

# 9. Atherosclerosis-Pathogenesis

## What is Atherosclerosis?

Atherosclerosis from Greek athero (meaning gruel or paste) and sclerosis (hardness).

Almost 100% of atherosclerotic patients have anti-nanobacteria antibodies in their serum, whereas in healthy blood donors antinobacteria antibodies are present in about 15%

Nanobacteria very very slow growing saprophytic microbe that causes "hardening of the arteries".

Atheromas are complex colonies of mobile Nanobacteria that spin and maintain a peptidoglycan biofilm around their colonies.

Supported but not proven hypothesis

## In a Plaque:

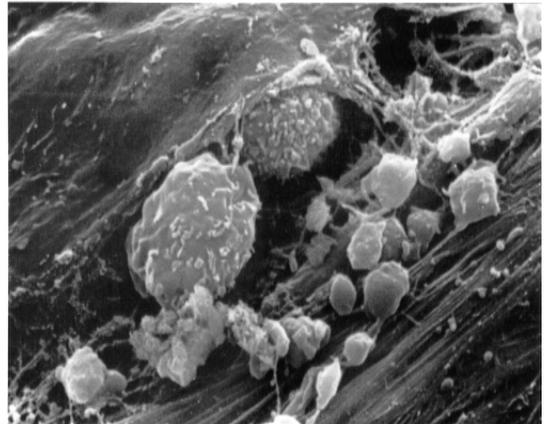
- 1) Early-Plaques have Monocyte infiltration
- 2) Later-Plaques complex inflammation
  - a) Foam cells (dead/dying Monocytes) trapped in the biofilm, a source of inflammation
  - b) PMN
- 3) Calcium apatite (calcium phosphate)
  - a) Nidus is nanobacteria
  - b) Early microcalcifications form
  - c) Later is macrocalcification
  - d) Remodeling by osteoclast forming calcified vessels
- 4) Biofilms around atheroma "peptidoglycan"?
- 5) Fibrous or fibrocalcific plaques
- 6) Thrombotic cascade
  - a) Apatite exposed to blood activates a thrombotic cascade. Platelet activation
- 7) Lipid pools (Oxidize LDL foam dead Foam cells)
  - a) Cellular debris is Inflammatory
- 8) Endothelial destruction

Atheroma Ossification not Calcification of Vessels (1863)

- v Calcification in Atherosclerosis is similar to calcification seen in **Ghon Complex of Tuberculosis**
- v Initial calcification leads to formal lamellae bone with osteoclasts and osteoblasts, even marrow appears!
- v Heavily Calcified Coronaries are dense chronic Osteoclastic remodeling. **Virchow, 1863**

## Infectious Agent

- Kajander's nanobacteria
- Nanobacteria, Nanobacterium sanguineum, Phyllobacterium mysinacearum
- Pleuropneumonic-like organisms or Mycoplasma species
- Archaea symbiont that requires cell contact or lipids from other cells for growth.
- Cell volume of about  $0.01 \mu\text{m}^3$
- Sphere structures from 30 to 150 nm and finger-like rod structures have been identified in calcified human tissue



**Monocytes under Endothelial Cells**

**Blood test: NANO-SERO™ IgG ELISA**

**NO EFFECT OF ANTIBIOTICS x yrs**  
Gatifloxacin (PROVE-IT-TIMI 22-2004)  
Zithromycin (WIZARD, JAMA 2003)