Diagnosis of Coronary Artery Disease in Patients with Chest Pain by Means of Magnetocardiography

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Magnetocardiography (MCG) has been proposed as a new non-invasive method for detecting myocardial ischemia. To date, the MCG technique, however, has not been widely introduced for clinical use. One of the main reasons might be the absence of statistically and diagnostically valid criteria, which can determine the presence of a certain heart disease. In our previous study, we have proposed a new classification method of MCG parameters, based on the different populations of the parameters, while the patients with chest pain and without ST-segment elevation were selected consecutively from all patients admitted to the hospital in 2004. We used four parameters, representing the directional changes of the electrical activity in the period of an R-ST-T interval, between coronary artery disease (CAD) patients and symptomatic patients or healthy volunteers. With this algorithm, the patients with CAD could be classified with sensitivities of higher than 80 %, showing that the proposed method can be useful for the diagnosis of CAD with MCG as compared to conventional methods. In this study, we examined the validity of the predefined probability distribution in diagnosis of new patients admitted to the hospital in 2005. In the results, we obtained the similar diagnostic accuracy as before in the diagnosis of CAD in patients with chest pain without specific ECG abnormalities of myocardial infarction. The proposed method will be useful for the diagnosis of CAD with MCG as compared to conventional methods.

Keywords : Magnetocardiography, coronary artery disease, myocardial ischemia, and diagnostic accuracy