Atherosclerotic changes in coronary aneurysms post-Kawasaki disease: in vivo demonstration with near-infrared spectroscopy and intravascular ultrasound

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In a 25-year-old patient treated with covered stents for a giant aneurysm of the LAD post-Kawasaki (arrowhead in Panel A), intravascular ultrasound was used to confirm the size and characteristics of a smaller aneurysm in the mid-RCA (Panels B and C). No treatment was performed as the maximal aneurysm diameter was 5.5 mm with a napkin’s ring of calcium in the mid-segment causing a moderate lumen narrowing with a lumen diameter of 2.2 mm (Panel D). Distal to the aneurysm near infrared spectroscopy showed two quadrants of lipid deposition (maximum lipid core burden index of 341) behind a shell of superficial calcium (Panel E). The patient had no risk factors for CAD (total cholesterol 3.9 with 2.0 mMol/L LDL) nor evidence of wall thickening or calcification neither distal nor proximal to the aneurysmal segment (Panel F) in a pull-back of 12 cm along the entire LAD and RCA. Near infrared spectroscopy has the unique ability to generate a chemogram of the vessel wall components not affected by the presence of calcium and is, for the detection of lipids, a technique much more robust than virtual histology, the only other method used so far to demonstrate in vivo the link between inflammation and early atherosclerosis in Kawasaki disease (Mitani et al., Circulation 2009; 119(21):2829–2836). This case image highlights the role of lipid precipitation in the progression to calcification and wall changes leading to the development of aneurysms and stenoses in Kawasaki disease.

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