Effects of Statins on Coronary Atherosclerotic Plaques: The PARADIGM Study.

This study sought to describe the impact of statins on individual coronary atherosclerotic plaques. Although statins reduce the risk of major adverse cardiovascular events, their long-term effects on coronary atherosclerosis remain unclear. We performed a prospective, multinational study consisting of a registry of consecutive patients without history of coronary artery disease who underwent serial coronary computed tomography angiography at an interscan interval of ≥2 years. Atherosclerotic plaques were quantitatively analyzed for percent diameter stenosis (%DS), percent atheroma volume (PAV), plaque composition, and presence of high-risk plaque (HRP), defined by the presence of ≥2 features of low-attenuation plaque, positive arterial remodeling, or spotty calcifications. Among 1,255 patients (60 ± 9 years of age; 57% men), 1,079 coronary artery lesions were evaluated in statin-naive patients (n = 474), and 2,496 coronary artery...
lesions were evaluated in statin-taking patients (n = 781). Compared with lesions in statin-naive patients, those in statin-taking patients displayed a slower rate of overall PAV progression (1.76 ± 2.40% per year vs. 2.04 ± 2.37% per year, respectively; p = 0.002) but more rapid progression of calcified PAV (1.27 ± 1.54% per year vs. 0.98 ± 1.27% per year, respectively; p50% DS were not different (1.0% vs. 1.4%, respectively; p > 0.05). Statins were associated with a 21% reduction in annualized total PAV progression above the median and 35% reduction in HRP development. Statins were associated with slower progression of overall coronary atherosclerosis volume, with increased plaque calcification and reduction of high-risk plaque features. Statins did not affect the progression of percentage of stenosis severity of coronary artery lesions but induced phenotypic plaque transformation. (Progression of Atherosclerotic Plaque Determined by Computed TomoGraphic Angiography Imaging [PARADIGM]; NCT02803411).

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