RESULTS

and maxLCBI4mm within non-culprit lesions. The derived lipid burden in all lesions was measured as maxLCBI4mm. PB in all segments was assessed by quantitative IVUS. Only lesions in arteries were divided into contiguous 10-mm non-culprit segments.

METHODS

Among consecutive patients undergoing NIRS-IVUS imaging, the present analysis was undertaken to: 1) evaluate the correlation between PB measured by IVUS and lipid burden measured by NIRS in imaging, 2) determine the prevalence of non-culprit PB70 lesions that have a maxLCBI4mm ≥400 among non-culprit coronary atheroma.

RESULTS

In 121 patients, 292 non-culprit lesions (mean PB 56 ± 10%) were identified. A significant but modest positive correlation was found between PB and maxLCBI4mm (R=0.32, 95% CI 0.22-0.42, p<0.001, Figure). Although PB70 lesions had a greater maxLCBI4mm than non-PB70 lesions (186 [51, 267] vs. 50 [0, 181], p = 0.02), only 17.1% of PB70 lesions contained a maxLCBI4mm ≥400. PB70 lesions having a maxLCBI4mm ≥400 were rare overall, accounting for only 2.1% of all non-culprit plaques.

CONCLUSIONS

We found a significant yet modest positive correlation between PB and lipid burden within non-culprit plaques. PB70 lesions harboring a maxLCBI4mm ≥400 are proportionately rare and accounted for only 2% of all non-culprit plaques. Whether these rare lesions having the IVUS feature most predictive of site-specific future events, coupled with a NIRS lipid burden characteristic of culprit lesions in myocardial infarction, will ultimately associate with future acute coronary events remains unknown.

CATEGORIES IMAGING: Intravascular

KEYWORDS Fibrous cap thickness, OCT, Vulnerable plaque

TCT-356

Characterizing Non-culprit Coronary Artery Plaques Using Hybrid Near-infrared Spectroscopy and Intravascular Ultrasound: The Rarity of Non-culprit Lesions Having Both a Large Plaque Burden and Large Lipid Burden

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BACKGROUND Culprit lesions in myocardial infarction frequently harbor a lipid burden exceeding a maximum lipid-core burden index in 4-mm (maxLCBI4mm) of 400, as defined by intracoronary near-infrared spectroscopy (NIRS). Whether non-culprit atheroma with a plaque burden ≥70% (PB70), the intravascular ultrasound (IVUS) characteristic most strongly associated with future lesion-specific events, concurrently harbor a maxLCBI4mm ≥400 remains unknown. Using hybrid NIRS-IVUS imaging, the present analysis was undertaken to: 1) evaluate the correlation between PB measured by IVUS and lipid burden measured by NIRS in vivo; and 2) determine the prevalence of non-culprit PB70 lesions that have a maxLCBI4mm ≥400 among non-culprit coronary atheroma.

METHODS Among consecutive patients undergoing NIRS-IVUS imaging as part of a single center registry, non-culprit portions of the target arteries were divided into contiguous 10-mm non-culprit segments. PB in all segments was assessed by quantitative IVUS. Only lesions having a PB >40% were included in the present analysis. NIRS-derived lipid burden in all lesions was measured as maxLCBI4mm. Summary statistics were used to describe the relationship between PB and maxLCBI4mm within non-culprit lesions.

RESULTS In 121 patients, 292 non-culprit lesions (mean PB 56 ± 10%) were identified. A significant but modest positive correlation was found between PB and maxLCBI4mm (R=0.32, 95% CI 0.22-0.42, p<0.001, Figure). Although PB70 lesions had a greater maxLCBI4mm than non-PB70 lesions (186 [51, 267] vs. 50 [0, 181], p = 0.02), only 17.1% of PB70 lesions contained a maxLCBI4mm ≥400. PB70 lesions having a maxLCBI4mm ≥400 were rare overall, accounting for only 2.1% of all non-culprit plaques.

CONCLUSIONS We found a significant yet modest positive correlation between PB and lipid burden within non-culprit plaques. PB70 lesions harboring a maxLCBI4mm ≥400 are proportionately rare and accounted for only 2% of all non-culprit plaques. Whether these rare lesions having the IVUS feature most predictive of site-specific future events, coupled with a NIRS lipid burden characteristic of culprit lesions in myocardial infarction, will ultimately associate with future acute coronary events remains unknown.

CATEGORIES IMAGING: Intravascular

KEYWORDS Fibrous cap thickness, OCT, Vulnerable plaque

TCT-357

Ex-vivo Validation of Vascular Response after Drug-eluting Stent implantation on Coronary Angioscopy

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BACKGROUND Color intensity and neointimal coverage after drug-eluting stent (DES) evaluation by coronary angioscopy (CAS) may predict late stent failure and stent thrombosis. However, the histopathological comparison data is limited. We evaluated the histological characteristics of DES characterized by CAS in coronary autopsy specimens.

METHODS A total of 14 DESs were examined to compare CAS and histological images. CAS examination was performed based on tissue structure and color intensity classified either white or yellow. Stent coverage was graded as 0, stent struts exposed; grade 1, struts bulging into the lumen, but still transparently visible although covered; grade 2, struts embedded in the neointima, but translucent; grade 3, struts fully embedded and invisible. Each examination was performed at each 3-mm interval of the entire DES.

RESULTS Sixty-one segments were matched to CAS and histological analysis. Of these, 37 were categorized as white and 24 were yellow on CAS. Histological analysis revealed white segments was entirely comprised of smooth muscle cells with an extracellular matrix containing collagens, indicating high neointimal maturity. On the other hand, segments classified as yellow contained fibroatheroma (n=3), foam cells accumulation (n=12) or superficial calcium deposition (n=9) (Figure). Intimal coverage grade was well correlated with histological neointimal thickness (grade 0 [n = 21] 10±1 µm, grade 1 [n =20] 115±70 µm, grade 2 [n =12] 487±243 µm, and grade 3 [n =9] 969±404 µm; p <0.05).

CONCLUSIONS In-stent yellow intima includes various types of atherosclerotic components, such as fibroatheroma formation, foam cell accumulation and superficial calcium deposition. CAS has the capability to evaluate vascular response of DES accurately.

CATEGORIES IMAGING: Intravascular

KEYWORDS Angioscopy, Drug-eluting stent, Neoatherosclerosis