

Identifying a Rare but Lethal Complication of Acute Myocardial Infarction

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Introduction

- Mechanical complications of acute coronary syndromes (ACS) include ventricular free wall rupture (VFWR), ventricular septal rupture (VSR), and papillary muscle rupture (PMR).
- Specifically, VFWR occurs in less than 1 percent of patients post percutaneous coronary intervention (PCI).
- However, those who develop VFWR have a significant in-hospital mortality. Half of VFWR occur in the first 5 days after transmural myocardial infarction.
- Risk factors include advanced age, female sex, first MI, and poor coronary collateral vessels.

References

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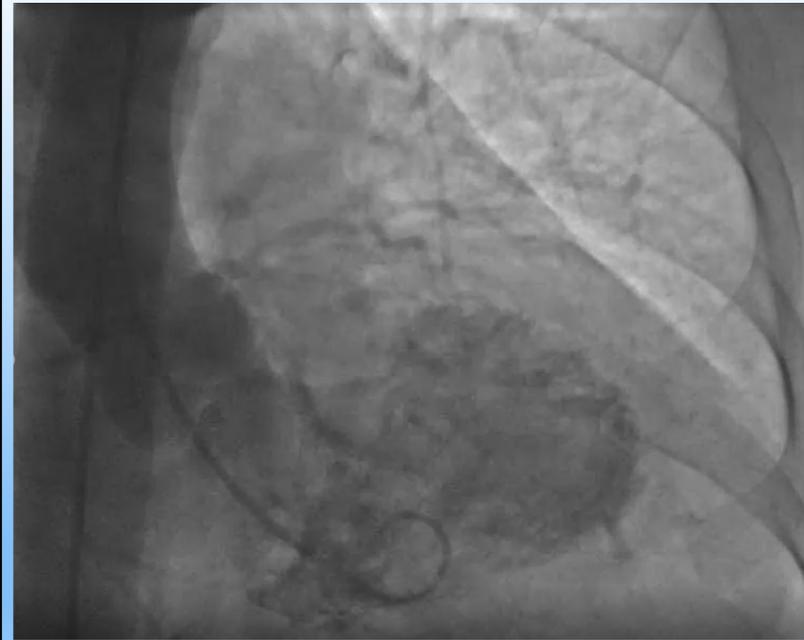


Figure 1: Left ventriculogram with dye extravasation concerning for free wall rupture

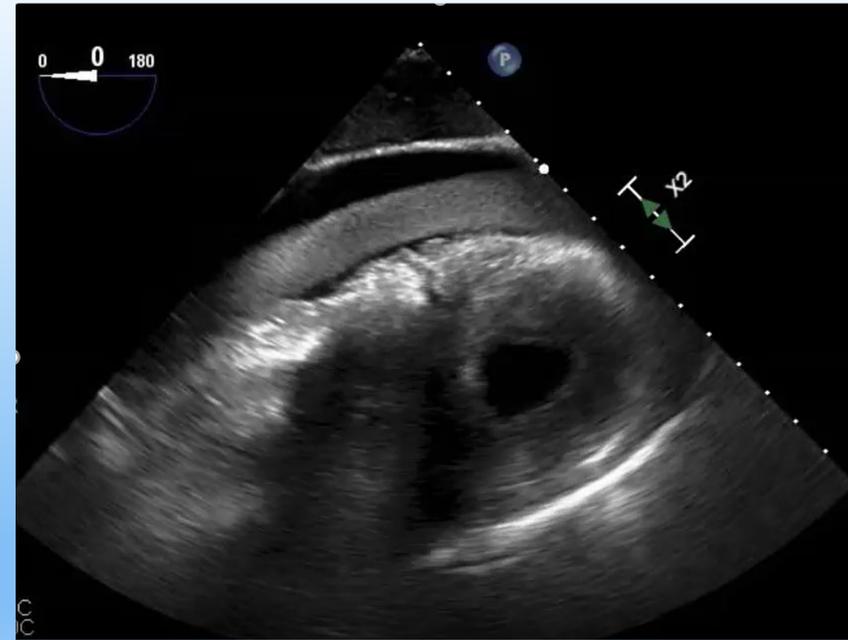


Figure 2: TEE transgastric short axis view with hemopericardium causing pericardial tamponade

Case Description

- A 70-year-old female presented with atypical chest pain. First troponin I was over 40 ng/mL.
- EKG had T-wave inversions in the lateral leads and minimal ST depressions in the anterior leads.
- Left heart catheterization (LHC) demonstrated:
 - 85% proximal right coronary artery (RCA) stenosis
 - 50% proximal left circumflex (LCx) stenosis
 - 100% mid left circumflex (LCx) stenosis
- RCA lesion was intervened with a drug-eluting stent (DES).
- LCx lesion was suspected to have a chronic total occlusion (CTO) - no intervention performed.
- Patient re-presented 1 day later with severe chest pain. EKG showed inferolateral ST elevations.
- Repeat LHC demonstrated patent RCA stent, however PCI with a DES to the LCx was performed as it was suspected to be the true culprit lesion.
- Post-PCI left ventriculogram (LV gram) demonstrated dye extravasation into the pericardial space concerning for ventricular free wall rupture (see Figure 1).
- Emergent TEE revealed hemopericardium with cardiac tamponade (see Figure 2). The patient underwent emergent surgical patch repair of her lateral LV free wall rupture.
- Unfortunately, her course was complicated by mixed shock, renal failure, and liver failure requiring intensive care. She ultimately passed away two days later.

Discussion

- Ventricular free wall rupture is one of the three common mechanical complications of acute MI.
- The incidence of VFWR has declined significantly from occurrence in about 2% of acute MI to only 0.01% of STEMI/NSTEMI due to the advent of early reperfusion by PCI.
- Definite therapy is emergent surgical intervention, however VFWR is associated with high in-hospital mortality of 42.4% after STEMI, and 18% after NSTEMI despite timely surgical or interventional repair.
- Complications entail cardiac tamponade, cardiogenic shock, and cardiac arrest.

Conclusion

- This case illustrates the significance of timely recognition of ACS and prompt intervention on culprit lesions while highlighting rare but lethal complications of ACS in order to provide the best chance at survival.

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