

UKPDS Coronary Heart Disease Risk Score Correlates with Extent and Type of Plaque in Asymptomatic Type 2 Diabetics: A Study Using 64 Slice Coronary CT Angiography

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Background: Characteristics of coronary arterial plaque may be predictive of subsequent coronary events in high risk individuals. We examined differences in extent and characteristics of coronary plaque in asymptomatic type 2 diabetics and their relation to 10 yr risk for late events as defined by the UK Prospective Diabetic Study (UKPDS).

Methods: Coronary CT angiography (64 slice) (CCTA) was performed in 120 asymptomatic diabetics (63% women, age 55-74 (mean 63.7) yrs) enrolled in an ongoing prospective outcomes trial. Coronary arteries were examined using a 17 segment model and presence or absence of plaques was assessed on a segmental basis. Plaques were characterized as calcified ($\geq 50\%$ calcium), non-calcified (no calcium) or mixed ($< 50\%$ calcium).

Results: Plaque was present in 105/120 (87.5%) pts. Percent UKPDS risk correlated with total number of coronary segments with plaque, calcified plaque and non-calcified plaque although not significantly for mixed plaque (Table). Plaque causing luminal narrowing ($> 25\%$ luminal obstruction) showed similar correlation with UKPDS risk.

UKPDS risk score and prevalence and characteristics of coronary plaque

	Total	Calcified	Non-calcified	Mixed
N of coronary segments with plaque (mean \pm 1SD)				
UKPDS risk				
Low (N=23)	2.2 \pm 2.1	1.3 \pm 1.8	0.39 \pm 0.89	0.57 \pm 0.84
Medium (N=46)	3.7 \pm 2.7	1.9 \pm 2.0	1.2 \pm 1.4	0.74 \pm 1.1
High (N=38)	5.6 \pm 3.3	3.4 \pm 3.0	1.3 \pm 1.4	1.1 \pm 1.6
p-value*	<0.001	0.012	0.006	0.232
N of coronary segments with luminal narrowing $> 25\%$ (mean \pm 1SD)				
Low	0.96 \pm 1.5	0.35 \pm 0.71	0.26 \pm 0.75	0.43 \pm 0.79
Medium	1.3 \pm 1.5	0.41 \pm 0.8	0.59 \pm 0.91	0.37 \pm 0.77
High	2.7 \pm 2.2	1.0 \pm 1.7	0.95 \pm 1.2	0.82 \pm 1.3
p-value*	<0.001	0.202	0.007	0.095

* Kruskal Wallis non-parametric

Conclusions: In asymptomatic type 2 diabetics: 1. Non-calcified, calcified and overall extent of coronary plaque and segmental luminal narrowing correlated with percent UKPDS risk. 2. CCTA is an excellent non-invasive tool for assessment of coronary plaque characteristics that may have important consequences for clinical outcomes.