

IMAGING VIGNETTE

INTERMEDIATE

CLINICAL VIGNETTE

Myocardial Abscess After Myocarditis

Advantages of Multimodal Imaging Detecting the Rare Case of Fungal Abscess



Mirac Senel, MD,^a Christian Schlensak, MD,^b Meinrad Paul Gawaz, MD,^a Patrick Krumm, MD,^c
Karin Anne Lydia Mueller, MD^a

ABSTRACT

We discuss the rare case of a myocardial abscess of the left ventricle in a 42-year-old man on immunosuppressive therapy after fulminant myocarditis. Multimodal imaging detected the myocardial abscess along with other septic emboli caused by infection with *aspergillus fumigatus*, which could be treated effectively with antimycotic strategies. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2023;6:101694) © 2023 Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A 42-year-old male patient with a history of fulminant macrophage-dominated myocarditis, who was treated by immunosuppressive therapy for 2 months, was admitted to our university hospital because of the incidental diagnosis of a myocardial abscess of the left ventricle. The myocardial lesion was suspected by routine cardiac magnetic resonance (CMR).

CMR revealed the myocardial abscess of the infero-basal wall of the left ventricle (LV) (Figures 1A and 1B, Video 1, Supplemental Figure 1) and a cystic lesion as septic focus in the right upper lobe of the lung. A computed tomography (CT) scan confirmed these findings (Figures 1C and 1D, Video 2). Transesophageal echocardiogram depicted the suspicious myocardial lesion of the LV (Video 3), which could not be seen in transthoracic echocardiogram. We performed positron emission tomography (PET)-CT for further clarification. Multiple metabolically active areas were found in the lungs, heart, muscular and subcutaneous tissue, and colon. Most interestingly, PET-CT illustrated again the large myocardial abscess within the LV wall (Figure 1E). Finally, microbiological examination yielded evidence of *Aspergillus fumigatus* and *Candida glabrata*. The invasive candidiasis/aspergillosis was treated with voriconazole and caspofungin for 5 weeks.

Here, we report a rare case of a suspected fungal myocardial abscess. The diagnosis of myocardial abscesses is an extraordinary challenge because the clinical relevance can range from asymptomatic courses to myocardial wall rupture and septic shock.¹ Transthoracic echocardiogram and transesophageal echocardiogram are helpful primary diagnostic tools but are not sufficient to discriminate the origin of suspicious lesions.² CT and CMR are valuable modalities with several advantages. CT scans identify typical abscess characteristics

From the ^aUniversity Hospital Tuebingen, Department of Cardiology and Angiology, Eberhard Karls University Tuebingen, Tuebingen, Germany; ^bUniversity Hospital Tuebingen, Department of Thoracic and Cardiovascular Surgery, Eberhard Karls University Tuebingen, Tuebingen, Germany; and the ^cUniversity Hospital Tuebingen, Department of Radiology, Eberhard Karls University Tuebingen, Tuebingen, Germany.

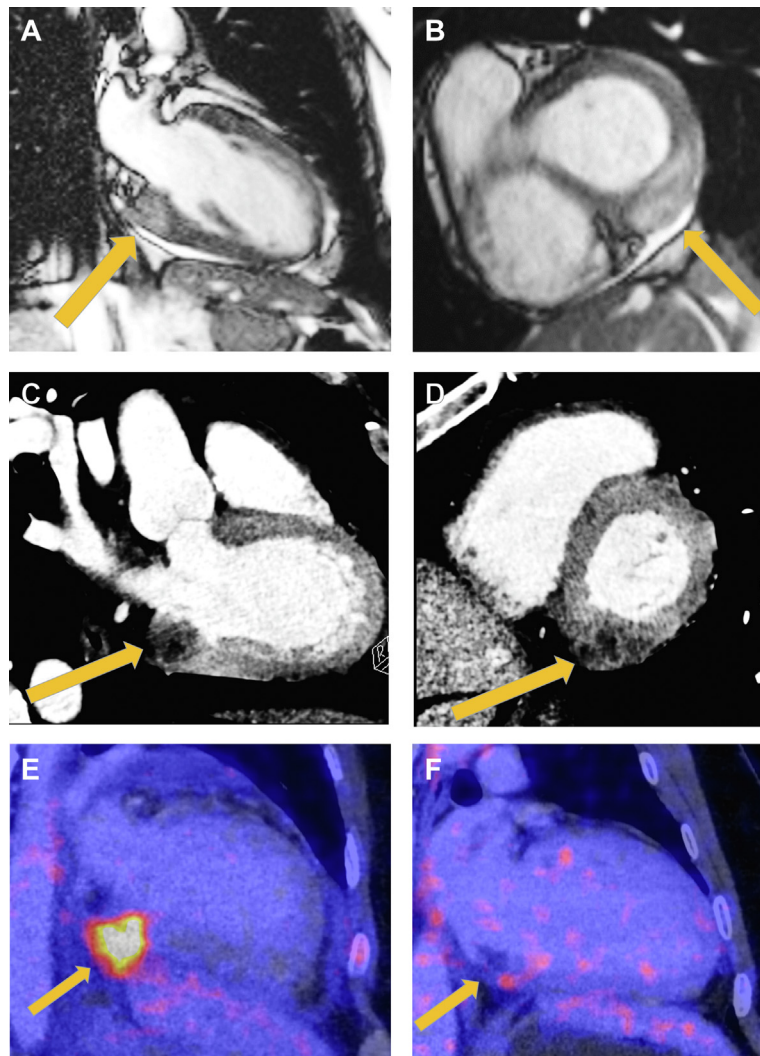
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**ABBREVIATIONS
AND ACRONYMS****CMR** = cardiac magnetic
resonance**CT** = computed tomography**LV** = left ventricle**PET** = positron emission
tomography

comprising fluid density and contrast-enhancing myocardial wall thickening, as we have shown.² CMR has a superior spatial and temporal resolution, so its sensitivity and specificity to correctly diagnose myocardial abscesses is significantly higher than other imaging tools.² CMR detects intramyocardial lesions independent from their origin. PET-CT scans supported our findings in CMR/CT as we aimed to differentiate between a myocardial abscess from lesions of other origin.³

Repeated PET-CT scans during follow-up proved that all metabolically active septic foci had resolved under the antimycotic therapy (**Figure 1F**).

FIGURE 1 Myocardial Abscess: Available Diagnostic Tools

(A and B) CMR revealed a suspicious lesion of the left ventricular wall and thereby identified the hyperintense myocardial abscess (bSSFP in 2CV and SA) indicated by **arrows**. **(C and D)** Furthermore, a contrast-enhanced cardiac computed tomography scan supported the diagnosis of a here hypodense myocardial abscess with a contrast-enhancing wall indicated by **arrows**. **(E)** Cardiac fluorodeoxyglucose positron emission tomography-computed tomography scan indicates the glucose hypermetabolism within the myocardial abscess in the infero-basal wall indicated by the **arrow**. **(F)** After 5 months of antifungal therapy, fluorodeoxyglucose positron emission tomography-computed tomography scan indicates complete resolution without any residual inflammatory hypermetabolism. The **arrow** indicates the resolution of the myocardial abscess in PET-CT during follow up. No inflammatory hypermetabolism detectable after antifungal therapy. bSSFP = balanced-steady-state-free-precession; 2CV = 2-chamber view; SA = short-axis.

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ADDRESS FOR CORRESPONDENCE: Dr Karin Anne Lydia Mueller, Department of Cardiology and Angiology, University Hospital, Eberhard Karls University Tuebingen, Otfried-Mueller Straße 10, 72076 Tuebingen, Germany. E-mail: k.mueller@med.uni-tuebingen.de.

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KEY WORDS myocardial abscess, myocarditis, PET CT

 **APPENDIX** For a supplemental figure and videos, please see the online version of this paper.