The aim of this study was to analyze the predictive value of coronary computed tomography angiography (CCTA) and to model and validate an optimized score for prognosis of 2-year survival on the basis of a patient population with suspected coronary artery disease (CAD). Coronary computed tomography angiography carries important prognostic information in addition to the detection of obstructive CAD. But it is still unclear how the results of CCTA should be interpreted in the context of clinical risk predictors. The analysis is based on a test sample of 17,793 patients and a validation sample of 2,506 patients, all with suspected CAD, from the international CONFIRM (Coronary CT Angiography Evaluation for Clinical Outcomes: An International Multicenter Registry) registry. On the basis of CCTA data and clinical risk scores, an optimized score was modeled. The
endpoint was all-cause mortality. During a median follow-up of 2.3 years, 347 patients died. The best CCTA parameter for prediction of mortality was the number of proximal segments with mixed or calcified plaques (C-index 0.64, p50% (C-index 0.56, p = 0.002). In an optimized score including both parameters, CCTA significantly improved overall risk prediction beyond National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) score as best clinical score. According to this score, a proximal segment with either a mixed or calcified plaque or a stenosis>50% is equivalent to a 5-year increase in age or the risk of smoking. In CCTA, both plaque burden and stenosis, particularly in proximal segments, carry incremental prognostic value. A prognostic score on the basis of this data can improve risk prediction beyond clinical risk scores.