Cardiac Invasion of Recurrence Esophageal Carcinoma Mimicking ST-elevation Myocardial Infarction

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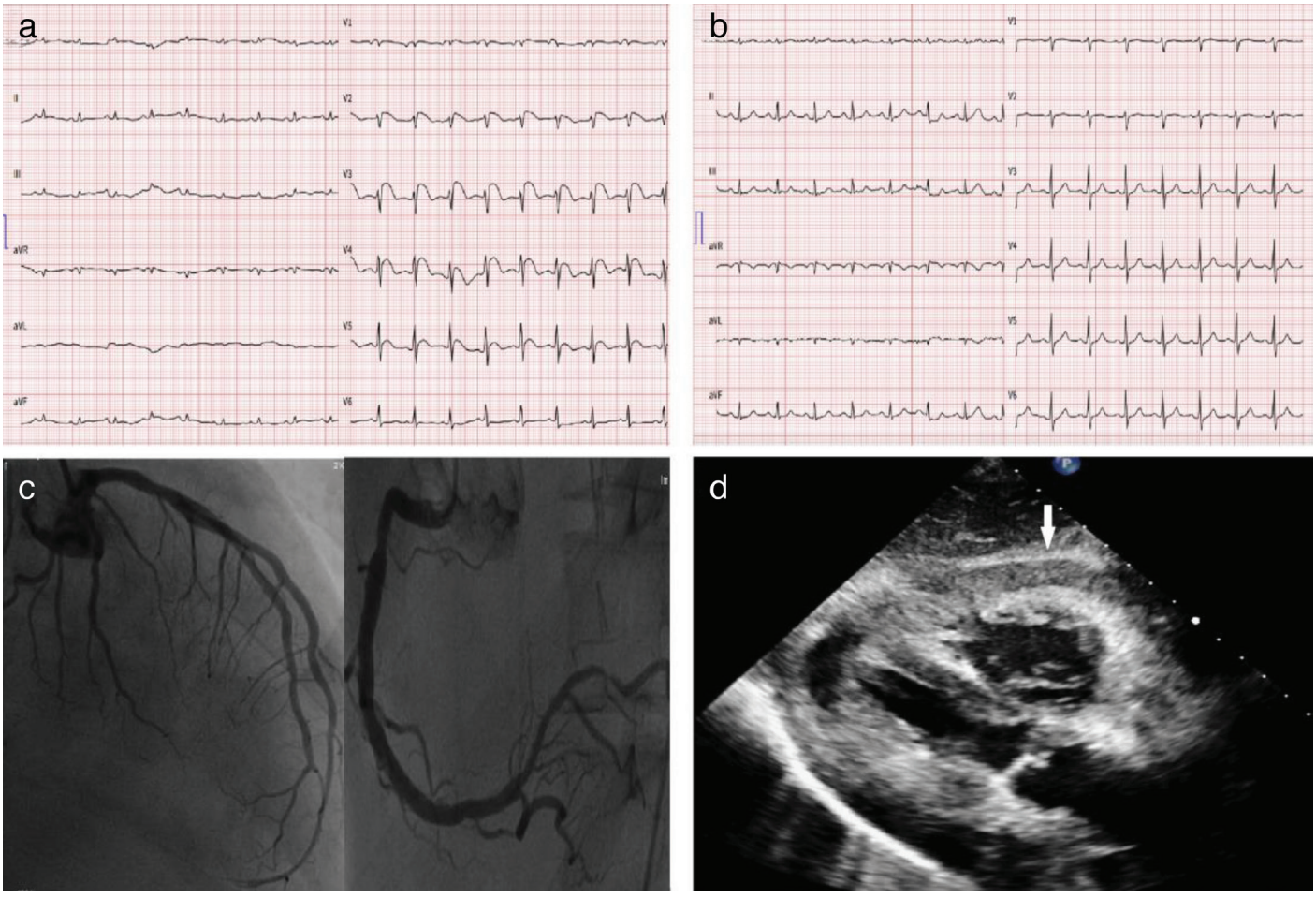

FIG. 1. (a) ST elevation in the anterior leads on ECG at admission. (b) Normal ECG from 6 months ago. (c) No significant stenosis observed on coronary angiography (CAG). (d) Echocardiographic image showing apical thickening with a heterogeneous appearance (secondary to invasion), and a solid structure (white arrow) adjacent to the myocardium in the pericardial space, consistent with cancer invasion.

ECG, electrocardiogram

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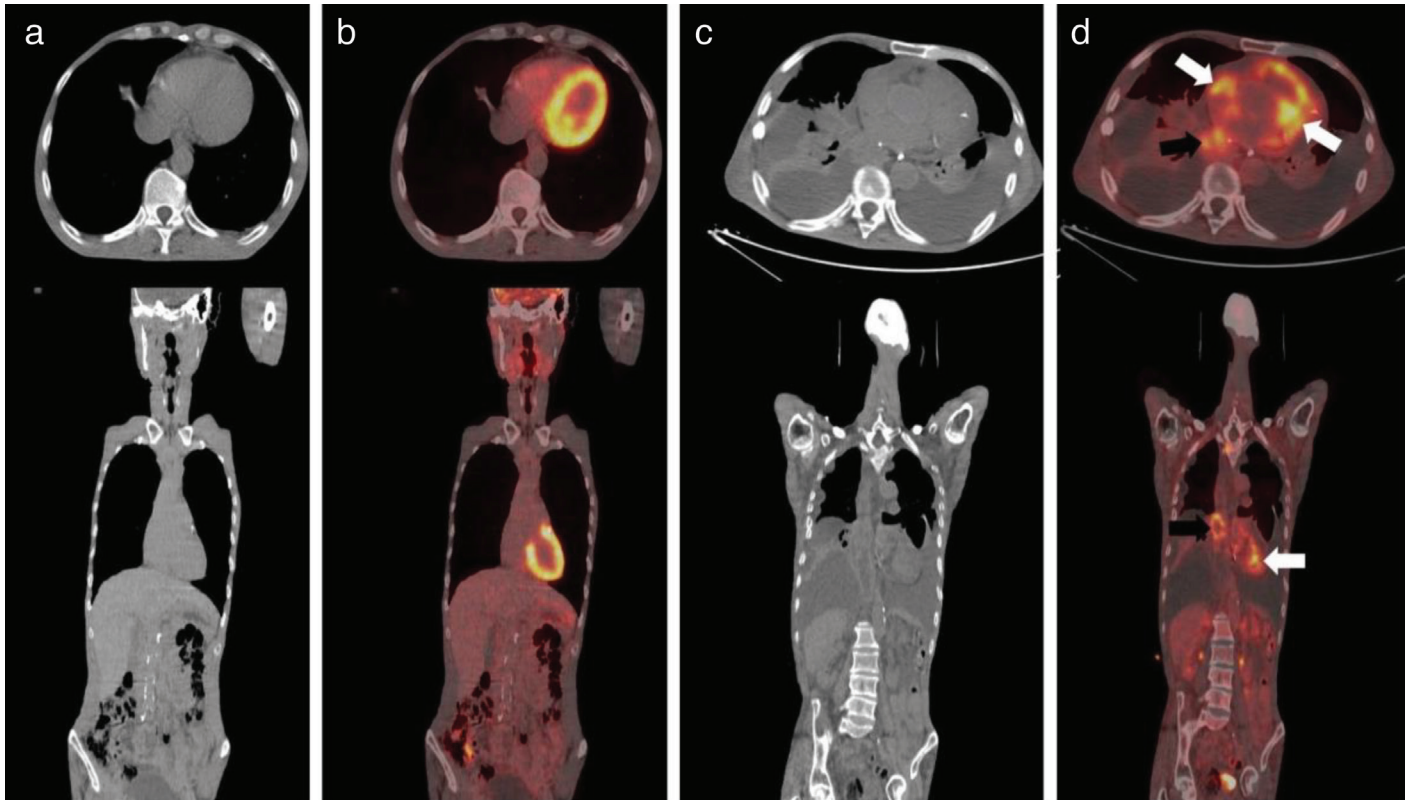

FIG. 2. (a) Normal CT images prior to cancer recurrence. (b) Normal myocardial FDG-18 uptake in PET/CT. (c) CT imaging showing myocardial thickening with a heterogeneous appearance secondary to cancer invasion after recurrence. (d) PET/CT revealing pathological FDG-18 uptake in the lower esophagus (black arrow) and myocardium (white arrow) indicative of malignancy involvement.

PET/CT, positron emission tomography/computed tomography; FDG, fluorodeoxyglucose.

A 63-year-old man presented to the emergency department with overall decline, shortness of breath, and chest pain. His medical history included an esophageal gastrectomy and chemotherapy in 2017 for esophageal cancer, which had gone into remission. However, the cancer recurred, and he underwent chemotherapy again 10 months prior. On admission, his vital signs indicated low blood pressure (80/60 mmHg) and low oxygen saturation (SpO_2 90%). His electrocardiogram (ECG) showed sinus rhythm with a heart rate of 110 bpm, and ST-segment elevation was noted in the anterior leads (Figure 1a). An emergency bedside echocardiogram (ECHO) revealed apical hypokinesia and thickening. Six months earlier, his ECG (Figure 1b) and ECHO results had been normal. Because of the ST elevation, he was sent for coronary angiography (CAG), which showed no significant stenosis (Figure 1c). No further ECG changes were detected during follow-up. Additional echocardiographic examination demonstrated biventricular apical thickening (more marked on the left side), mild hypokinesis, and pericardial effusion (Figure 1d, Supplementary Videos 1-3). A hypoechoic solid mass was seen along the myocardial wall. Considering his history of esophageal cancer, a positron emission tomography/computed tomography (PET/CT) scan was performed to check for cancer spread. The PET/CT showed abnormal F-18 fluorodeoxyglucose uptake in the heart muscle, confirming myocardial involvement by the tumor (Figure 2). The echocardiographic findings of thickening and hypokinesis matched the areas of malignant invasion. The ST elevation was attributed to the myocardial changes caused by this infiltration. During his hospital stay, his infection markers rose, and he developed severe pneumonia, requiring intubation. Sadly, he died from septic shock.

The reported incidence of cardiac metastasis ranges from 2.3% to 18.3%, depending on the imaging method used and the type of primary tumor involved.[1] Esophageal carcinoma (EC) ranks as the eighth most common cancer and the sixth leading cause of cancer-related death worldwide.[2] Metastasis to the heart from esophageal tumors is uncommon and even more so when the primary tumor is a squamous cell carcinoma.[3] In this case image, we describe an instance of cardiac invasion by recurrent EC that imitated ST-elevation myocardial infarction, supported by illustrative cardiac imaging. Our aim is to share an example of cardiac metastasis with biventricular and pericardial involvement, which we have not previously found documented in the literature, and to outline the pathway from clinic presentation to diagnosis through cardiac imaging. The patient's initial symptoms resembled ST-elevation myocardial infarction; however, CAG revealed no significant blockage. This diagnostic course highlights the need to consider cardiac metastasis in cancer patients with unusual cardiac findings and demonstrates the value of multimodal imaging, particularly

PET/CT, for distinguishing malignant from ischemic or inflammatory heart disease. By presenting this case, we hope to raise awareness of this rare but clinically important condition and stress the need for early, comprehensive cardiac evaluation in similar oncologic situations.

Informed Consent: The patient's relatives gave written and verbal consent for the publication of the case report.

Authorship Contributions: Materials- E.K., F.K.Y.; Data Collection and/or Processing- E.K., F.K.Y.; Literature Review- E.H.; Writing- C.Ö.; Critical Review- M.Ç.

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SUPPLEMENTARY VIDEO 1. Subcostal long-axis view showing biventricular apical thickening with a heterogeneous appearance, consistent with cancer invasion. Pericardial effusion and a solid structure (secondary to invasion) adjacent to the myocardium in the pericardial space are also visualized on echocardiography.

SUPPLEMENTARY VIDEO 2. Apical short-axis view.

SUPPLEMENTARY VIDEO 3. Subcostal four-chamber view.

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