klinik ve biyolojik iyileşme sağlandı. Bu olgu, ameliyat sonrası dönemde ^{18}F-FDG PET/BT kullanımında önemli bir tanısal yanılgı riskine işaret etmekte; yanlış tanı ve gereksiz antibiyotik tedavisinden kaçınmak amacıyla görüntüleme bulgularının klinik ve mikrobiyolojik verilerle birlikte değerlendirilmesinin önemini vurgulamaktadır.

Anahtar Kelimeler: PCIS, endokardit, PET/BT, Dressler

Address for Correspondence: Ayat Mouaden, Mohammed V University, Faculty of Medicine and Pharmacy, Department of Nuclear Medicine, Rabat, Morocco
E-mail: ayatm14@htmail.com **ORCID ID:** orcid.org/0000-0002-3625-1026

Received: 06.02.2026 **Accepted:** 09.09.2026 **Epub:** 25.11.2026

Cite this article as: Mouaden A, Ghfir I, Guerrouj H. Post-cardiac injury syndrome as a cause of false-positive ^{18}F-FDG PET/CT for infection. Mol Imaging Radionucl Ther. [Epub Ahead of Print]

Copyright© 2027 The Author(s). Published by Galenos Publishing House on behalf of the Turkish Society of Nuclear Medicine.
This is an open access article under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND) International License.

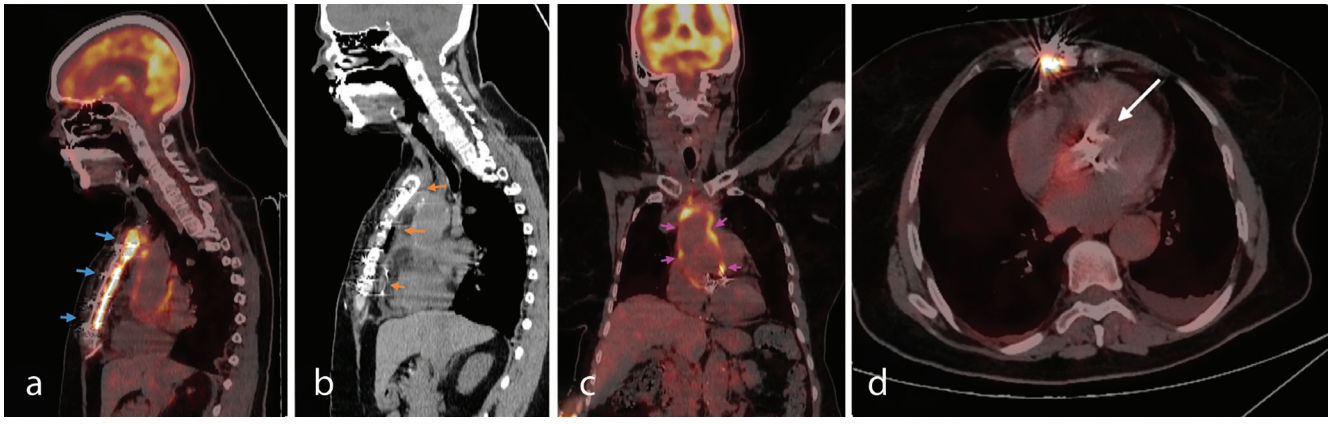


Figure 1. We report the case of a 53-year-old woman who underwent cardiac surgery consisting of simultaneous aortic valve replacement and ascending aortic graft implantation via median sternotomy six weeks earlier. She was referred for ^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT) because of persistent chest pain, fever, and elevated inflammatory markers. This context strongly suggested infective endocarditis.

Whole-body ^{18}F-FDG PET/CT was performed following a dedicated cardiac protocol after 24 hours of a high-fat low-carbohydrate diet, and 8 hours of strict fasting, followed by the injection of 5 MBq/kg of ^{18}F-FDG (total activity of 340 MBq). The examination demonstrated intense ^{18}F-FDG uptake along the sternotomy line maximum standard uptake value (SUV_{max}=13.1) (blue arrows on Figure 1A, representing a fusion sagittal image of the thorax), with no associated inflammatory changes or fluid collections on the CT image (orange arrows on Figure 1B, representing a CT sagittal image of the thorax). In addition, marked, heterogeneous hypermetabolism was observed along the ascending aortic graft (SUV_{max}=8.5; purple arrows in Figure 1C, a coronal fusion image of the thorax). Figure 1D shows low-grade left pleural effusion with no abnormal ^{18}F-FDG uptake at the level of the prosthetic aortic valve (white arrow on the axial fusion image).

Given the intensity and heterogeneity of ^{18}F-FDG uptake, an infectious complication involving the aortic graft and sternotomy site was initially suspected. However, repeated blood cultures and local samples from the surgical site remained persistently negative. No clinical deterioration or embolic events were observed during follow-up. Ultimately, a diagnosis of Dressler syndrome (DS) was retained. DS represents a form of autoimmune-related post-cardiac injury syndrome (PCIS), characterized, in this case, by pleural effusion and persistent inflammatory activity involving the graft. The patient was treated with non-steroidal anti-inflammatory therapy at a dose of 2 g/day, resulting in rapid and marked clinical improvement. Fever resolved and inflammatory signs regressed within a few days. Follow-up confirmed complete recovery without antibiotic therapy, supporting the non-infectious inflammatory nature of the PET/CT findings.

DS occurs after myocardial infarction or cardiac surgery (1,2). Although relatively uncommon, DS should be considered as an alternative diagnosis in patients presenting with persistent malaise, chest pain, or systemic inflammatory symptoms, particularly when symptoms occur more than two weeks after the triggering factor (3).

While ^{18}F-FDG PET/CT is a powerful imaging modality for the evaluation of suspected infective endocarditis, postoperative inflammatory conditions such as DS may closely mimic infection. In the present case, PET/CT interpretation was guided by the previously published five-point semi-quantitative grading scale validated by Sah et al. (4) for the diagnosis of vascular graft infection. According to this scale, the marked heterogeneous ^{18}F-FDG uptake observed in our patient corresponded to grade 4, a category considered highly suggestive of infection. Moreover, the SUV_{max} cut-off for infection proposed in the same study was 3.8, which is substantially lower than the values observed in our patient. In another study evaluating PET/CT findings after sternotomy in 44 patients, the mean SUV_{max} at five weeks post-surgery was 7.34±1.86 (5). The sternotomy uptake in our patient was notably higher, suggesting that postoperative inflammatory healing processes may occasionally exceed commonly reported ranges.

Differentiating infection from autoimmune-mediated inflammation remains highly challenging on ^{18}F-FDG PET/CT, given the absence of standardized interpretation criteria in the postoperative setting. Careful integration of clinical presentation, CT morphological findings, and microbiological results is therefore essential to avoid misdiagnosis and unnecessary antibiotic treatment.

Ethics

Informed Consent: Informed consent was obtained from the patient.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.M., I.G., H.G., Concept: A.M., Design: A.M., Data Collection or Processing: A.M., H.G., Analysis or Interpretation: A.M., I.G., H.G., Literature Search: A.M., I.G., H.G., Writing: A.M., I.G., H.G.

Conflict of Interest: No conflicts of interest were declared by the authors.

Financial Disclosure: The authors declare that this study has received no financial support.

References

1. Tahir MH, Sohail S, Shahid D, Hussain I, Malik J, Iqra S, Faraz M. Postcardiac injury syndrome after cardiac surgery: an evidence-based review. Cardiol Rev. 2026;34:19-23.
2. Jaworska-Wilczynska M, Abramczuk E, Hryniewiecki T. Postcardiac injury syndrome. Med Sci Monit. 2011;17:CQ13-CQ14.
3. Gungor B, Ucer E, Erdinler IC. Uncommon presentation of postcardiac injury syndrome: acute pericarditis after percutaneous coronary intervention. Int J Cardiol. 2008;128:e19-e21.
4. Sah BR, Husmann L, Mayer D, Scherrer A, Rancic Z, Puippe G, Weber R, Hasse B; VASGRA Cohort. Diagnostic performance of ^{18}F-FDG-PET/CT in vascular graft infections. Eur J Vasc Endovasc Surg. 2015;49:455-464.
5. Blomjous MSH, Mulders TA, Wahadat AR, Tanis W, Bogers AJJC, Roos-Hesselink JW, Budde RPJ. ^{18}F-FDG/PET-CT imaging findings after sternotomy. J Nucl Cardiol. 2023;30:1210-1218.