

IMAGING VIGNETTE

BEGINNER

CLINICAL VIGNETTE

Echocardiographic Features of Evolving Aortic Root Abscess



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ABSTRACT

Paravalvular abscess is a serious complication of endocarditis that often requires surgical intervention. Diagnosis is achieved by recognizing echocardiographic features of paravalvular abscess seen on transesophageal echocardiography. Our case report highlights these features seen in a patient with aortic root abscess and aortotricuspid annulus involvement. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2019;1:426-7) © 2019 The Authors. 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 68-year-old woman with a past medical history of bioprosthetic aortic valve, end-stage renal disease on hemodialysis, hypertension, diabetes mellitus, and stroke presented with worsening shortness of breath and back pain. Work-up revealed *Proteus mirabilis bacteremia*, secondary to hemodialysis catheter infection. The patient was promptly started on intravenous antibiotics, and the hemodialysis catheter was removed. A transthoracic echocardiogram showed a drop in ejection fraction from 52% to 28%, trace aortic regurgitation, and moderate mitral regurgitation. The drop in ejection fraction likely was due to severe sepsis, as the patient had recently had a normal coronary angiogram. Transesophageal echocardiography (TEE) revealed a vegetation measuring 1.7 x 1.0 cm at the aortotricuspid annulus with no involvement of the bioprosthesis (**Figures 1A to 1C, Video 1**). It was decided to continue intravenous antibiotics with a plan for repeat TEE in a week. Repeat TEE (**Figures 1D to 1F, Video 2**) demonstrated a significant increase in the size of the vegetation attached to the aortotricuspid annulus, involvement of the tricuspid septal leaflet, and appearance of a perivalvular echolucent area consistent with aortic root abscess. The bioprosthetic aortic valve showed no signs of malfunction or vegetation. The patient was taken to the operating room and underwent extensive debridement of the aortic root abscess, replacement of the bioprosthetic valve, and tricuspid valve repair after removal of the vegetation. Post-procedure, the patient had significant right-ventricular dysfunction, profound metabolic acidosis, and extensive blood loss, and finally died from postoperative complications. Unfortunately, the patient's family refused an autopsy.

Aortic root abscess is a life-threatening complication of endocarditis, with high morbidity and mortality (1). TEE provides definite anatomical recognition as well as delineation of extension to other chambers. It is uncommon for aortic root abscess to develop without involvement of the prosthetic aortic valve. In this patient, we did not find any significant valvular stenosis, regurgitation, or vegetation associated with the

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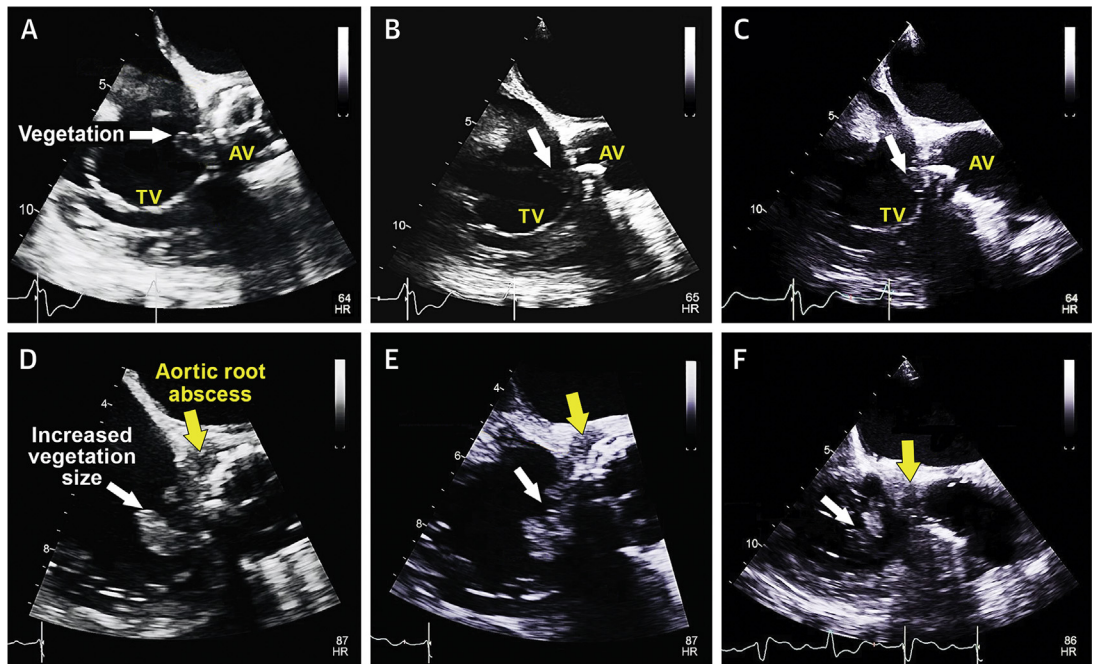
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prosthetic aortic valve. In situations in which TEE is inconclusive but suspicion of infective endocarditis is high, or a complication such as perivalvular abscess is suspected, other imaging modalities, including F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG-PET/CT), could be useful (2). Tricuspid valve involvement in the setting of aortic root abscess is rare (3). Prompt surgical intervention is required because antibiotics alone will fail to control infection.

**ABBREVIATIONS
AND ACRONYMS**

FDG-PET/CT = F-fluorodeoxyglucose positron emission tomography/computed tomography
TEE = transesophageal echocardiography

FIGURE 1 Progression From Endocarditis to Aortic Root Abscess



(A to C) Short-axis view on transesophageal echocardiography (TEE) at the level of the AV during different stages of the cardiac cycle. Vegetation at the aortotricuspid annulus (white arrow) with no TV or bioprosthetic AV involvement is seen. No aortic root thickening is noted. See Video 1. (D to F) The same views on TEE taken 1 week later show an echolucent space with thickening at the aortic root consistent with an abscess (yellow arrow). Involvement of septal tricuspid valve leaflet, as well as increased vegetation size, are noted (white arrow). See Video 2. AV = aortic valve; TV = tricuspid valve.

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KEY WORDS echocardiography, aortic valve, abscess

APPENDIX For supplemental videos, please see the online version of this paper.