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Coronary CT angiography as the first-line diagnostic strategy in patients with non-ST-segment Elevation Acute Coronary Syndrome - The VERDICT trial

K.F. Kofoed[1], H. Kelbaek[2], P. Sigvardsen[1], C. Torp-Pedersen[3], P. Riis-Hansen[3], L. Holmvang[1], H. Elming[2], D. Hofsten[1], T. Engstroem[1], G. Gislason[3], L. Kober[1], J. Linde[1]

[1]Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark; [2]University Hospital, Roskilde, Denmark; [3]Gentofte University Hospital, Gentofte, Denmark

On behalf of the VERDICT trial group

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Background: In patients with non-ST segment elevation acute coronary syndrome (NSTE-ACS) coronary pathology may range from structurally normal vessels to severe coronary artery disease. Current guidelines recommend early invasive coronary angiography (ICA) to guide management strategy.

Purpose: We tested the hypothesis that a strategy of first-line coronary computed tomography angiography (CCTA) may be used to differentiate between significant and nonsignificant coronary artery stenosis in patients with NSTE-ACS.

Methods: We included patients with NSTE-ACS confirmed by ischaemic ECG changes and/or elevated biomarkers of myocardial ischaemia, in whom ICA was feasible within 12 hours. Patients were randomised 1:1 to ICA within 12 hours (Very Early) or 48–72 hours (Standard) and CCTA was conducted prior to ICA. The primary endpoint was the ability of CCTA to rule out significant coronary artery stenosis ($\geq$50% stenosis) expressed as the negative predictive value (NPV) using ICA as the reference standard. The VERDICT trial is registered with ClinicalTrials.gov number NCT02061891.

Results: CCTA was conducted in 1023 patients – Very Early, 2.5 (IQR 1.8, 4.2) hours, N=583 and Standard, 59.9 (IQR 38.9, 86.7) hours, N=440 after establishment of the diagnosis. Significant coronary stenosis was found by ICA in 67.4% of the patients. NPV of CCTA (95% CI) was 90.9% (86.8%-94.1%) and the positive predictive value, sensitivity and specificity were 87.9% (85.3–90.1%), 96.5 (94.9–97.8%) and 72.4 (67.2–77.1%), respectively. False negative patients (24/1023, 2.3%) mostly had lesions in coronary segments with a luminal diameter $\leq$2.5 mm. NPV was not influenced by patient characteristics or clinical risk profile, including abnormal cardiac troponin, ischaemic ECG changes, or a GRACE risk score$>$140. CCTA accuracy parameters were similar in Very Early and the Standard strategy group.

Conclusions: First-line CCTA may be used to rule out clinically significant coronary artery disease in patients with NSTE-ACS and thus potentially guide patient management.