



Chronic CAD/Stable Ischemic Heart Disease

VARIATIONS IN ATHEROSCLEROSIS PHENOTYPE WITHIN THE CORONARY AND PERIPHERAL VASCULAR TERRITORIES: INSIGHTS FROM INTRAVASCULAR ULTRASONOGRAPHY

ACC Moderated Poster Contributions
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Background: Intravascular ultrasound (IVUS) has described the burden of coronary atherosclerosis, remodeling and calcification patterns; each known to be associated with plaque progression and clinical events. However, the structural phenotype of atherosclerosis within the periphery, and its relationship with the expression of coronary atherosclerosis is poorly understood.

Methods: Volumetric IVUS imaging was performed within the superficial femoral or epicardial coronary artery of 278 patients undergoing percutaneous revascularization in the peripheral (n=70) or coronary (n=208) circulations, were matched for age, gender and diabetic status. Groups were compared with regards to clinical characteristics, vascular dimensions, atheroma burden, vessel remodeling and calcification.

Results: Mean age was 67 years, 37% were female, and 60% diabetic. Both peripheral and coronary groups were well matched for current smoking status (22.9 vs 19.2%, p=0.51), history of smoking (58.6 vs 66.3%, p=0.24), hypertension (85.5 vs 82.2%, p=0.53) and dyslipidemia (85.5 vs 85.6%, p=0.99) respectively. Peripheral vessels harbored more extensive atherosclerosis than the coronaries by percent atheroma volume (52.0±12.4 vs 41.3±8.7%, p<0.001) and total atheroma volume normalized for vessel length (555.2±173.6 vs 193.3±86.3 mm³, p<0.001). Volumes occupied by the lumen (520.0±216.8 vs 267.1±89.2 mm³, p<0.001) and vessel wall (1084.0±300.4 vs 460.4 mm³, p<0.001) were greater in the peripheral versus coronary vessels respectively. However peripheral vessels were expansively remodeled (Remodeling Index [RI] of 1.1±0.2), whereas the coronaries were constrictively remodeled (RI 0.90±0.2, p<0.001). Percentage of IVUS frames identified with calcium were greater in the periphery compared with the coronaries (78.9±24.0 vs 35.5±25.4%, p<0.001) respectively.

Conclusions: Marked variations in the expression of atherosclerosis within differing vascular territories exist. Local, territory specific rheological factors are likely to influence the expression and natural history of atherosclerosis. This has implications for the local and systemic treatment of PAD.