8-2012

Aortic Valve Perforation Diagnosed With Use of 3-Dimensional Transesophageal Echocardiography

Nitya Alluri
University of Connecticut School of Medicine and Dentistry

Simi Kumar
University of Connecticut School of Medicine and Dentistry

Ravi Marfatia
University of Connecticut School of Medicine and Dentistry

Pravin Patil
University of Connecticut School of Medicine and Dentistry

Jason Ryan
University of Connecticut School of Medicine and Dentistry

See next page for additional authors

Authors
Nitya Alluri, Simi Kumar, Ravi Marfatia, Pravin Patil, Jason Ryan, and Erick Avelar

Images in Cardiovascular Medicine

Aortic Valve Perforation

Diagnosed with Use of 3-Dimensional Transesophageal Echocardiography

Nitya Alluri, MBBS
Simi Kumar, MD
Ravi Marfatia, MD
Pravin Patil, MD
Jason Ryan, MD
Erick Avelar, MD

A 62-year-old man presented with acute decompensated heart failure. His medical history included heart failure with preserved ejection fraction and infective endocarditis. Two-dimensional transthoracic echocardiography (TTE) showed eccentric aortic insufficiency, the mechanism and severity of which could not be accurately determined because multiple jets were present (Fig. 1A and 1B). Three-dimensional (3D) transesophageal echocardiography (TEE) of the aortic valve showed major perforations in the right coronary and noncoronary cusps and small perforations in the left coronary cusp; moderate thickening was consistent with prior endocarditis (Fig. 1C and 1D). Visual examination of the excised aortic valve confirmed these findings (Fig. 2).

Comment

Two-dimensional TTE and TEE are the conventional methods for the diagnosis and quantification of valvular heart disease. Because 3D echocardiography enables

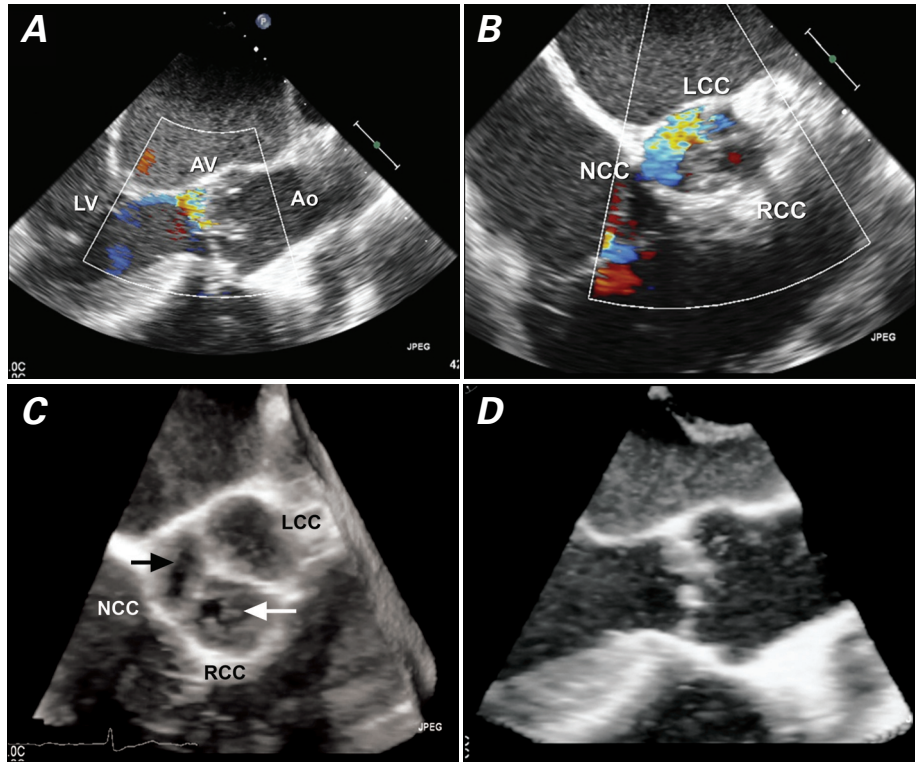

Fig. 1 *Two-dimensional transthoracic echocardiograms with color-flow Doppler in **A**) long-axis and **B**) short-axis views show eccentric aortic valve regurgitation. **C**) Three-dimensional transesophageal echocardiogram (short-axis view) of the aortic valve in diastole reveals major perforations in the right coronary and noncoronary cusps (arrows) and multiple small perforations in the left coronary cusp. **D**) Three-dimensional long-axis view shows moderate thickening, consistent with previous endocarditis.*

Ao = aorta; AV = aortic valve; LCC = left coronary cusp; LV = left ventricle; NCC = noncoronary cusp; RCC = right coronary cusp

Real-time motion image of Figure 1C is available at www.texasheart.org/journal.

Section Editor: *Raymond F. Stainback, MD, Department of Adult Cardiology, Texas Heart Institute at St. Luke's Episcopal Hospital, 6624 Fannin St., Suite 2480, Houston, TX 77030*

From: *Departments of Internal Medicine (Drs. Alluri, Kumar, and Marfatia), Cardiology (Drs. Avelar, Patil, and Ryan), Radiology (Dr. Avelar), and Noninvasive Cardiac Imaging (Dr. Avelar), University of Connecticut Health Center, Farmington, Connecticut 06030*

Address for reprints: *Erick Avelar, MD, Director, Noninvasive Cardiac Imaging Program, University of Connecticut Health Center, 263 Farmington Ave., Farmington, CT 06030*

E-mail: *eavelar@uchc.edu*

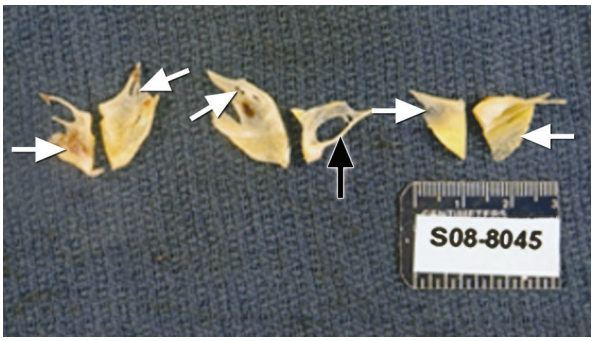

Fig. 2 *Photograph of a specimen from the excised aortic valve shows a major perforation (black arrow) and multiple small perforations (white arrows) in the valve cusps. The lack of commissural fusion indicates that prior infective endocarditis, not rheumatic valvular disease, was the cause.*

the acquisition of a 3D data set, it is emerging as a better noninvasive tool for the evaluation of valvular and other structural heart disease.[1] The images that we acquired with use of 3D TEE definitively established the diagnosis of aortic valve perforation.

References

1. Leja MJ, Shah DJ, Reardon MJ. Primary cardiac tumors. Tex Heart Inst J 2011;38(3):261-2.