

中文題目：冠狀動脈硬化斑塊與血管狹窄程度的關係

英文題目：Relationship of coronary plaque composition and stenosis severity

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**Background:** Multidetector computed tomography (MDCT) has emerged as a promising noninvasive tool to directly examine the coronary artery wall, determine the degree of plaque burden, and assess the degree of coronary artery stenosis. To provide insight into the pathophysiology of coronary artery disease (CAD), we study coronary plaque composition and relate composition to stenosis severity.

**Methods and Results:** From January 2007 to October 2010, we performed a contrast-enhanced 64-slice or 256-slice MDCT coronary angiography as part of a health check-up protocol in 800 subjects (70.6% male, 56±9 yrs) without a history of coronary interventions. A 17-segment model of the coronary arteries and 4-point grading score (normal, mild [ $<50\%$ ], moderate [ $50\%$  to  $69\%$ ], severe [ $\geq 70\%$ ]) was used for the evaluation of coronary diameter stenosis. The same 17-segment model of the coronary arteries was used for the evaluation and visual semiquantification of coronary artery calcific, noncalcific, and mixed plaque. Coronary plaques were detected in 480 (60%) patients and 215 (27%) and 37 (5%) were found to have stenosis 50–69% and at least 70% in at-least one coronary artery segment, respectively. Among the 1382 detected plaques, the overall proportion of the composition of plaque burden revealed relatively more calcified (44%), less mixed (30%), and noncalcified (26%) plaques. However, on a per-segment analysis, mixed plaques were more obstructive at the 50% thresholds (53%), as compared to noncalcified plaques (32%) and calcified plaques (15%). In addition, at the 70% thresholds, mixed plaques (48%) and non-calcified plaques (43%) were more often obstructive than calcified plaques (10%). Within respective composition categories, mixed plaques were more obstructive at the 50% thresholds (53%), as compared to noncalcified plaques (32%) and calcified plaques (15%). At the 70% thresholds, mixed plaques (7%) and non-calcified plaques (7%) were more often obstructive than calcified plaques (1%). On multivariate analysis of the obstructive CAD at the 50% thresholds, mixed plaques were more hazardous than noncalcified plaques or calcified plaques (hazard ratio: 7.3 vs. 4.8 vs. 2.0, respectively); while at the 70% thresholds, both noncalcified plaques and mixed plaques were more hazardous than calcified plaques (hazard ratio: 1.8 vs. 1.7 vs. 1.3, respectively).

**Conclusions:** In the apparently healthy population, moderate obstructive CAD was associated with mixed plaque composition, and more severe obstructive CAD was associated with both mixed plaques and noncalcified plaques. Coronary segments containing purely calcified plaques were less associated with obstructive stenosis.