

CT Angiography

Hyung-Yoon Kim, Jin-Ho Choi

Department of Medicine, Department of Emergency Medicine, Heart Vascular Stroke Institute

Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Coronary computed tomography angiography (CCTA) has high negative predictive power for detecting coronary artery disease. However CCTA is limited by moderate positive predictive power in the detection of myocardial ischemia. This is not unexpected because the diameter of a stenosis is a poor indicator of myocardial ischemia and discrepancy between the severity of stenosis and noninvasive tests is not uncommon. The value of stenosis for predicting future development of acute coronary syndrome represented by plaque rupture has been questioned. CCTA identifies the characteristics of high-risk plaque including positive remodeling, low density plaque and spotty or micro-calcification. Also, additional evaluation of myocardial ischemia using computational flow dynamics, and luminal attenuation gradient are expected to increase both diagnostic performance for hemodynamically significant stenosis and the predictive power for future cardiovascular risk. Technical advances in CCTA would enable evaluation of both coronary artery stenosis and myocardial ischemia simultaneously with high predictive performance, and would improve vastly the clinical value of CCTA.