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TCT@ACC-i2: The Interventional Learning Pathway

RELATIONSHIP BETWEEN THE EXTENT OF LIPID-RICH PLAQUE ASSESSED BY NEAR-INFRARED SPECTROSCOPY AND CLINICAL PRESENTATION: A COLOR REGISTRY ANALYSIS

Poster Contributions

Hall C

Saturday, March 29, 2014, 3:45 p.m.-4:30 p.m.

Session Title: IVUS and Physiology

Abstract Category: 35. TCT@ACC-i2: IVUS and Intravascular Physiology

Presentation Number: 2103-304

Authors: *Fuyu Qiu, Akiko Maehara, Annapoorna Kini, David Rizik, Emmanouil Brilakis, Kendrick Shunk, Jonathan Tobis, Kosaku Goto, Tomotaka Dohi, Ke Xu, Gregg Stone, Gary Mintz, James Muller, Giora Weisz, Cardiovascular Research Foundation, New York, NY, USA*

Background: The COLOR Registry is a prospective, multicenter observational study of real-world pts undergoing percutaneous coronary intervention (PCI) with intracoronary near-infrared spectroscopy (NIRS).

Methods: The relationship between the extent of lipid-rich plaque (LRP) in the culprit lesion assessed by pre-PCI NIRS was compared to clinical presentation among 347 pts with (1) myocardial infarction (MI) including ST-segment elevation MI (STEMI) and non-STEMI, (2) unstable angina pectoris (UAP) with negative cardiac biomarkers and (3) stable coronary artery disease (CAD). Using raw spectroscopic information, pixels with a probability of LRP >0.6 were divided by all viable pixels to generate the lipid-core burden index (LCBI).

Results: Maximum LCBI in any 4 mm-long segment (maxLCBI4mm) of the culprit lesion in MI pts was significantly greater than pts with UAP or stable CAD (Table). The cutoff value of maxLCBI4mm that best predicted MI was 417 (AUC = 0.62). Using a multivariate linear regression model, MI presentation - among age, gender, body mass index (BMI), or estimated glomerular filtration rate (eGFR) - was the only independent predictor for maxLCBI4mm ($p=0.0002$, coefficient = 59 [95% CI; 28-91]). However, within the subgroup of MI pts, both eGFR and BMI were positively associated with maxLCBI4mm.

Conclusion: We demonstrated that MI presentation was associated with LRP within culprit lesions and that maxLCBI4mm differentiated culprit lesions of MI pts from UAP or stable CAD pts.

Table

	(a) MI (71 pts)	(b) UAP (132 pts)	(c) Stable CAD (144 pts)	p-value (a) vs (b) vs (c)	p-value (a) vs (b)	p-value (a) vs (c)	p-value (b) vs (c)
Age, years	61.0 ± 10.7	65.9 ± 11.1	63.2 ± 8.1	0.001	0.0003	0.09	0.02
Male, %	90.7%	79.7%	85.5%	0.08	0.03	0.24	0.19
Smoking, %	78.4%	63.4%	74.2%	0.03	0.02	0.46	0.05
Diabetes, %	22.4%	28.7%	40.9%	0.007	0.3	0.004	0.03
BMI, kg/m ²	28.2 ± 5.5	29.8 ± 5.4	31.2 ± 6.7	0.0007	0.06	0.0002	0.04
eGFR*, mL/min/1.73 m ²	65.4 ± 19.2	60.9 ± 21.9	60.8 ± 23.6	0.23	0.29	0.25	0.99
Lesion length, mm	25.4 ± 11.5	31.0 ± 18.2	29.3 ± 17.0	0.04	0.01	0.07	0.38
LCBI in lesion segment	161 ± 130	92 ± 90	112 ± 108	<0.0001	<0.0001	0.0006	0.11
MaxLCBI4mm	427 ± 269	305 ± 253	317 ± 236	0.0007	0.0004	0.001	0.67

*eGFR was calculated by the MDRD formula