

CORONARY ARTERY REMODELING AND PLAQUE COMPOSITION IN NON INFARCT RELATED CORONARY ARTERIES IN PATIENTS PRESENTING WITH ST SEGMENT ELEVATION MYOCARDIAL INFARCTION: WHERE IS THE NECROTIC CORE?

i2 Poster Contributions

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Background: We studied a non-infarct related coronary artery using Virtual Histology (VH) intravascular ultrasound (IVUS) to assess patterns of remodeling and necrotic core (NC) distribution relative to the minimum lumen site.

Methods: VH-IVUS was performed in a previously non-revascularized, non-infarct related artery (27 LAD, 22 LCX, and 32 RCA) in 81 statin naïve STEMI pts. Standard grayscale and VH-IVUS analyses were performed every 0.5mm. The length of the analyzed segment was 53.3 ± 21.5 mm.

Results: The maximum NC (MaxNC) site was located at the minimum lumen area (MLA) site in only 2.6% of lesions; most often the MaxNC site was distal to the MLA site in (69.2% of lesions by 21.7 [10.6-36.8 mm]) or proximal to the MLA site (28.2% of lesions by 12.9 [1.9-28.4 mm]). In parallel with the distribution of the NC, the remodeling index was significantly larger at the MaxNC site compared to the MLA site (1.04 vs. 0.90, $p < 0.001$) with a positive correlation between the remodeling index and %NC ($r = 0.336$; $p = 0.003$) only at the MLA site. Conversely, %dense calcium (DC) was significantly greater at the MaxNC and %fibrotic (FI) and %fibrofatty (FF) plaque were less than at the MLA site (Table).

Conclusion: In statin naïve patients with angiographic insignificant lesions, the largest NC and the greatest degree of positive remodeling - the presumed site of greatest lesion instability - were rarely at the minimum lumen site. Instead, it was located distally and would be missed if only the minimum lumen site was assessed.

	MLA site	MaxNC site	P value
Remodeling index	0.90 ± 0.14	1.04 ± 0.11	<0.001
Plaque burden	0.51 ± 0.16	0.49 ± 0.13	0.058
Lumen CSA (mm ²)	5.0 ± 2.5	9.3 ± 4.6	<0.001
% FI plaque	54.3 ± 18.7	49.7 ± 17.0	0.002
% FF plaque	10.0 ± 10.3	7.3 ± 7.4	<0.001
% NC plaque	21.7 ± 11.9	29.5 ± 13.6	<0.001
% DC plaque	10.1 ± 10.0	12.2 ± 9.9	0.006