INFLUENCE OF CORONARY CALCIFICATION ON THE ACCURACY OF DUAL SOURCE CT FOR CORONARY STENOSIS DETECTION IN PATIENTS WITH INTERMEDIATE LIKELIHOOD OF DISEASE: RESULTS OF THE INTERNATIONAL MULTICENTER MEDIC TRIAL

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Introduction: We analyzed the results of an international multicenter trial (“Multicenter Evaluation of Dual source CT coronary angiography in patients with Intermediate likelihood of Coronary artery stenoses” - MEDIC) to determine the influence of coronary calcification on the accuracy of dual source coronary CT angiography.

Methods: In 6 international sites, 415 patients (with intermediate likelihood of coronary stenoses, no renal failure, no arrhythmias, Agatston score less than 800) were investigated by contrast-enhanced DSCT in spiral mode without beta blockade and by invasive coronary angiography. Both modalities were analyzed concerning the presence of at least one coronary artery stenosis > 50% on a per-patient basis.

Results: In the entire patient group, sensitivity of DSCT for the detection of individuals with at least one coronary artery stenosis was 95% (104/110) and specificity was 95% (289/305). Patients were divided in three subgroups; patients with zero Agatston score (162 patients, group 1), patients with Agatston score between 1 and 399 (204 patients, group 2) and patients with Agatston score ≥ 400 (49 patients, group 3). Mean heart rate was not significantly different in the three subgroups. Prevalence of significant coronary artery disease was 8%, 33% and 59%, respectively. The sensitivity of DSCT for the detection of individuals with at least one coronary artery stenosis was 100% (13/13), 94% (65/69) and 97% (28/29) for groups 1, 2 and 3, respectively (p <0.0001). Specificity was 98% (146/149) for group 1 versus 93% (125/135) and 90% (18/20) for groups 2 and 3, respectively (p< 0.0001). Accuracy was 98%, 93% and 94% for groups 1, 2 and 3, respectively.

Conclusions: In the largest multicenter trial to date concerning the detection of coronary artery stenoses by CT angiography, dual source CT demonstrated a high accuracy independent of coronary calcification. Accuracy was highest in patients without coronary calcification, who still had a prevalence of obstructive coronary artery disease of 8%. In patients with mild to moderate and severe calcification, accuracy was slightly lower. While a high sensitivity was maintained, specificity decreased with increasing calcium scores.