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First-line coronary computed tomography predicts long-term clinical outcome in patients with Non-ST-segment elevation acute coronary syndrome - The VERDICT trial

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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) for risk assessment and choice of treatment strategy.

Purpose: We tested the hypothesis that 1) a first-line coronary computed tomography angiography (CCTA) predicts long term clinical outcome in patients with NSTE-ACS and 2) adding ICA to CCTA does not improve prediction of cardiovascular events.

Methods: We included patients with NSTE-ACS confirmed by ischaemic ECG changes and/or elevated biomarkers of myocardial ischaemia, in whom both CCTA and ICA were feasible within 12 hours. According to the VERDICT study protocol (ClinicalTrials.gov number NCT02061891) patients were randomised 1:1 to evaluation within 12 hours (Very Early) or 48–72 hours (Standard). CCTA was conducted prior to ICA and patients with an event between tests were excluded. Based on CCTA and ICA, patients were categorized according to European Society of Cardiology (ESC) guidelines as having prognostic indication for coronary revascularization ESCprog (left main stenosis, proximal left anterior descending artery stenosis or multivessel disease) or no prognostic indication – ESCnon-prog. The primary endpoint was a combined endpoint of all-cause mortality, non-fatal recurrent myocardial infarction, hospital admission for refractory myocardial ischemia or hospital admission for left sided heart failure. Discrimination of 1.5-year outcomes was assessed by time-dependent area under the receiver operating characteristic curve (AUC).

Results: CCTA and ICA was conducted in 979 patients. During a median follow-up time of 4.2 (IQR 2.7–5.5) years the primary endpoint occurred in 209 (21.3%) patients. Patients with ESCprog as defined by CCTA had a hazard ratio of 1.53 (95% CI 1.16–2.03) for occurrence of the primary endpoint. AUC for the prediction of the primary endpoint by CCTA was 68.6 (95% CI: 62.7–74.5) as compared to 68.6 (95% CI: 62.8–74.5), when adding ICA to the model. Similar findings were noted in patients randomized to either Very Early or Standard treatment strategy.

Conclusions: Long-term risk assessment in patients with NSTE-ACS may be conducted using a first-line CCTA strategy and may thus potentially guide patient management. Adding invasive coronary angiography to CCTA does not improve risk assessment.