

Plaque Characterisation By Coronary CTA-Should We Get Excited?

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Coronary CTA (CCTA) is now well validated by many studies compared to IVUS, as the best non-invasive imaging method for detecting coronary plaque. Quantification of plaque volumes or burden is calculated usually using automated software but can be done semiquantitatively or manually. In prospective studies it has been shown that patients with higher plaque volumes have higher risk of acute coronary syndrome. Currently there is good interplatform reproducibility for quantification of plaque but poor interplatform reproducibility and further software improvements are needed. Coronary plaque characterisation depends on determination of plaque composition by its density on CCTA, even though there are some difficulties related to overlap of plaque densities and need for adequate contrast enhancement in the coronary artery. It is now well established that CCTA can detect vulnerable plaque and patients with low density plaque <30HU and positive remodeling are at higher risk of developing acute coronary syndrome. Other CT features described as associated with high risk plaque now include ring-like appearance with central low density area and "napkin-ring" sign. It is therefore important when reporting CCTA studies to try to assess plaque burden and look for high risk plaques as this can change patient management even if there is no significant stenosis present. Prognostic studies, with more than 10 years follow up, are now available confirming ability to use CCTA to risk stratify patients, even in those who are asymptomatic. Follow up studies on patients on statin therapy can be used not only to assess plaque burden reduction but prognostic studies using CCTA confirming reduced mortality following treatment with statin are now available.