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Use of common Computed Tomography to Find Coronary Calcification on Diagnosis of Coronary Artery Disease

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Objectives: Using the spiral CT to scan coronary calcification, with qualitative and semi-quantitative method, to predict the presence and extent of coronary artery disease.

Background: Early diagnosis of coronary artery disease has been an important clinical issue. Coronary angiography was the gold standard for diagnosis of coronary artery disease, but to have invasive examination, only used in a small fraction of patients. Clinical diagnosis in most patients still needs to rely on non-invasive examination. Coronary artery calcium deposition within the intima is a sign of atherosclerosis. CAC associated with the presence and extent of coronary atherosclerosis.

Methods: 280 symptomatic patients (mean age 60 ± 5; range 35-76 years) received coronary angiography and chest CT scan and their image were qualified. CT image shows left main and at least proximal and middle part of anterior descending was considered acceptable CT scans, punctuate calcification as mild, segmental calcification as moderate and diffuse as severe. Stenosis was measured in three vessels. Completely normal coronary artery was defined as no stenosis. Stenosis less than 50% was considered non-obstructive, while more than 50% stenosis as obstructive coronary artery disease.

Results: There were no difference in patient with or without obstructive stenosis on demographic characteristics .Of all the 280 patients , 62 confirmed by coronary angiography with normal coronary artery, 218 patients in contrast with the narrow, including 59 non-obstructive, 159 of obstructive stenosis(96 with moderate CAC ,48 with severe CAC and 15 without). 62 patients with normal coronary angiography were not calcified. The sensitivity to predict normal coronary artery was 81.2 %, specificity was 100%. Incidence and severity of CAC were associated with the severity of CAD.

Conclusion: Symptomatic patients without CAC on chest CT scan may have less possibility of CAD. Such patients may not need excessive coronary angiography.CAC on CT scan may predict multivessel disease before invasive coronary angiography.