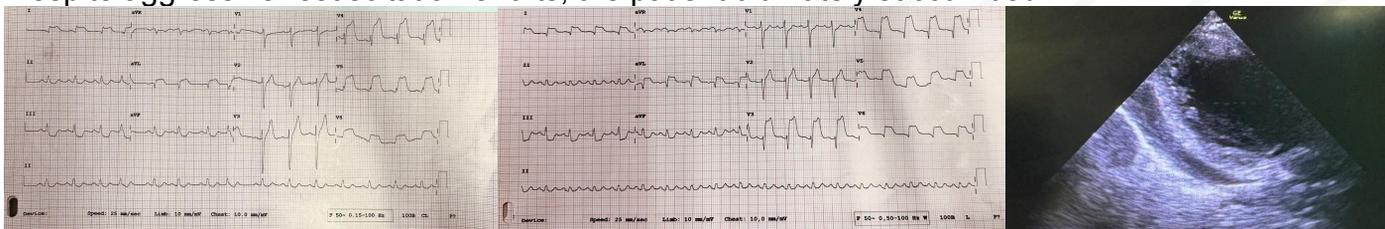


INTRODUCTION

Free wall rupture (FWR) is a rare but fatal complication of myocardial infarction (MI), typically occurring within the first few days post-infarct. It may present abruptly with cardiogenic shock or gradually with hemodynamic instability and pericardial effusion. Point-of-care ultrasound (POCUS) aids in rapid detection of pericardial effusion and tamponade. Despite medical advances, FWR remains poorly understood and carries a high mortality rate.

CASE DESCRIPTION

A 58-year-old male with a history of hypertension, presented with chest pain that had begun 10 hours prior, associated with diaphoresis and shortness of breath. On examination, he was tachypnoeic with a blood pressure of 85/59 mmHg, heart rate 64 bpm, and oxygen saturation of 92% with bibasal fine crepitations. Serial electrocardiograms (ECGs) demonstrated ST-segment elevation in leads I, aVL, V3-V6, with reciprocal changes in inferior leads. Transthoracic echocardiography showed reduced ejection fraction of 30% and anterolateral wall hypokinesia. A diagnosis of anterolateral MI, Killip class IV, was made. The patient was commenced on inotropic support and thrombolysed with streptokinase. Post-thrombolysis, the ECGs showed no resolution of ST elevation. The patient became more tachypnoeic, requiring escalation of oxygen therapy. He continued to experience severe chest pain despite adequate analgesia, requiring increasing doses of inotropes. Due to clinical deterioration, he was intubated and mechanically ventilated. During intubation, he developed cardiorespiratory collapse. Repeat echocardiography revealed a pericardial effusion measuring up to 1.7 cm, with clotted blood evident within the pericardial space. Despite aggressive resuscitation efforts, the patient ultimately succumbed.



DISCUSSION

POCUS plays a crucial and increasingly recognized role in the rapid diagnosis and management of complications following MI. POCUS offer a real time, noninvasive and efficient way to identify these issues. This includes identification of mechanical complications such as ventricular septal rupture, papillary muscle rupture leading to acute mitral regurgitation, LV wall thrombus as well as LV free wall ruptures (LVFWR)- a catastrophic complication. POCUS can reveal a pericardial effusion and evidence of cardiac tamponade. This warrants immediate intervention. The role of POCUS also includes the assessment of ventricular function and hemodynamics. These includes the assessment of LV systolic function, RV dysfunction, pericardial tamponade and effusion volume status and congestion. POCUS can also help in guidance of management and monitoring.

CONCLUSION

MI complicated by free wall rupture remains a devastating, albeit rare, mechanical complications associated with an exceptionally high mortality rate. This case underscores the critical role of POCUS as an indispensable tool to enable rapid identification of key pathological findings of FWR.

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[2] Honda S, Asaumi Y, Yamane T, Nagai T, Miyagi T, Noguchi T et al. Trends in the clinical and pathological characteristics of cardiac rupture in patients with acute myocardial infarction over 35 years. *J Am Heart Assoc* 2014;3:e000984.