Coronary Vascular Disorders

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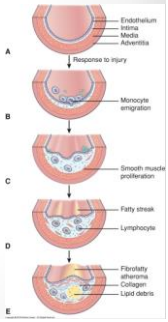
Atherosclerosis- Pathophysiology

- Injury to vascular endothelium
  - Smoking
  - HTN
  - Other
- Narrowing of lumen
- Rupture plaque
  - ACS
  - MI



Risk Factors for CAD

Non-modifiable

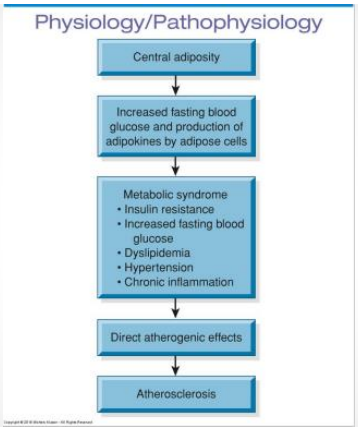
- Family hx
- Age
- Gender
- Race

Modifiable

- HTN
- Smoking
- Hyperlipidemia
  (↑ cholesterol, LDL, ↓ HDL)
- Metabolic syndrome
- DM
  Obesity
- ↓ Physical activity

Metabolic Syndrome

- 3 of the following:
  - Insulin resistance
  - Central obesity
  - Dyslipidemia
  - BP > 130/85 mmHg
  - Proinflammatory states (C-reactive protein)
  - Prothrombic state



CAD Prevention

- 4 modifiable risk factors
- Cholesterol
  - Fasting lipid profile every 5 yrs (≥ age 20)
  - Dietary changes
  - Physical activity
  - Medications (HMG-CoA reductase inhibitors, nicotinic acid, fibric acids, bile acid sequestrants, cholesterol absorption inhibitors, omega 3 acid)
- Cessation of smoking
- Manage HTN

Angina Pectoris

- Pathophysiology
- Types
  - Stable angina
  - Unstable angina (preinfarction or crescendo angina)
  - Intractable/ Refractory
  - Variant angina (Prinzmetal)
  - Silent ischemia
- Assessment- S/S

Angina Pectoris

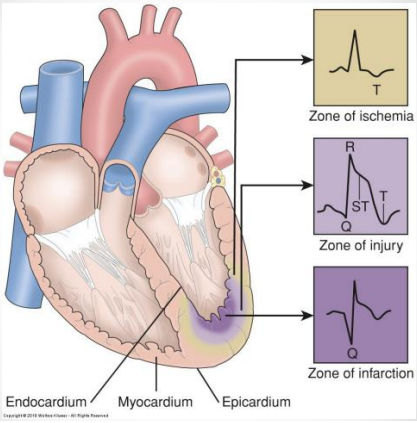
- Diagnostics
  - ECG
  - CRP
  - Stress test
  - Cardiac catheterization/ angiography

Angina Pectoris

- Treatment/ Management
  - Medication
    - Nitroglycerin
    - Beta-Adrenergic
      - Metoprolol, Atenolol
    - Calcium channel blockers
    - Antiplatelet/ Anticoagulants
      - ASA, plavix, heparin, glycoprotein IIb/ IIa
  - Oxygen

Acute Coronary Syndrome (ACS)

- Unstable angina
- Non- ST segment elevation MI (NSTEMI)
- ST- segment elevation MI (STEMI)

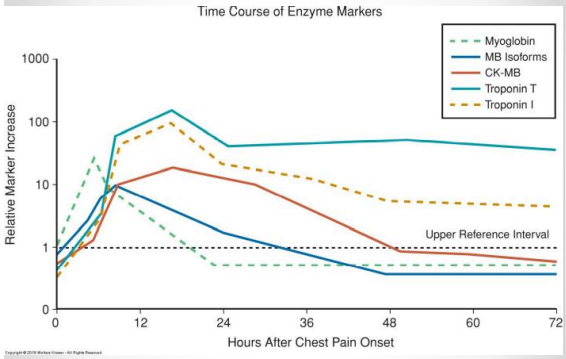


Assessment of ACS/ MI

- Cardiovascular
  - Chest pain, murmur, bp, pulse, ECG
- Respiratory
  - SOB, dyspnea, tachypnea, crackles
- GI/ GU
  - Nausea, vomiting, ↓ urine output
- Skin
  - Cool, clammy, diaphoretic, pallor
- Neurological
  - Anxiety, restlessness, lightheadedness

Diagnostic/ Laboratory Test

- ECG
- CXR
  CRP
- Cardiac enzymes/ markers
  - Creatine kinase (CK-MB)
  - Myoglobin
  - Troponin



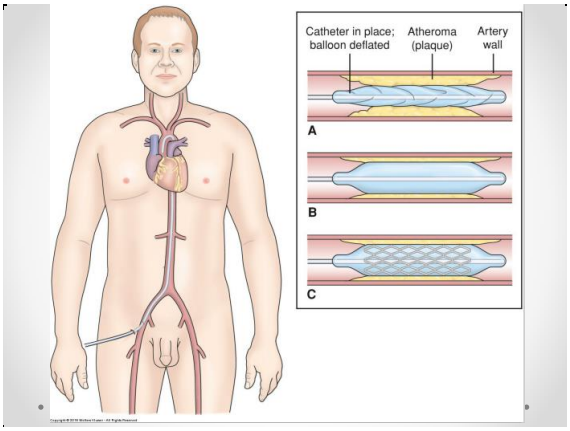
Management/ Treatment

- Goal is reperfusion
- Decrease myocardial damage

- Rapid transfer to hospital
- ECG within 10 minutes of arrival to ED
- Diagnostics/ lab tests
- Interventions
  - Oxygen
  - Nitroglycerin
  - Morphine
  - ASA
  - Beta blocker
  - ACE (within 24 hrs)
  - Anticoagulation with heparin and platelet inhibitors
- Evaluation for indications of reperfusion
  - Percutaneous coronary intervention (PCI) within 60 minutes
  - Thrombolytic therapy (t-PA/ r-PA within 30 minutes- alteplase/ reteplase
- Continuous therapy as indicated
  - IV heparin
  - Plavix
  - Glycoprotein inhibitor
  - Bedrest minimum 12 to 24 hours

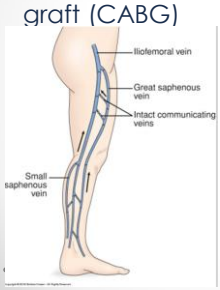
Percutaneous Coronary Interventions (PCI)

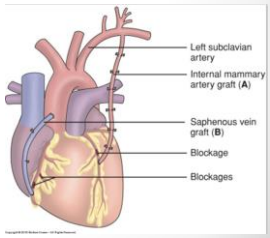
- Percutaneous Transluminal Coronary Angioplasty
- Coronary artery stent
- Atherectomy
- Brachytherapy



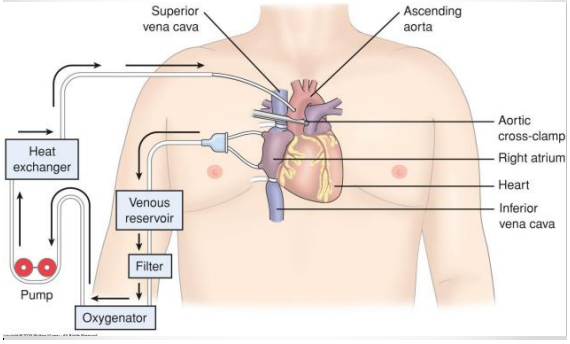
Coronary Artery Revascularization

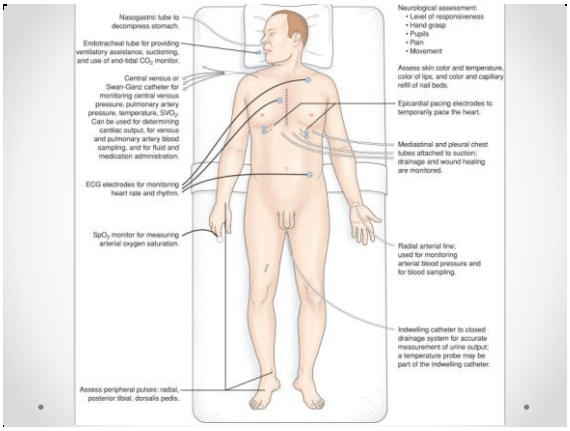
- Traditional coronary artery bypass graft (CABG)





Cardiopulmonary Bypass





Complications of Cardiac Surgery

- ↓ Cardiac output
  - Hypovolemia, bleeding, cardiac tamponade, fluid overload, hypothermia, HTN, tachydysrhythmias, bradycardia, cardiac failure, MI
- Pulmonary
  - Impaired gas exchange
- Neurological
  - CVA
- Renal/ Electrolyte
  - Acute renal failure (ARF), electrolyte imbalance
- Other
  - Hepatic failure, infection

Cardiac Rehabilitation

- Phase I
  - Dx of atherosclerosis
  - Unstable angina, MI
- Phase II
  - After discharge from hospital
  - 3x a week x 4-6 weeks
- Phase III
  - Long-term outpatient