STATINS MODERATE CORONARY Atheroma BUT NOT CORONARY CALCIFICATION: RESULTS FROM META-ANALYSES

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Background: It is generally accepted that atheroma with increased intimal-medial thickness (IMT) and plaque formation are the pathological manifestations of coronary atherosclerosis. While lowering LDL-Cholesterol (LDL-C) is associated with atheroma and IMT reduction a similar effect on coronary artery calcification (CAC) remains uncertain. The objective of these meta-analyses is to compare the existing evidence for the effect of lowering LDL-C with statins on both coronary atheroma and CAC.

Methods: Literature searches identified five controlled trials suitable for inclusion in the analysis of the effect of statins (high dose versus either low dose or placebo) on coronary artery calcification and six trials suitable for inclusion in the analysis of the effect of statins on coronary atheroma.

Results: All trials reported substantial and significant reductions in LDL-C with statin treatment. Similar reductions in LDL-C were achieved in the CAC and atheroma trials of 37mg/dl and 35mg/dl, respectively. Analysis of the CAC trials did not demonstrate any effect of statins on the progression of calcification. In contrast, in the coronary atheroma trials there was a consistent moderation of atheroma progression with statins (p<0.0001).

Conclusions: Meta-analysis of the available trials has demonstrated significant moderation of coronary atheroma associated with the statin-induced reduction in LDL-C. In contrast, there was no effect on coronary calcification despite a similar reduction in LDL-C levels. This suggests that the pathogenesis of the two conditions may be different, if not in aetiology, then certainly in their development. It further suggests that statin use to moderate arterial calcification is not effective.