

Atherosclerosis

I. Arteriosclerosis= “Hardening of the arteries,” 3 categories:

1. Atherosclerosis
 2. medial calcific sclerosis
 3. arteriosclerosis
- A. Atherosclerosis
- Formation of intimal fibrous plaques with lipid cores
 - Large, medium, small muscular arteries (coronary, popliteal arteries)
 - Large elastic arteries (aorta, carotid, iliac)
- B. Medial calcific sclerosis (Monckeberg)
- Calcification of media of large and medium muscular arteries
 - Elderly patients
 - Palpable, “pipestem” arteries; *not* associated with disease
- C. Arteriosclerosis
- Arterioles
 - Associated with DM, HTN
 - Arteriolonephrosclerosis
 - Hyaline versus Hyperplastic
 - slowly evolving -rapid, accelerated
 - much more common -rare
 - mostly kidney, some brain -kidney and brain→increased ICP
 - not a cause of malignant HTN -associated with malignant HTN

II. Atherosclerosis

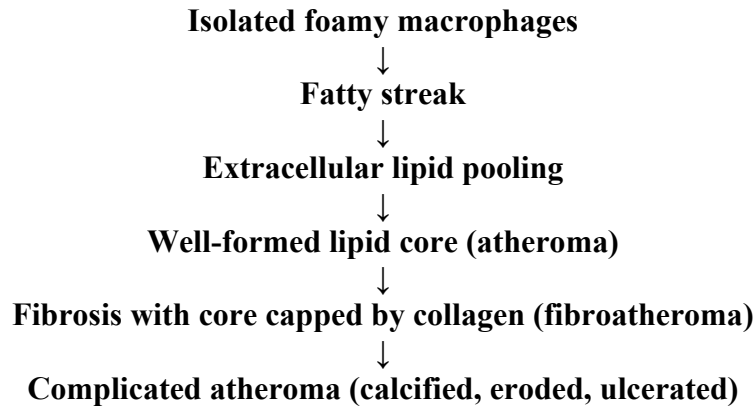
- In small arteries, may cause complete occlusion
- In larger arteries, more destructive in nature
 - aneurysm, plaque rupture, thrombi, emboli

Mechanism:

1. Injury to vessel (i.e. chronic inflammation, hyperlipidemia, HTN, smoking, homocysteinemia, toxins, viruses, autoimmune factors)
2. Myofibroblasts attracted to messages of chemical injury
 - Myofibroblasts infiltrate intima, proliferate into smooth muscle cells, and produce ECM
4. Endothelial injury simultaneously recruits macrophages
 - Macrophages and smooth muscles cells phagocytose lipids
 - “Foamy” lipid-laden macrophages
5. Smooth muscle cell proliferation, ECM deposition, extracellular lipid pooling

6. Production of ECM leads to collagen formation with eventual production of a fibrous cap over a lipid-laden core

Pathologic sequence:



Risk factors—You MUST know these!!!!

Non-modifiable

- age
- male
- family history
- genetics

Modifiable

- hyperlipidemia
- smoking
- diabetes (induces hypercholesterolemia)

Characteristics of atherosclerosis

- Occurs in areas of turbulent flow
 - vessel branch points
 - ostia

Complications

- Luminal stenosis
- Thrombus (local)→MI, cerebral infarct, gangrene
- Embolus (travels)
- Vessel wall weakening→aneurysms