Dewaswala and Chait. *HCA Healthcare Journal of Medicine* (2020) 1:3
https://doi.org/10.36518/2689-0216.1054

Clinical Image

A Complication of Acute Myocardial Infarction

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Abstract

Description

Ventricular septal rupture (VSR) is a rare complication after acute myocardial infarction (MI). The case presents an apical four chamber echocardiogram showing mid-septal discontinuity with lateral to medial movement of the transected ventricular septum during systole and diastole. Color Doppler demonstrates flow across the septum with extensive anatomic destruction of the ventricular septum.

Keywords

myocardial infarction/complications; ventricular septal rupture; echocardiography; ventricular septal rupture/therapy; cardiovascular diseases; heart rupture, post-infarction

Case Presentation

A 54-year-old male presented 24 hours after he developed sub-sternal chest pain. Physical examination was unremarkable and did not reveal a murmur. EKG showed ST elevation in the anterolateral leads. Echocardiogram was diagnostic of ventricular septal rupture. Apical four chamber view showed mid-septal discontinuity with lateral to medial movement of the transected ventricular septum during systole and diastole. (**Video 1**) Color Doppler demonstrated flow across the septum with extensive anatomic destruction of the ventricular septum. (**Video 2**)

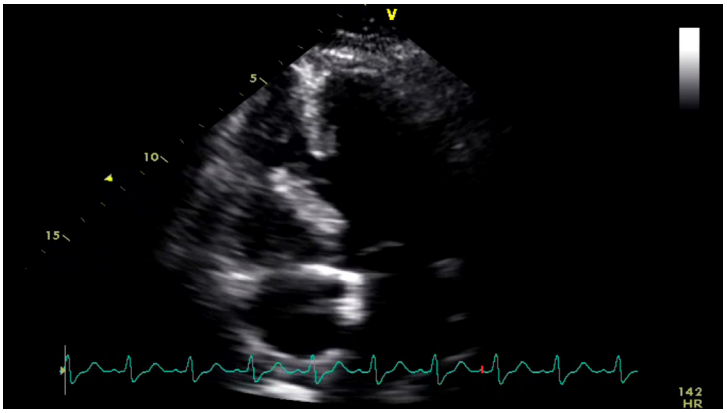
Discussion

Ventricular septal rupture (VSR) is a rare complication after acute myocardial infarction (MI).

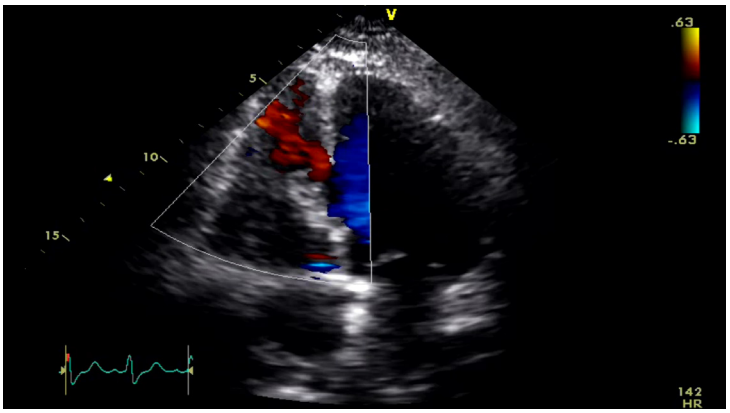
The incidence of VSR has decreased from 1-3% following ST-segment elevation MI in the pre-reperfusion era to 0.17-0.31% following primary percutaneous coronary intervention.[1]

Transmural infarction due to the complete occlusion of any coronary vessel subtending a portion of the septum can result in VSR.[2]

Patients with VSR often present with



Video 1. Apical four chamber echocardiogram showed mid-septal discontinuity with lateral to medial movement of the transected ventricular septum during systole and diastole. Click on the image to download the video.



Video 2. Color Doppler demonstrated flow across the septum with extensive anatomic destruction of the ventricular septum. Click on the image to download the video.

hemodynamic instability or frank cardiogenic shock.[3]

The diagnosis is made by a prompt transthoracic echocardiogram identifying drop-out of the ventricular septum in the 2D image and demonstration of flow across the septum using color Doppler.[1] If necessary, a pulmonary catheter can be placed at bedside. The detection of a step up in the O2 saturation in the right ventricle or pulmonary artery will confirm the diagnosis.[4]

Surgical closure is the definitive treatment for post-infarction VSR. Transcatheter septal closure using occlusion devices can also be attempted in inoperable patients but the necrotic tissue makes successful closure challenging.[5] Mortality of VSR in the setting of cardiogenic shock is high.[3, 6]

Conflicts of Interest

The authors declare they have no conflicts of interest.

Drs. Dewaswala and Chait are employees of JFK Medical Center, a hospital affiliated with the journal's publisher.

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

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