CORONARY ARTERY DISEASE

J.E. JAYNE MD
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ANATOMY

- BULLET, FIST AND FINGERS
PHYSIOLOGY

100,000 HEART BEATS PER DAY =>

CONSTANT DEMAND FOR FUEL AND OXYGEN,

VARIABLE BLOOD FLOW VIA THE CORONARY ARTERIES, ADAPTS TO DEMAND
ECONOMICS OF HEART MUSCLE:

- FiO2
- Hgb
- Fe++

Oxygen carrying capacity

SUPPLY

- Coronary blood flow

- Diastolic flow

- Resistances
  - R1 epicardial
  - R2 precapillary
  - R3 microvascular

Regulation
- Metabolic control
- Endothelial function
- Autoregulation
- Neurohumeral factors
- Myogenic and extracellular compressive forces

DEMAND

- Heart rate
- Contractility
- Ventricular wall tension
TERMINOLOGY

- CAD
- ACS
- MI
- STEMI
- CABG
- PCI
- Atherosclerosis
- Hyperlipidemia
- Endothelium
- Ischemia
- Angina
- Stenosis
EPIDEMIOLOGY

> 13 MILLION AMERICANS HAVE OVERT CAD

LIFETIME RISK: 49% (MEN), 32 % (WOMEN)

SINGLE MOST FREQUENT CAUSE OF DEATH (1/5)
CAD PREVALENCE: USA

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CAD RISK FACTORS

- HEREDITY
- METABOLIC XS
- HYPERTENSION
CAD RISK FACTORS

- HEREDITY
- METABOLIC XS
- HYPERTENSION
- SMOKING
- PHYSICAL INACTIVITY
CAD RISK FACTORS

- HEREDITY
- METABOLIC XS
- HYPERTENSION
- SMOKING
- PHYSICAL INACTIVITY
- OBESITY/DIABETES
OBESITY & DIABETES: US TRENDS
ATHEROSCLEROSIS: DISEASE PROCESS
ATHEROSCLEROSIS: DISEASE PROCESS
ATHEROSCLEROSIS => STENOSIS
How does CAD show up?

- **SUBCLINICAL DISEASE**
  - **ANGINA**
  - **STEMI**
  - **SILENT ISCHEMIA**
  - **ACUTE CORONARY SYNDROME**
- **DEATH**
How do we treat CAD?

**ATHEROSCLEROSIS:**
- RISK FACTOR CONTROL, EXERCISE, DRUGS

**ANGINA:**
- MEDS TO ALTER SUPPLY & DEMAND
- PLUMBING WORK

**ACS AND STEMI:**
- MEDS
- PLUMBING WORK
ALTERING THE PLUMBING: CABG

- Single attached mammary
- Bilateral
- Sequential
- Y-Graft
- Free graft
ALTERING THE PLUMBING: PCI
Problems with CABG and PCI

- NOT A CURE FOR ATHEROSCLEROSIS
- PROCEDURAL RISKS
- BYPASS GRAFT DURABILITY
- STENT THROMBOSIS AND RESTENOSIS
What should I do?

- Choose your parents wisely
- Avoid metabolic overload
- Control your risk factors
- Exercise regularly
- Be smart about symptoms
Questions?