

THINGS ARE NOT ALWAYS AS THEY SEEM: A DECEPTIVE ECG

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INTRODUCTION

- ST segment elevation myocardial ischemia (STEMI) is most commonly associated with acute plaque rupture leading to total coronary artery occlusion, although other etiologies have been described in literature.
- STEMI may result from any condition that limits adequate blood flow to the coronary arteries, such as coronary vasospasm, hypovolemia, and critical valvular disease.
- We describe a case of STEMI that did not result from acute plaque rupture.

CASE SUMMARY

- A 72-year-old male with history of diastolic heart failure and moderate AS was admitted for hemodynamically unstable gastrointestinal (GI) bleed.
- Labs noted hemoglobin of 4.6. Upper endoscopy was unremarkable, however post-operatively the patient developed profound hypotension.
- He subsequently developed cardiac arrest with initial rhythm showing VT then VF.
- Post-ROSC ECG showed inferior STEMI.
- With active GI bleed of unknown origin, ACS treatment and coronary angiography was deemed too high risk and deferred.
- He received multiple units of packed RBCs with resolution of ST elevations.
- Echocardiogram revealed normal LV systolic function, normal wall motion, and severe aortic stenosis (mean gradient 38 mmHg, aortic valve area 0.65 cm²).
- After clinical status stabilized, diagnostic coronary angiography was obtained which showed severely diseased RCA without any evidence of acute plaque rupture or occlusion.

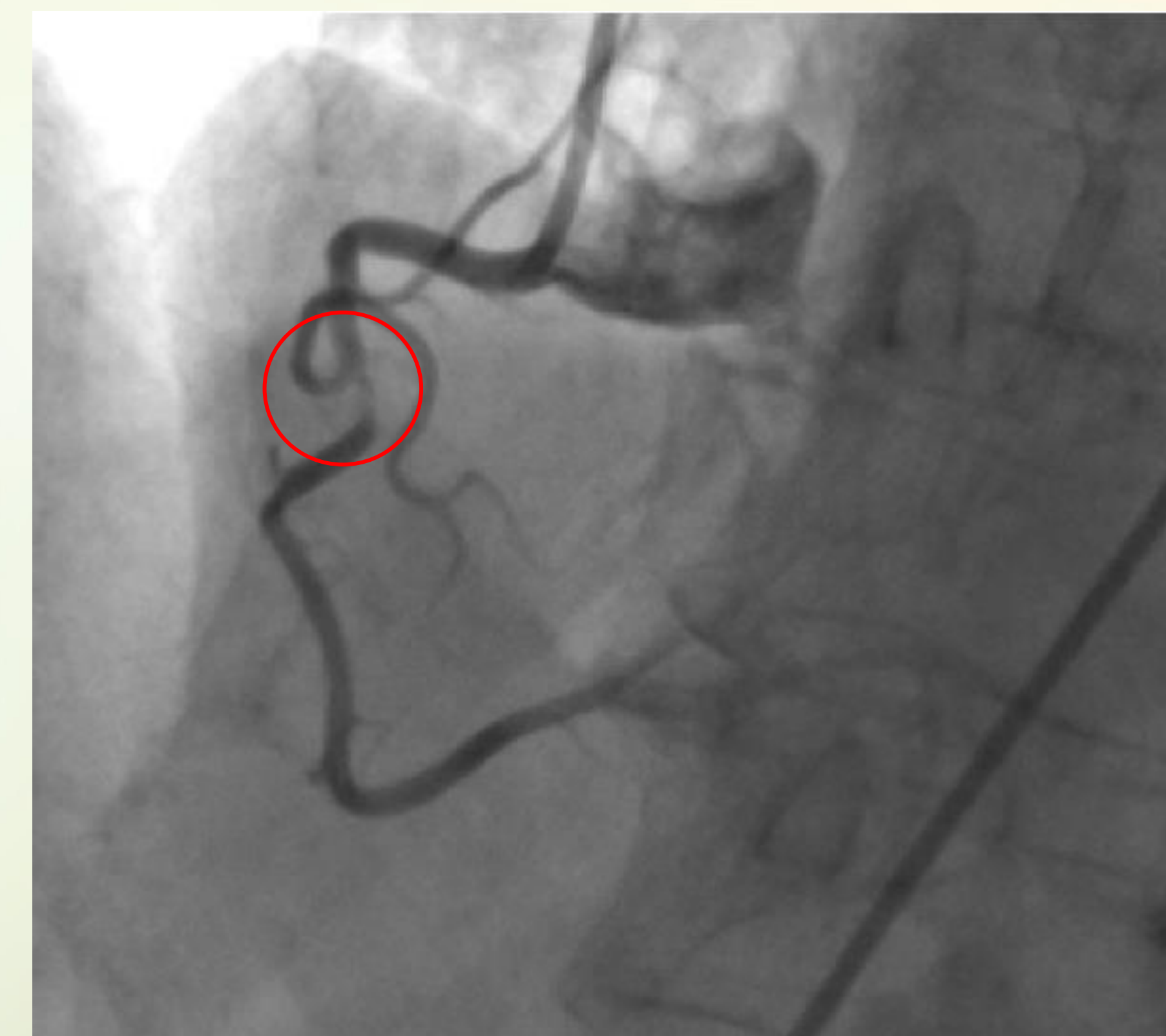
INVESTIGATIONS



Post-ROSC ECG showing marked ST segment elevations in leads II, III, and aVF.



Following volume resuscitation and blood transfusion, ECG showed resolution of ST segment elevations.



Coronary angiography showed significantly diseased RCA (red circle), but no evidence of plaque rupture or occlusion.

DECISION MAKING

- Blood flow through the coronary arteries requires an adequate diastolic period and perfusion pressure.
- There are many factors that can inhibit appropriate flow and ultimately lead to inappropriate oxygenation of the myocardium including, but not limited to, valvular heart disease, pulmonary hypertension, hypovolemia, and anemia.
- In our patient, a combination of severe hypovolemia, severe AS, and underlying coronary artery disease led to a reduction of coronary perfusion and “functional occlusion”, prompting the ST elevations seen on initial ECG.
- Lack of evidence of acute plaque rupture on coronary angiography confirmed that ACS was not the primary cause of the ECG findings or cardiac arrest.

CONCLUSION

- This case highlights that in the setting of STEMI it is important to rule out other potentially reversible etiologies prior to undergoing percutaneous coronary intervention, particularly in patients at high risk for bleeding.

REFERENCES

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