Contrasting Investigation Between Magnetocardiography and Electrocardiogram for the Early Diagnosis of Coronary Artery Disease in Patients Presenting with Acute Chest Pain

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Background: Accurate identification of patients with acute coronary syndrome (ACS) is often difficult especially when an electrocardiogram (ECG) does not show typical changes of ST segment. The aim of the present study was therefore to investigate the sentivisity of magnetocardiography (MCG) and electrocardiogram for the early diagnosis of coronary artery disease in patient presenting with acute chest pain. Methods and Results: 287 patients with the suspected ACS with (144 patients) and without(143 patients) ST segment elevation were selected, The MCG recordings were obtained using a MCG system in a magnetically shielded room, the ECG data were recorded by a ECG system. Ventricular repolarisation measurements including QRS-, R-, T-wave, and ST-T period from MCGs were evaluated to determine the clinical relevance of these measurements compared with ECGs. All patients underwent coronary angiogram examinations and patients with coronary artery narrowing = 70% in at least 1-vessel were defined as CAD group. Result: The presence of significant CAD was identified with a sensitivity of 81.4% and a specificity of 86.5% on MCG, compared to 45.3% and 84.7% on ECG.. In the group of patients without typical ST segment elevation on ECG, MCG had a sensitivity of 71.5% and a specificity of 83.3%. Conclusion: MCG was acceptably sensitive and specific in identifying patients with ACS even in the absence of specific findings on ECG. Thus, MCG has potential clinical application for detection of ACS and should be further investigated.