



Acute Coronary Syndromes

3D ANGIOGRAPHY/IVUS-VH BASED ANALYSIS OF TEMPORAL CHANGES IN NECROTIC CORE CONTENT AND LUMINAL DISTRIBUTION WITH STATIN TREATMENT

Poster Contributions

Hall C

Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: Acute Coronary Syndromes: NSTEMI

Abstract Category: 26. Stable Ischemic Heart Disease: Therapy

Presentation Number: 1117-262

Authors: *Zhi Chen, Andreas Wahle, Richard Downe, Tatiana Masiarova, Hana Skalicka, Ross Vimr, Ales Kral, Stepan Jerabek, John Lopez, Milan Sonka, Tomas Kovarnik, University of Iowa, Iowa City, IA, USA, General University Hospital, Charles University, Prague, Czech Republic*

Background: Despite only small changes in total plaque volume, lipid lowering therapy with statin agents (LLT) significantly decreases cardiac events. The precise plaque morphologic changes associated with plaque stabilization are not known. We evaluated temporal patterns of necrotic core (NC) modification via serial IVUS-VH evaluation.

Methods: 32 patients with stable angina receiving LLT underwent angiography and IVUS in 32 non-culprit vessels at the time of coronary intervention (BL) and at follow-up (FU) 12 months later (range: 8~21). Vessels were co-registered and divided into 5mm vessel segments for plaque measurements. Automated BL/FU IVUS-VH pullbacks were segmented and adjudicated. IVUS-VH was used to determine plaque phenotypic features. The relative and absolute amounts of NC and NC-angle abutting the lumen were assessed in all segments.

Results: 2791 frames were co-registered and analyzed resulting in 386 5mm-segments. Cholesterol (total TC, LDL) decreased in 78.1% and 62.5% of patients respectively while NC (area, angle) increased in 62.5% and 62.5% of patients respectively. No correlations were found for Δ NC-area/ Δ NC-angle vs. Δ TC/ Δ LDL/ Δ HDL as well as Δ NC-area/ Δ NC-angle vs. FU TC/LDL/HDL (all $R^2 < 0.25$).

Conclusion: Despite LLT resulting in a significant decrease in LDL levels, NC area and NC% continue to increase at FU in CAD patients and cannot explain the declining coronary event rates after institution of LLT.

Necrotic core related analysis and lipid levels						
	Necrotic Core Indices			Lipid Levels		
	NC area (mm ²)	NC plaque percentage	NC-angle abutting lumen [°]	Total cholesterol (mg/dL)	LDL (mg/dL)	HDL (mg/dL)
Baseline	0.29 +/- 0.31	11% +/- 9%	44 +/- 48	175 +/- 42	102 +/- 37	44 +/- 12
Followup	0.37 +/- 0.34	14% +/- 9%	54 +/- 51	141 +/- 44	85 +/- 31	46 +/- 14
Change	0.08 +/- 0.28	3% +/- 9%	10 +/- 43	-34 +/- 61	-17 +/- 45	2 +/- 14
t-test p-value	< 0.001	<0.0001	0.002	0.001	0.023	ns