

Does Obstructive Coronary Plaque Have Different Composition to Non-Obstructive Plaque? A Study Using 64-Slice Cardiac CTA in Asymptomatic Type 2 Diabetics

David Halon¹, Tamar Gaspar², Idit Dobrecky-Mery^{1,2}, Mali Azencot¹, Nathan Peled², Basil Lewis¹

¹ Cardiovascular Medicine, ² Radiology, Lady Davis Carmel Medical Center, Haifa, Israel

Background: We prospectively examined 64 slice coronary CT angiograms (CTA) in an asymptomatic patient cohort at high risk for coronary events to examine differences in the characteristics of coronary plaque between pts with non-obstructive disease and pts with coronary luminal narrowing.

Methods: Type 2 diabetics, 55-74 yrs, with no history of coronary artery disease underwent CTA in the confines of a prospective, ongoing, outcomes study. Coronary luminal narrowing was assessed visually on CTA as <25%, 25-50% or >50% and plaque as absent, calcified ($\geq 50\%$ calcium), non-calcified (no calcium) or mixed (<50% calcium) using a 17 segment coronary arterial model.

Results: In 120 pts [age 63.7 yr, 44 (36.7%) men] coronary plaque was present in 40 (90.9%) men and 65 (85.5%) women (ns) but was more extensive in men (5.7 ± 3.4 vs 3.2 ± 2.2 coronary segments, $p=0.001$; total plaque length 56 ± 56 vs 30 ± 31 mm, $p=0.02$). Non-obstructive lesions were mostly calcified (in >70% of cases) while 50% of obstructive lesions (>50% narrowing) were non-calcified and only the minority (11.5%) calcified ($p<0.001$) (Table). Findings were similar for men and for women.

Plaque characteristics in relation to severity of luminal narrowing

	Segments with plaque	Calcified	Mixed	Non-calcified
Luminal narrowing	N (% total segments)	N (% segments within luminal narrowing group)		
<25%	258 (55.4)	183 (70.9)	46 (17.8)	29 (11.2)
25-50%	156 (33.5)	58 (37.2)	54 (34.6)	44 (28.2)
>50%	52 (11.1)	6 (11.5)	20 (38.5)	26 (50.0)
		P<0.001		

Conclusions: In asymptomatic type 2 diabetics: 1. Coronary plaques were present on 64 slice cardiac CTA in most patients (>85% women, >90% men). 2. Half the obstructive plaques were non-calcified, while calcification was present in >70% of minimally obstructive lesions. 3. Progression of plaque to luminal stenosis appears to be due to mechanisms unrelated to calcification.