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Coronary Artery Calcium by Digital Cinefluoroscopy in Patients with Pain Suggestive of an Acute Coronary Syndrome

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Summary

Background: Detection of coronary calcium may be a useful noninvasive approach for detecting coronary artery disease (CAD) in subjects presenting to the emergency department with chest pain.

Hypothesis: We tried to assess the diagnostic value of coronary artery calcium (CAC) detection by digital cinefluoroscopy in patients with new-onset chest pain suggestive of an acute coronary syndrome.

Methods: In 97 consecutive patients (70 men, 27 women, mean standard deviation [SD] age 55 (11) and 60 (8) years, respectively), with new-onset chest pain suggestive of an acute coronary syndrome, nondiagnostic electrocardiogram, and normal initial creatine kinase (CK)-MB, digital cinefluoroscopy was performed for CAC detection.

Results: All patients underwent routine clinical evaluation with treadmill exercise test, thallium scintigraphy, dobutamine stress echocardiography, and coronary angiography, as needed clinically and blinded to the cinefluoroscopy results. Coronary artery calcium was present in 27 of 33 (81.8%) of patients with and in 10 of 64 (15.6%) of patients without CAD, $p < 0.0001$. The presence of CAC had 82% sensitivity, 84% specificity, 73% positive predictive value, and 90% negative predictive value for CAD diagnosis (odds ratio = 24.3, 95% confidence interval 7.98–73.94).

Conclusions: In patients with acute chest pain, nondiagnostic electrocardiogram and normal initial enzyme evaluation, CAC detection by digital cinefluoroscopy appears to have high sensitivity, specificity, and negative predictive value for CAD diagnosis.

Key words: coronary calcium, fluoroscopy, coronary artery disease

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