

CT-based abdominal aortic calcification score as a surrogate marker for predicting the presence of asymptomatic coronary artery disease

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PURPOSE: To assess the value of a CT-based abdominal aortic calcification (AAC) score as a surrogate marker for the presence of coronary artery disease (CAD) in asymptomatic individuals.

MATERIALS AND METHODS: This retrospective study was approved by our Institutional Review Board, and informed consent was waived. Three hundred and seventy-three patients without cardiac symptoms who underwent both a screening cardiac CT and an abdominal CT for non-cardiovascular indications within one year were selected, and their AAC scores were calculated according to the Agatston method. The presence of CAD and traditional cardiovascular risk factors were recorded. Logistic regression was used to derive two multivariate models from traditional factors with and without AAC scores to predict the presence of CAD. The AAC score and the two multivariate models were compared by calculating the area under the receiver operating characteristic curve (AUC) and the net reclassification improvement (NRI).

RESULTS: The AAC score showed a marginally higher AUC (0.823 vs. 0.767, $p = 0.061$) and significantly better risk classification (NRI = 0.158, $p = 0.048$) than the multivariate model without AAC. The multivariate model that was derived from traditional factors and AAC did not show a significantly higher AUC (0.832 vs. 0.823, $p = 0.616$) or NRI (0.073, $p = 0.13$) than the AAC score alone. The optimal cutoff value of the AAC score for predicting the presence of CAD was 1025.8 (sensitivity, 79.5%; specificity, 75.9%). With an AAC score of zero as a cutoff value, the sensitivity and negative predictive values for CAD were 93.6% and 94.7%.

CONCLUSION: AAC scores may serve as a single surrogate marker for the presence or absence of asymptomatic CAD.