

TCT@ACC-i2: Invasive and Interventional Cardiology

LARGER LIPID POOLS ASSOCIATE WITH FEATURES OF PLAQUE VULNERABILITY ON OPTICAL COHERENCE TOMOGRAPHY

Poster Contributions

Poster Sessions, Expo North

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Background: While lipid pools are thought to promote plaque instability, it remains to be elucidated how they associated with other features implicated in vulnerability. High resolution imaging with optical coherence tomography (OCT) enables the visualization of microstructures in vivo. Therefore, we investigated the impact of lipid pool on plaque vulnerability by using OCT.

Methods: 102 patients with coronary artery disease underwent OCT imaging of non-culprit atherosclerotic plaque. Patients were stratified according to the quadrant of lipid plaque (<180°, 180-270°, >270°). Clinical characteristics and OCT-derived features of plaque vulnerability were compared.

Results: Patients with lipid pools >270° were less likely to receive thienopyridine. Plaques containing larger lipid pools exhibited a thinner fibrous cap and were more likely to contain microchannels. Thin-cap fibroatheroma, thrombus and plaque rupture were more frequently observed in these patients (Table). Multivariate analysis showed that the presence of lipid pool >180° was independently associated with OCT-derived features of plaque vulnerability, including fibrous cap thickness (p=0.005), microchannels (p=0.01) and thin-cap fibroatheroma (p=0.003).

Conclusions: Atherosclerotic plaques with a larger lipid pool exhibit more features of plaque vulnerability. This finding identifies patients who need intensive risk factor modification to stabilize vulnerable plaques.

Table. Comparison of OCT-derived Features for Plaque Vulnerability

	Lipid arc < 180° (n=34)	Lipid arc 180-270° (n=33)	Lipid arc > 270° (n=28)	p-value
LDL-C (mg/dl)	84 ± 44	93 ± 36	97 ± 35	0.10
Statin (%)	55	48	34	0.10
thienopyridines (%)	100	100	86	0.02
OCT parameters				
FCT (um)	120 ± 75	90 ± 42	68 ± 20	<0.001
Microchannel (%)	35	70	75	0.002
TCFA (%)	30	73	79	<0.001
Thrombus (%)	0	6	43	<0.001
Plaque rupture (%)	12	12	50	<0.001

FCT = fibrous cap thickness, TCFA = thin-cap fibroatheroma