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IMAGES IN INTERVENTION

Right Ventricular Free Wall Hematoma

Contemporary Multimodal Imaging

M. Fuad Jan, MBBS, MD, Suhail Allaqaband, MD, Khawaja Afzal Ammar, MD, Sara Fetke, APNP, A. Jamil Tajik, MD

Successful percutaneous coronary intervention (PCI) was performed on a 75-year-old woman for an inferior ST-segment elevation myocardial infarction (STEMI) (**Figures 1A and 1B**, Online Videos 1 and 2). Persistent staining of contrast material (**Figure 1C**, Online Videos 3 and 4) post-PCI prompted emergent transthoracic echocardiography (TTE) in the catheterization laboratory to rule out pericardial effusion. TTE revealed a small intramural base-to-mid-right ventricular free wall hematoma (RVFWH). The latter progressively increased in size (maximal size, 4 × 2.4 cm) over the next few days to become bilobed, but with no communication with the RV cavity (**Figures 1D to 1G**, Online Videos 5, 6, 7, 8, 9). Multimodality imaging with computed tomography (**Figure 1H**) and magnetic resonance imaging (**Figure 1I**, Online Video 10) confirmed the diagnosis of RVFWH. Repeat TTE 2 months later showed nearly complete resolution of the RVFWH (**Figure 1J**, Online Video 11) with excellent recovery of peak systolic strain of the right ventricle (from −5% to −25%) (**Figures 1K and 1L**, Online Video 5).

Post-infarction intramyocardial hemorrhage/hematoma (involving either the right or left ventricle) after PCI for STEMI is a singular event. The incidence and natural history after PCI in the contemporary era are unknown. Reperfusion post-PCI in the distressed endothelium is likely followed by a complex cascade of events culminating in increased matrix metalloproteinase concentrations, providing a ripe bed for the development of intramyocardial hemorrhage. No comparative studies exist on the best imaging modality to optimize identification of a post-infarction intramyocardial hematoma. Multimodality cardiac imaging as delineated can be useful for both diagnosis and risk stratification.

From the Aurora Cardiovascular Services, Aurora Sinai/Aurora St. Luke's Medical Centers, Milwaukee, Wisconsin.

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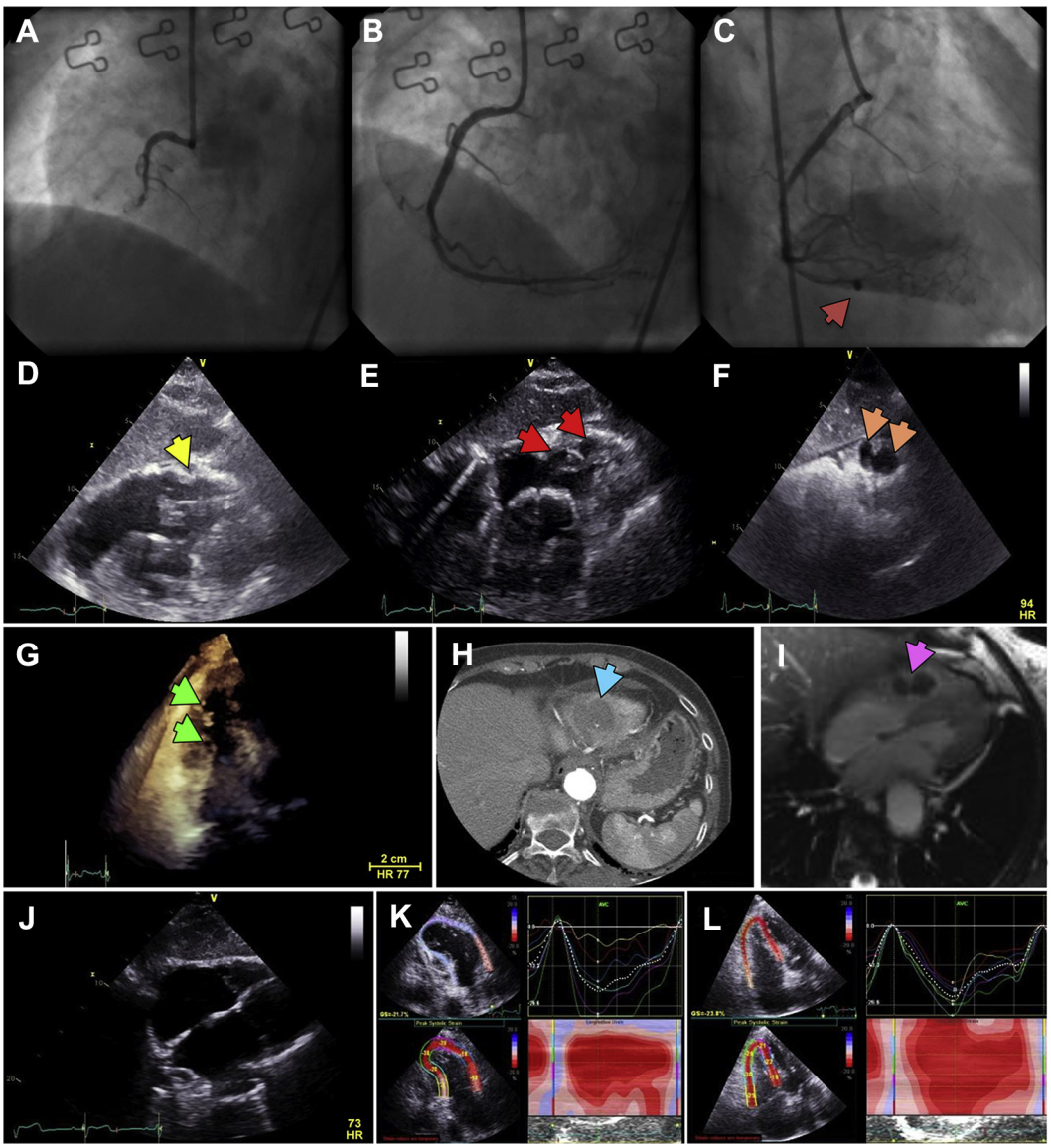
FIGURE 1 Multimodal Imaging of an RV Free Wall Hematoma After PCI for an Acute Myocardial Infarction



(A) Complete occlusion (TIMI flow grade 0) of the right coronary artery followed by restoration of the TIMI grade 3 flow (**B**, Online Videos 1 and 2). **(C)** Persistent staining **(arrowhead)** (Online Videos 3 and 4) led to emergent transthoracic echocardiography that demonstrated an area of hemorrhagic transformation in the RV free wall **(arrowhead) (D)** that progressively increased in size **(arrowheads)** (**E, F, G**, Online Videos 5, 6, 7, 8, and 9). **(H, I)** Computed tomography and magnetic resonance imaging of the heart, performed on days 3 and 5 post-PCI (**H, I,** Online Video 10) confirmed the hemorrhagic transformation in the RV free wall. **(J)** Nearly complete resolution of the right ventricular hematoma at 8 weeks (Online Video 11); note also the reduced peak systolic strain of the right ventricle on day 3 post-PCI (−5%) **(K)** and its resurgence 8 weeks after development of the hematoma (−25%) (**L,** Online Video 5). PCI = percutaneous coronary intervention; RV = right ventricular; STEMI = ST-segment elevation myocardial infarction; TIMI = Thrombolysis In Myocardial Infarction.

REPRINT REQUESTS AND CORRESPONDENCE: Dr. A. Jamil Tajik, Aurora Cardiovascular Services, St. Luke's Medical Center, 2801 West Kinnickinnic River Parkway, #840, Milwaukee, Wisconsin 53215. E-mail: publishing14@aurora.org.

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APPENDIX For the accompanying videos, please see the online version of this article.