**NOVEL ULTRASOUND IMAGING STRATEGIES FOR ISCHEMIC HEART DISEASE**

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Practice guidelines for stable ischemic heart disease have outlined the role of coronary CT angiography (CCTA) and cardiac magnetic resonance (CMR), in addition to stress echocardiography and radionuclide myocardial perfusion imaging (MPI) (Fihn & Gardin, et al, 2012). Other techniques are emerging for evaluating myocardial ischemia: (1) *Targeted molecular imaging* (TMI) using microbubbles to image*recent myocardial ischemia* (without infarction) may improve speed/accuracy of diagnosis in patients with chest pain. Microbubbles (MB) with phosphatidylserine (an anionic lipid) in their shell performed as well as experimental p-selectin glycoprotein ligand-1 targeted MB in myocardial contrast echo (MCE) imaging of recent ischemia in animal models of ischemia-reperfusion (Mott & Lindner et al, 2016). TMI is also in use experimentally to assess atherosclerotic plaque; (2) *Sonothrombolysis* using high mechanical index ultrasound and MCE (i.e., diagnostic and therapeutic ultrasound) has shown promise for treating micro-thrombi-induced coronary obstruction after intervention (PCI) in ST-elevation MI. However, longer pulse duration therapeutic ultrasound has been associated with coronary vasospasm distal to the PCI site (Roos, et al, 2016); (3) *Custom fusion software*can combine 3D displays of coronary arteries from CTCA with color images of either *resting*echo longitudinal strain or CT *stress*myocardial perfusion. When both approaches were compared to CT-fractional flow reserve as a reference in each coronary territory, CT stress perfusion was more sensitive than resting echo strain, but both techniques were equally specific for detecting significant coronary stenosis. Fusion of CCTA and 3D echo strain may facilitate assessment of coronary stenosis without the need for ionizing radiation or stress testing (Maffessanti, Mor Avi, et al, 2017); (4) *Real-time quantitative MCE* during Dobutamine Stress Echo (DSE) has demonstrated incremental predictive value over DSE wall motion abnormalities for acute coronary events over 3 years in known or suspected CAD patients (Mattoso, Porter et al, 2017). These approaches portend an exciting future for non-invasive ultrasound imaging of ischemia.