

# Inferior STEMI Secondary to Paradoxical Thromboembolism in Patient with Eisenmenger Physiology

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## Introduction:

Patients with cyanotic congenital heart disease are at high risk of paradoxical thromboembolism. This case involves a patient with ventricular septal defect (VSD) and Eisenmenger physiology who presented with STEMI from an embolic coronary occlusion.

## Case Presentation:

37-year-old male with Trisomy 21 and VSD with Eisenmenger physiology presented to the emergency department febrile and hypotensive. Exam was notable for 2/6 systolic crescendo-decrescendo murmur, fixed split S2, and finger clubbing with nailbed cyanosis. Labs notable for normal white count, baseline polycythemia, normal creatinine, troponin, pro-BNP, and negative COVID-19. EKG showed sinus rhythm with right ventricular hypertrophy (RVH) (**Figure 1 Panel A**).

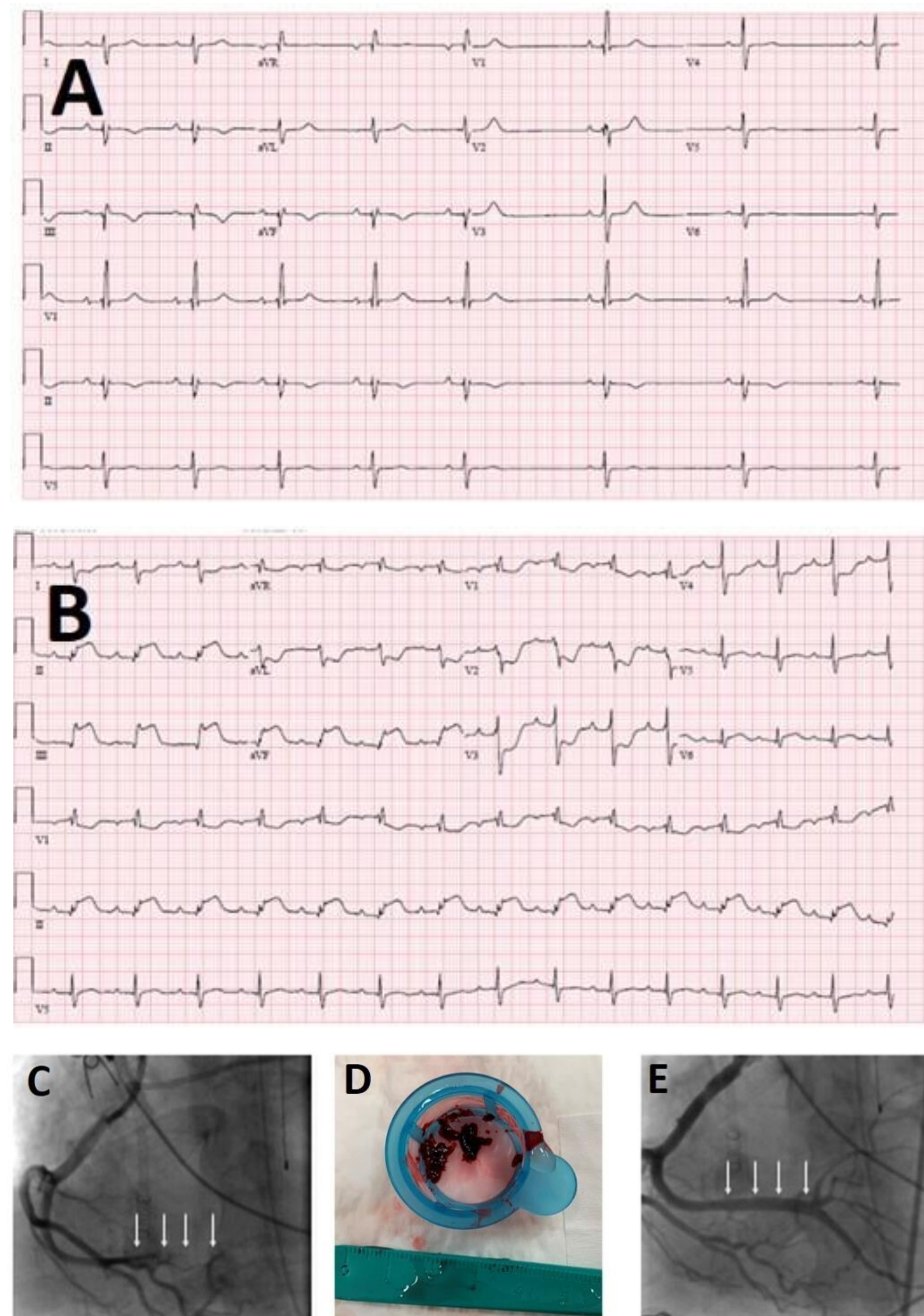
The patient was admitted and treated for pneumonia, with placement of a peripherally inserted central catheter (PICC) to facilitate venous access.

Echocardiogram showed 1.4cm membranous VSD and RVH. Four days later, he unexpectedly went into V-fib arrest, and was successfully resuscitated. Post-arrest EKG showed inferior STEMI (**B**). Emergent coronary angiography revealed 100% right coronary artery occlusion from acute thromboembolism (**C**).

Patient underwent thrombectomy removing large quantity of dark clot (**D**), and repeat angiography demonstrated normal intra-arterial flow (**E**).

## Imaging/Studies:

### Figure 1: Panels A-E



## Outcome:

Hemodynamically, the patient stabilized with pressor support, but he did not recover neurologically. Brain imaging showed multiple strokes (with hemorrhagic conversion) consistent with cardioembolic process. Multiple blood cultures were obtained all of which showed no growth. Trans-esophageal echocardiogram showed a mobile echo-density on the PICC felt to be thrombus. Patient died on hospital day 10 after being transitioned to comfort measures family request.

## Discussion:

To our knowledge, this is the first documented case of paradoxical embolism in a patient with Eisenmenger physiology whose PICC line was noted to have thrombus on echocardiography. These patients are hypercoagulable at baseline due to increased hematocrit (which is further exacerbated by critical illness). Unfortunately, the complex hemodynamics of patients with congenital heart disease makes management challenging when faced with an acute cardiovascular insult. Review of the literature yielded similar cases of paradoxical emboli in patients with cyanotic heart disease. These include instances of acute post-operative strokes and retinal artery occlusion in Eisenmenger patients thought to be from venous thromboembolism.