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BEGINNER

IMAGING VIGNETTE: CLINICAL VIGNETTE

Ventricular Septal Rupture in 2 Patients Presenting Late after Myocardial Infarction during the COVID-19 Pandemic

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ABSTRACT

Ventricular septal rupture (VSR) following myocardial infarction is rare in the reperfusion era. The decrease in patients presenting with myocardial infarction during the coronavirus-2019 (COVID-19) pandemic could result in more frequent VSR. This report describes two patients with VSR presenting late after myocardial infarction and treated at a single institution. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2020;2:2013–5) © 2020 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/).

Mechanical complications of myocardial infarction are rare in the reperfusion era (1,2). During the coronavirus-2019 (COVID-19) pandemic, reports of presentations of ST-segment elevation myocardial infarction (STEMI) have decreased (3). It is therefore conceivable mechanical complications might have become more prevalent. This report describes 2 patients with ventricular septal rupture (VSR) treated at a single center during the pandemic.

CASE 1

A 67-year-old male presented with 5 days of epigastric pressure and dyspnea. He initially resisted seeking care after symptom onset due to fear of contracting COVID-19 infection. Initial vital signs were blood pressure of 143/63 mm Hg, heart rate of 118 beats/min, and respirations of 26 breaths/min. He was diaphoretic with mottled extremities. Electrocardiography showed inferior Q waves. Result for COVID-19 infection testing was negative. Coronary angiography demonstrated an occluded right coronary artery, and echocardiography demonstrated a VSR (**Figure 1**). Venoarterial extracorporeal membrane oxygenation was initiated. Due to progressive multiorgan failure, surgical and percutaneous VSR repair were deemed futile. He expired on day 7 of hospitalization.

CASE 2

A 60-year-old female presented with dyspnea 1 to 2 weeks after an illness characterized by chest pain and vomiting that she thought was a viral infection. Initial vital signs were blood pressure of 135/78 mm Hg, a heart rate 95 beats/min, and respirations of 20 breaths/min. Electrocardiography showed anterior Q waves. Coronary angiography revealed left anterior descending artery occlusion, and echocardiography revealed a VSR

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the *JACC: Case Reports* author instructions page.

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ABBREVIATIONS AND ACRONYMS

STEMI = ST-segment elevation myocardial infarction

VSR = ventricular septal rupture

(Figure 1). An intra-aortic balloon pump was placed. Percutaneous VSR closure was performed, but she developed apical extension 4 days later (Figure 1), which was treated with open surgical repair. She ultimately progressed to hospital discharge.

DISCUSSION

This report describes 2 late-presenting myocardial infarctions complicated by VSR. It is notable that the COVID-19 pandemic seemingly influenced each patient to avoid seeking immediate care after symptom onset. At the time of this writing, the authors were aware of 3 additional VSR cases treated during the pandemic at our institution. Historically reported to occur in 0.21% of hospitalizations for STEMI (1), the occurrence of 5 VSR cases at a single institution during the pandemic was indeed curious. Among 366 patients treated for STEMI at the authors' institution in 2019, 2 (0.5%) had VSR. In contrast, the rate of VSR per STEMI hospitalizations at the authors' institution during the pandemic was 6.7%.

AUTHOR RELATIONSHIP WITH INDUSTRY

The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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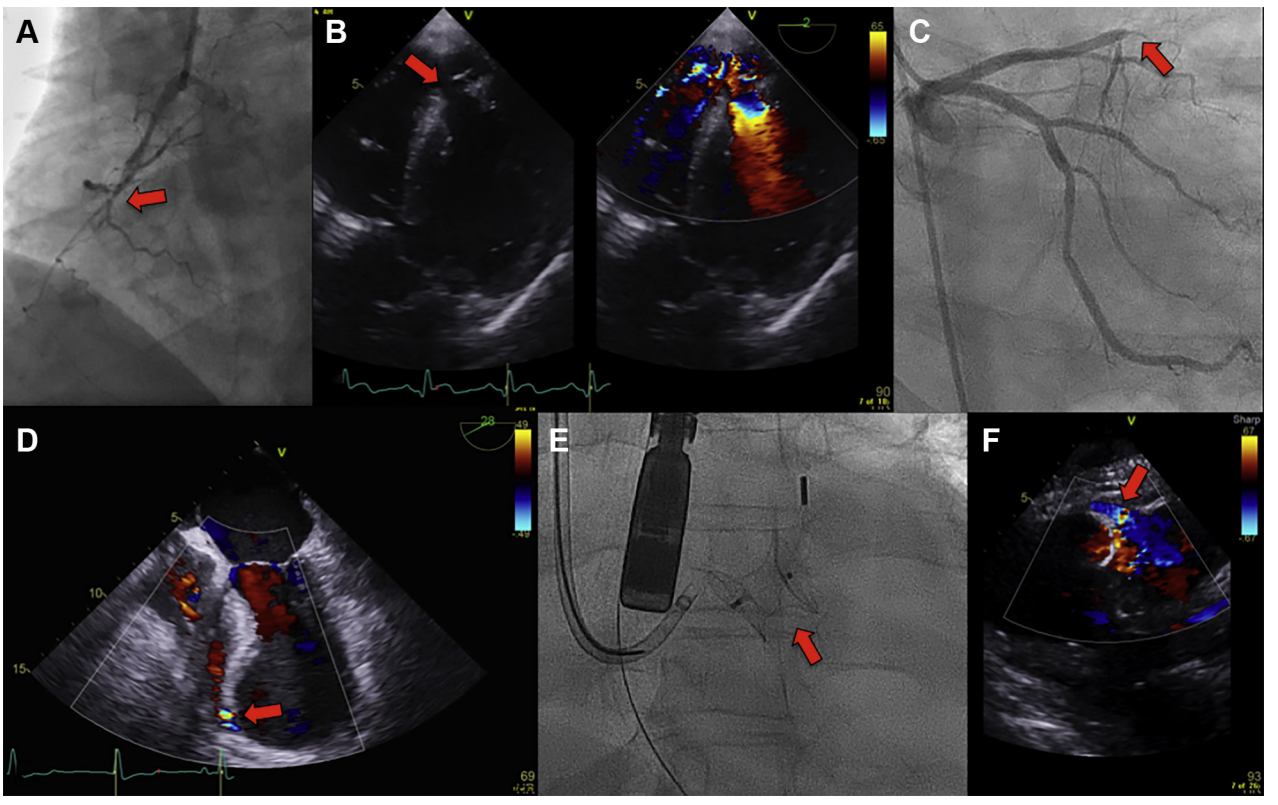
FIGURE 1 Findings in Cases 1 and 2



Case 1: Right coronary artery occlusion **(A, arrow)**. Ventricular septal rupture (VSR) by echocardiography **(B, arrow)**. Case 2: Left anterior descending artery occlusion **(C, arrow)**. VSR by echocardiography **(D, arrow)**. Closure device in the ventricular septum **(E, arrow)**. Flow around the device several days after percutaneous closure **(F, arrow)**.

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KEY WORDS mechanical complication, myocardial infarction, STEMI, ventricular septal defect, ventricular septal rupture