Atherosclerotic Plaque Regression: Is it a reality? How it can occur? future expectations?

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This presentation reflects the Author’s opinions; not those of the Department of Veterans Affairs or the United States Government

No commercial interests or conflicts exist

Experimental plaque regression studies were supported by AHA 1969-1972 and NIH 1974-1982

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Is Plaque Regression now a Reality?

Yes: qualified; but Yes

PubMed from 1974: 1340 references to experimental/human observations

Evolving studies of plaque content/structure/progression/regression

Methods: path comparisons; sequential observations: angiography; US and IVUS; MRI/MRI Pet; Markers for activated macrophages/inflammation

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Regression vs. Stabilization

Both are Relevant clinically

• “Reversion to earlier state/return to earlier or less developed condition…”
• “Process of making firm/steady…”
• Regression: less volume/area luminal intrusion and plaque lipid content stabilization: firmer structure/less friable. Less vulnerable to rupture: greater ratio collagen to lipid.

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Sequential Angiograms 0, 12, 18 months L leg. 57yo male diabetic smoker; claudication. TC 32; TG 350; FBS 140 mg/dl. TC to ~ 140mg/dl with RX CST; Diet; Smoking cessation. Old Old News
Classification: types II through early IV: regress by lipid egress/increase in collagen/decrease inflammation: AHA/class reference HC Stary

Type II and III
Type IV note “LRC”

Symptomatic Carotid Plaques Classes V-VI regression/stabilization unlikely

How Can Regression Occur?

- Lipid egress: shrinkage of lipid rich core (LRC): likely more readily from cellular pool than from crystalline cholesterol; Ca++ not seen to regress
- Protein/collagen: Increases in certain lesions (Sclerosis); also decreases.
- Plaque Volume and Surface: modest decreases.
- Ratio of LRC in type IV to total plaque decreases
- Activated macrophages (Fe + FDG) decrease
- Microvasculature /perivascular inflammation decrease.

Future Expectations: Observe and Measure “Best Medical RX” Effects

- DOCUMENT effects of medical RX on Plaque
- DEFINE Best Medical Therapy by effect locally and systemically
- LDL reduction to NCEP111 normalize inflammatory markers: STATIN;
- Complete smoking cessation
- Hypertension (~140-120 systolic)
- Diabetes: Hbg A1C ~6
- LOW DOSE antplatelet RX (more data needed)

Take Home: stage II–IV Plaques Can Regress: Avoid Unreasonable Expectations for V-VI Advanced Plaque

Initiate prompt/comprehensive medical treatment
Timely intervention for symptomatic lesions
Focus on Plaque stage/structure and composition
Follow results of pathology based prospective observational trials e.g. PARISK and Others: Spence,Nicholaides