Role of Automatic Strain Analysis of Echos for Chest-Pain Triage in the Emergency Departmentresults

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Background: Chest pain (CP) is a very prevalent complaint among people presenting to emergency departments (ED) and rapid exclusion of an ischemic etiology is critical.
Objective: To assess the value of automated segmental and global longitudinal strain analysis of echocardiograms for detecting ischemic CP over clinical judgment based on routine ED examinations and visual identification of wall motion (WM) abnormalities.
Methods: Patients presenting to the ED for CP who did not have a history of ischemic heart disease (IHD) or evidence of acute ischemia were evaluated by attending physicians. Decisions if to hospitalize patients were based on medical history, physical examination, ECG, chest X-ray, routine blood tests and cardiac markers. Echocardiographic clips were recorded and visual segmental WM analysis was performed independently by an experienced echocardiographer and by a cardiac sonographer. Global and segmental longitudinal strain values were determined by an automatic application.
Results: Of 84 patients, 37 were hospitalized based on clinical judgment alone. Of these, 15 underwent coronary angiography: 13 had abnormal coronary perfusion and at 6-month follow-up an additional patient had IHD. Assessments by ED physician, echocardiographer, sonographer and automated 2D longitudinal and segmental strain analysis yielded sensitivities of 91%, 63%, 73%, 64% and 46%, respectively, and specificities of 63%, 90%, 75%, 53% and 79%, respectively.
Conclusion: ED physicians' assessments of CP in the ED resulted in a high sensitivity but a low specificity for IHD. Echocardiograms, interpreted by an echocardiographer or by an automated application for segmental strain analysis had a better specificity and may improve correct triage of CP in EDs.