Extremely high Agatston calcium score without significant coronary artery stenoses

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Severe coronary calcification (Agatston score >1000) is associated with advanced obstructive coronary disease.

Case 1
A 48-year-old woman, presented with long-standing Type II diabetes mellitus, hypertension, renal failure, peripheral vascular disease with prior bilateral above knee amputation, had atypical chest pain and T-wave inversion in the anterolateral ECG leads. Non-enhanced cardiac CT (CCT) revealed an Agatston calcium score of 5031, of which 2135 in the left anterior descending (LAD), 2097 in the left circumflex (LCX), and 785 in the right coronary artery (RCA; Panel A); therefore, CCT angiography was omitted. Invasive coronary angiography revealed mild and non-obstructive coronary stenoses (Panel B).

Case 2
A 51-year-old asymptomatic man, who was presented with long-standing Type II diabetes mellitus, hypertension, and family history of coronary artery disease, was referred to CCT for risk assessment. An Agatston calcium score of 6420 was found, of which 1220 in the LAD, 1116 in the LCX, and 4084 in the RCA (Panel C). Invasive coronary angiography revealed non-significant coronary stenoses in the left system, whereas significant lesions were noted only in the right posterior descending and posterior–lateral RCA branches (Panel D).

Conclusion
The Agatston calcium score of >2000 was reported in 1% of 44 052 asymptomatic persons referred for non-enhanced CCT for the assessment of subclinical atherosclerosis. The frequency of CCT angiographic stenoses was 87% among symptomatic patients with calcium score ≥400. These cases demonstrate that an extremely high Agaston score may not be associated with severe obstructive disease, but rather reflects diffuse severe arteriosclerosis in patients with multiple risk factors including long-standing diabetes mellitus.

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