

Acute Myocardial Infarction

Definition: Inadequate blood flow or inadequate oxygen delivery to the coronary arteries resulting in death of myocardial cells.

Facts: 1.25 million AMI's in the U.S./year, with 500,000 deaths, half of which occur in the prehospital setting.
 45 % of AMI's occur in individuals who are < 65 years of age.
 1/4 of AMI's occur in individuals with no known risk factors.
 20 % of AMI patients will have heart failure within 6 years.
 Frequency of thrombotic events is highest 6 am - 12 noon.
 1/2 of patients with chest pain delay going to the hospital for more than 4 hours. 20 - 30 % have *no* chest pain.
 If patient meets selection criteria, AHA recommends administration of thrombolytic within 12 hours of onset.
 Outcome is best if given within 6 hours; ideal if < 70 mins.

Risk Factors for AMI:

Hypertension (Sys > 160, Dias > 95)	Age
Hypercholesterolemia (> 250 mg/dL)	Obesity
Cigarette smoking	Male sex
Stress/Type A personality	Black race
Sedentary lifestyle	

After cardiac surgery: Redo of previous saphenous vein graft
 Prolonged duration of CPB
 Left main disease, multi-vessel disease.

Causes: Coronary Thrombus:
 Injury to the endothelial lining of the coronary artery attracts platelets, WBC's, fibrin, and lipids.
 Macrophages infiltrate the damaged lining and engorge with fatty substances, then die. A tough fibrous scar (or cap) forms which narrows the lumen and secretes procoagulant factors.
 When the fibrous cap ruptures (due to physical or hemodynamic stress), platelets are activated. The GP IIb/IIIa receptors on the platelet surface are activated and bind to fibrinogen, which forms a bridge between the platelets, holding them together in a growing mass.
Other Causes: Hypotension, Hypoxemia, Chemical

Pathophys:

- ↓ contractility, ↓ stroke volume, ↓ CO, and ↓ BP trigger the sympathetic-adrenal response -> release of epinephrine, norepinephrine, aldosterone, and ADH and conversion of angiotensin I to II -> ↑ HR, ↑ SVR, volume conservation.
- Cell death -> release of intracellular contents K, CK, CK-MB, lactate, aspartate aminotransferase -> ventricular arrhythmias.
- The conducting system may also be affected.

