American Heart Association.
Fighting Heart Disease and Stroke

Case 6

Acute Coronary Syndromes

Serum Cardiac Markers

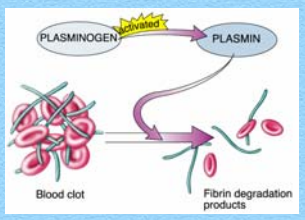
Serum Cardiac Markers			
	Rises	Peaks	Duration
Troponin-I	4-8 hours	12-16 hours	2 weeks
CK-MB	3-6 hours	12-24 hours	1-3 days
Myoglobin	2-4 hours	9-12 hours	1-2 days

Fibrinolytic Therapy

- Breaks up the fibrin network that binds clots together
- Indications: ST elevation >1 mm in 2 or more contiguous leads or new LBBB or new BBB that obscures ST
  - *Time of symptom onset must be <12 hours*
  - Caution: fibrinolytics can cause death from brain hemorrhage
- Agents differ in their mechanism of action, ease of preparation and administration; cost; need for heparin
- 5 agents currently available: alteplase *(tPA, Activase),* anistreplase *(Eminase),* reteplase *(Retavase),* streptokinase *(Streptase),* tenecteplase *(TNKase)*

Fibrinolysis

- Fibrinolytics ("clot-busters")
  - Stimulate conversion of plasminogen to plasmin, which dissolves the clot



Management of ST-Segment Elevation MI

- Determine best reperfusion strategy
- Fibrinolytic therapy
  - Class I intervention for patients that have:
    - ST-segment elevation in two or more anatomically contiguous leads (or bundle-branch block [obscuring ST-segment analysis])
    - History suggesting acute MI
    - Time to therapy is <12 hours
    - <75 years of age

Goals of Fibrinolytic Therapy

- Restoration of blood flow through the infarct-related artery resulting in:
  - Improved myocardial oxygenation
  - Decreased myocardial ischemia
  - Improved left ventricular function and cardiac output
  - Improved arterial perfusion
  - Decreased incidence of dysrhythmias
  - Reduced mortality

Heparin

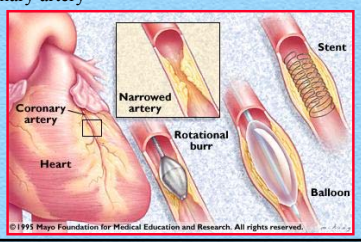
- Mechanism of action
  - Indirect thrombin inhibitor
- Indications
  - PTCA or CABG
  - With fibrin-specific lytics
  - High risk for systemic emboli
    - Conditions with high risk for systemic emboli, such as large anterior MI, atrial fibrillation, or LV thrombus

Antiplatelet Agents

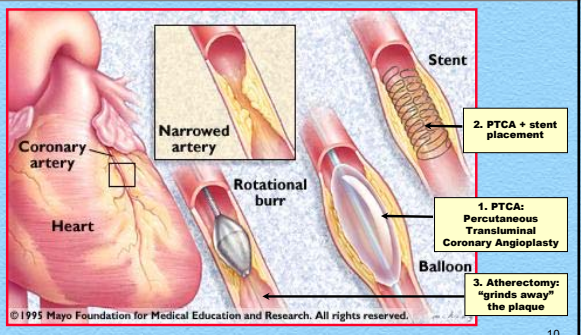
- Blocks glycoprotein IIb/IIIa receptors on platelets
- Blocked receptors cannot attach to fibrinogen
- Fibrinogen cannot aggregate platelets to platelets
- Indications: ACS with ***NO ST-segment elevation*:**
  - *Non–Q-wave MI*
  - *Unstable angina managed medically*
  - *UA undergoing PCI*
- Examples: abciximab (*ReoPro*), eptifibitide (*Integrilin*), tirofiban (*Aggrastat*)

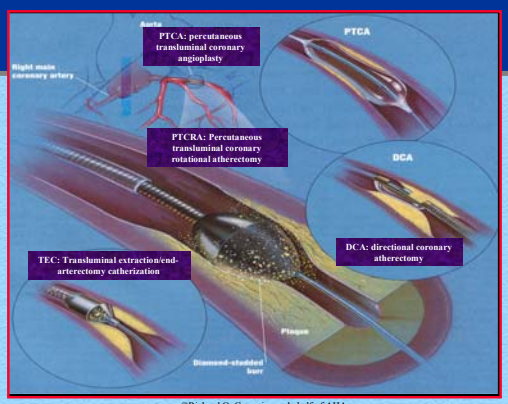
Percutaneous Transluminal Coronary Angioplasty

- Direct treatment
- Mechanical reperfusion of infarct-related coronary artery
- Best outcome achieved for patients with AMI plus cardiogenic shock



Three Percutaneous Coronary Interventions (PCIs)





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EMC 350

Hemodynamic Monitoring

Hemodynamics

- Hemodynamics is the relationship between pressure, flow, and resistance in the circulatory system