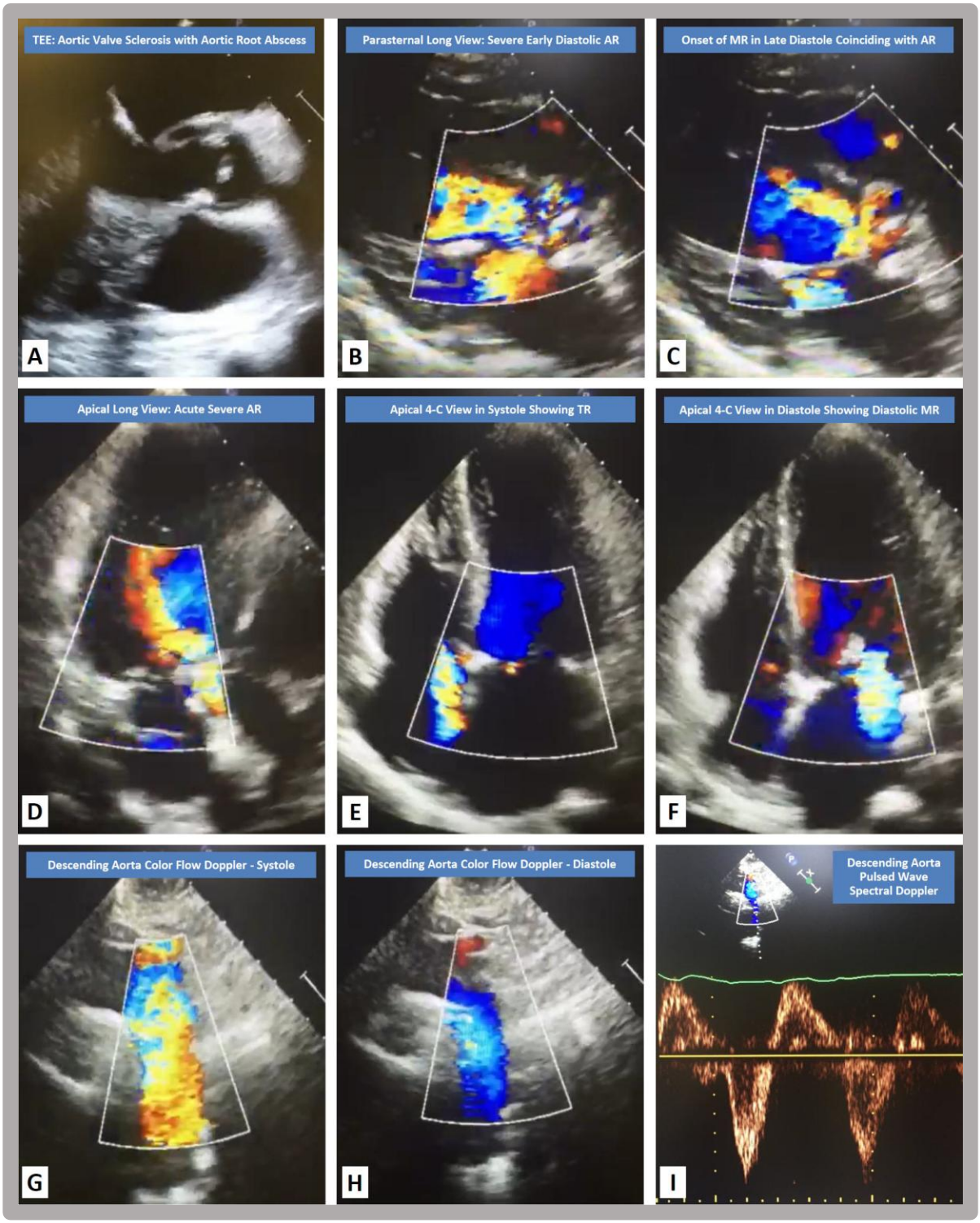
Cardiofel Newslet 2019 May; 2(5): 15-16

Acute Severe Aortic Regurgitation..*Reverse Circulation!*

Keerthana Karumbaiah, M.D.[a], Landai Nguyen, D.O.[b], Sarina Sachdev, M.D.[b], Bassam Omar, M.D., Ph.D.[b,c]



ISSN 2689-291X https://doi.org/10.13140/RG.2.2.32064.35841

Description

Acute severe aortic regurgitation may result from acute aortic dissection, acute endocarditis, or less commonly, trauma [1]. The sudden massive increase in both preload and afterload overwhelm the left ventricle's compensatory mechanisms, resulting in abrupt rise in the left ventricular end diastolic pressure and acute congestive heart failure [2].

In the figure, the transesophageal echocardiography (TEE) midesophageal long axis view (A) reveals calcified aortic cusps with an anterior aortic root echolucent space consistent with an abscess. The 2-D parasternal long axis view in early diastole (B) shows severe aortic regurgitation (AR) by color-flow Doppler, while the late diastolic frame (C) reveals a jet of diastolic mitral regurgitation (MR) concurrent with the AR jet. The 2-D apical long axis view (D) demonstrates the early diastolic jet of severe AR by color-flow Doppler. The apical four-chamber (4-C) views reveal tricuspid regurgitation (TR) in systole (E) and MR in late diastole (F). The suprasternal notch 2-D and color flow Doppler views display normal antegrade flow in systole within the descending aorta (G), with reversal of flow in diastole (H). The pulsed wave spectral Doppler of the descending aorta (I) reveals an abnormal holodiastolic flow reversal.

Manuscript submitted May 10, 2019, accepted May 11, 2019.

a Shannon Clinic, 120 E. Beauregard Ave. San Angelo, TX 76903, USA.

b Division of Cardiology, University of South Alabama, Mobile, AL, USA

c Corresponding Author: Bassam Omar, MD, PhD. Division of Cardiology, University of South Alabama, 2451 USA Medical Center Dr., Mobile, AL 36617, USA.

http://cardiofellows.com/newsletter-may-2019.html

Flow reversal within the descending aorta is a well described sign of significant aortic regurgitation, especially when the reversal is holodiastolic [3]. The increasing pressure in the left ventricle throughout diastole results in higher left ventricular end diastolic pressure than left atrial pressure. This causes presystolic reversal of flow and late diastolic MR [4]. Another mechanism for the diastolic MR is spread of the aortic valve infection to the mitral valve causing leaflet perforation resulting in flow reversal through the perforation once the left ventricular pressure exceeds the left atrial pressure in late diastole [5].

References:

1. Maheshwari V, Barr B, Srivastava M. Acute Valvular Heart Disease. Cardiol Clin. 2018 Feb;36(1):115-127.
2. Bugan B, Yildirim E, Celik M, et al. Acute Aortic Regurgitation in the Current Era of Percutaneous Treatment: Pathophysiology and Hemodynamics. J Heart Valve Dis. 2017 Jan;26(1):22-31.
3. Sutton DC, Kluger R, Ahmed SU, et al. Flow reversal in the descending aorta: a guide to intraoperative assessment of aortic regurgitation with transesophageal echocardiography. J Thorac Cardiovasc Surg. 1994 Sep;108(3):576-82.
4. Downes TR, Nomeir AM, Hackshaw BT, et al. Diastolic mitral regurgitation in acute but not chronic aortic regurgitation: implications regarding the mechanism of mitral closure. Am Heart J. 1989 May;117(5):1106-12.
5. Konka M, Kusmierczyk-Droszcz B, Wozniak O, et al. Aortic regurgitation and unusual diastolic mitral regurgitation. Eur J Echocardiogr. 2008 Sep;9(5):709-11.

KEYWORDS: Aortic Regurgitation; Mitral Regurgitation; Echocardiography

Reference this article as:

Karumbaiah K, Nguyen L, Sachdev S, Omar B**.** Acute Severe Aortic Regurgitation..Reverse Circulation! Cardiofel Newslet 2019 May;2(5):15-16.