POST-MI THROMBOEMBOLIC COMPLICATIONS


Take home points:
1. Most patients with systemic thromboembolism s/p MI have had a large anterolateral MI with decreased ejection fraction and LV aneurysm formation.
2. Causes of systemic thromboembolism s/p MI include LV aneurysm, arrhythmia, cholesterol emboli, and DVT/PE with patent foramen ovale.
3. Screen high-risk patients: those with large anterolateral infarcts or atrial fibrillation and treat accordingly.
4. Splenic infarction is uncommon, but typically presents with LUQ abdominal pain. Treat the underlying cause and remember to vaccinate as these patients may have functional asplenia.

What are the most important nonarrhythmic complications after an acute MI?
- Cardiogenic shock
- Left ventricular free wall rupture or ventricular pseudoaneurysm
- Ventricular septal defect due to rupture of the interventricular septum
- Papillary muscle rupture
- LV aneurysm
- Thromboembolic complications (occurs in < 2% of MI)

What are the types of thrombotic complications after acute MI?
- Most common: CVA.
- In a study of 1277 patients s/p acute MI, 30 had non-cerebral thromboembolic complications (older study from 1986). The most common types of thromboembolism were as follows:
  - Ischemic limb
  - Splenic infarct
  - Renal infarct
  - Ischemic bowel

What causes systemic thromboembolism after acute MI?
- LV aneurysm causing clot formation in the left ventricle (most common)
- Arrhythmia (usually atrial fibrillation) causing clot formation in the left atrium
- Cholesterol emboli due to cardiac catheterization or during CABG
- DVT/PE with systemic thromboembolism due to patent foramen ovale

Management:
- Screen high-risk patients in the post-MI period (those with large anterolateral infarctions, heart failure, or atrial fibrillation).
- Screening typically involves echocardiography to look for LV aneurysm or clot.
- In patients with large LV aneurysms or visible clot but no thromboembolic complications: treatment is controversial, but most advocate for short-term anticoagulation (small observational studies).
- In patients with evidence of thromboembolic complications, treat with anticoagulation and/or surgery (ischemic bowel, ischemic limb).

What about splenic infarction?
- Uncommon. Typically occurs in older patients.
- Causes: arterial thromboembolism, atheroembolism, endocarditis, sickle cell disease.
- Typically presents as LUQ abdominal pain; can present with fever, tachycardia.
- Diagnosis is made by CT scan of the abdomen.
- Treatment: treat underlying disease/cause and remember to vaccinate (functional asplenia).
For more information and resources developed by UCSF medical housestaff, please browse the following links:

UCSF Department of Medicine, Housestaff Website:
- Resources and information for our housestaff
- Location: http://medicine.ucsf.edu/housestaff/

UCSF Department of Medicine Hospitalist Handbook:
- Available free of charge for download to PDA
- Updated annually and written by UCSF medical residents
- Location: http://medicine.ucsf.edu/housestaff/handbook/

UCSF Chief Medical Residents’ Cover Sheets:
- Covering a wide array of topics that were discussed at morning report
- Location: http://medicine.ucsf.edu/housestaff/Chiefs_cover_sheets/
Incidence of systemic thromboembolic lesions in acute myocardial infarction.

Puletti M, Cusmano E, Testa MG, Borgia C, Fanari F, Curione M.

In a series of 1277 cases of acute myocardial infarction, 30 episodes of systemic, noncerebral, thromboembolic lesions in 22 patients have been detected. Locations most frequently involved were the extremities (60%), kidneys (16.6%), spleen (13.3%), and mesentery (10%). The incidence of thromboembolism has been higher in patients over the age of 60. In the great majority of cases, the myocardial infarction has been anterolateral, often with a superimposed pump failure. Mortality has been very high (54.5%), perhaps in relation to the advanced age of the patients and to the extension of the infarction. Embolism at the extremities has been well treated with Fogarty's catheter. Among patients whose postmortem examination has been performed a high incidence of ventricular aneurysm (3 of 7) and mural thrombosis (5 of 7) has resulted. In the cases of ventricular aneurysm, episodes of atrial fibrillation have always occurred.
Thromboembolic splenic infarction.

O'Keefe JH Jr, Holmes DR Jr, Schaff HV, Sheedy PF 2nd, Edwards WD.

Splenic infarction occurs as a consequence of systemic thromboembolization in association with several cardiovascular disorders. We describe a case of splenic infarction in a patient who had paroxysmal atrial fibrillation after aortic valve replacement. In an autopsy series of 96 consecutive cases of splenic infarction, only 10% had been suspected clinically even though the splenic infarctions had contributed substantially to morbidity and mortality in 44% of the cases. Thromboembolic causes were responsible for the splenic infarcts in 67% of the cases, and concomitant infarcts in other organ systems were found in 62%. Embolization of atheromatous debris from the aorta, thrombotic elements from the left ventricle (in dilated cardiomyopathy and acute myocardial infarction), and vegetations from infected valves are the most common settings in which thromboembolic splenic infarcts are noted. The clinical picture associated with splenic infarction is typically nonspecific; manifestations may include fever, tachycardia, and left-upper-quadrant tenderness. Computed tomographic scanning and, to a lesser degree, ultrasonography are the imaging techniques of choice for diagnosing splenic infarction.