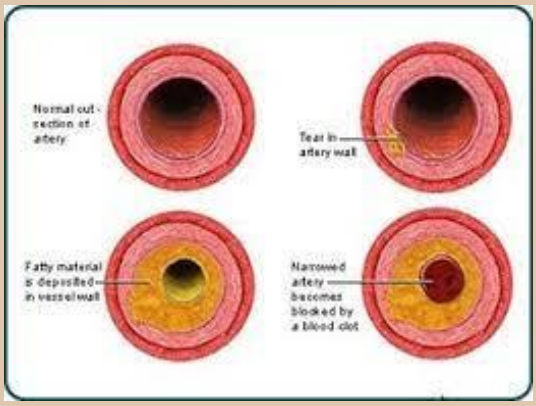
Statin Prevention



Promising findings regarding soft plaque volume

The ideal time to address heart disease is before it becomes an issue. While our healthcare system is effective at preventing subsequent heart attacks, it's not as proactive in preventing the first one. Statins are commonly prescribed to treat high cholesterol and prevent heart attacks. It's important to know how much plaque they can reduce, and which types of plaque are hazardous.

Abstract

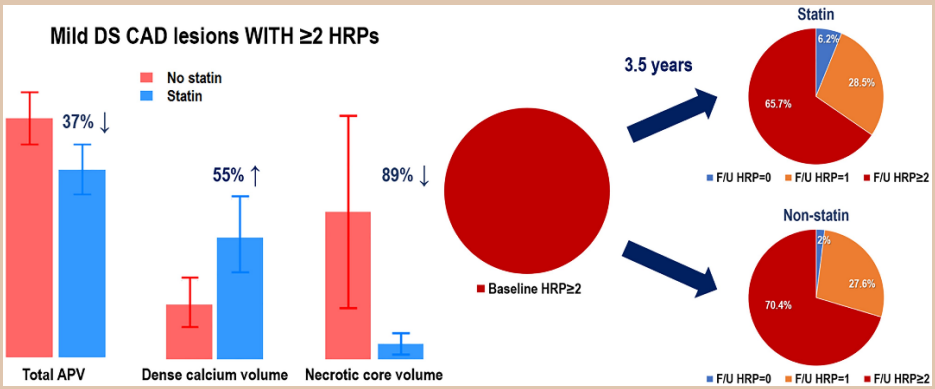
AIMS: To investigate the impact of statins on plaque progression according to high-risk coronary atherosclerotic plaque (HRP) features and to identify predictive factors for rapid plaque progression in mild coronary artery disease (CAD) using serial coronary computed tomography angiography (CCTA).

METHODS AND RESULTS: We analyzed mild stenosis (25-49%) CAD, totaling 1432 lesions from 613 patients (mean age, 62.2 years, 63.9% male) and who underwent serial CCTA at a ≥2 year inter-scan interval using the Progression of AtheRosclerotic PlAque DetermIned by Computed TomoGraphic Angiography Imaging (NCT02803411) registry. The median inter-scan period was 3.5 ± 1.4 years; plaques were quantitatively assessed for annualized percent atheroma volume (PAV) and compositional plaque volume changes according to HRP features, and the rapid plaque progression was defined by the ≥90th percentile annual PAV. In mild stenotic lesions with ≥2 HRPs, statin therapy showed a 37% reduction in annual PAV (0.97 ± 2.02 vs. 1.55 ± 2.22, P = 0.038) with decreased necrotic core volume and increased dense calcium volume compared to non-statin recipient mild lesions. The key factors for rapid plaque progression were ≥2 HRPs [hazard ratio (HR), 1.89; 95% confidence interval (CI), 1.02-3.49; P = 0.042], current smoking (HR, 1.69; 95% CI 1.09-2.57; P = 0.017), and diabetes (HR, 1.55; 95% CI, 1.07-2.22; P = 0.020).

CONCLUSION: In mild CAD, statin treatment reduced plaque progression, particularly in lesions with a higher number of HRP features, which was also a strong predictor of rapid plaque progression. Therefore, aggressive statin therapy might be needed even in mild CAD with higher HRPs.

Cardiovascular disease is the leading cause of death worldwide, for both men and women. When the walls of the coronary artery are damaged, plaque deposits can form. These plaques are often inflammatory and unstable. If these unstable plaques break off, they can form clots and blockages that can lead to a heart attack or stroke. The overall process can take many years to progress so identifying and treating risk early is crucial in preventing these events. By analyzing plaque composition through testing, we can determine the short-term risk. Plaques that are mainly calcified are considered stable, while those with soft lipid deposits are more likely to cause problems.

This study was conducted on 613 patients with mild coronary artery disease who underwent serial coronary CT angiogram testing. The study examined 1,432 lesions and found that subjects who received statin therapy for mild stenotic lesions with two or more high-risk features had a 37% reduction in plaque volume. The chart below shows a reduction in plaque volume, but more importantly, a reduction in inflammatory necrotic core volume. An increase in plaque calcification and a decrease in necrotic core volume indicate a less inflammatory plaque, which reduces the risk of coronary events. These findings support the importance of treating potential lesions early to lower inflammatory markers and plaque volume. It's important to note that by the time someone needs a stent or bypass surgery, the disease has been present for decades. Waiting for an event may be too late.



Park, H., Arsanjani, R., Sung, J., et al. Impact of statins based on high-risk plaque features on coronary plaque progression in mild stenosis lesions: Results from the PARADIGM study. *European Heart Journal - Cardiovascular Imaging*. https://doi.org/10.1093/ehjci/jead110