Detection and location of myocardial ischemia prior to and after coronary artery bypass grafting using a novel computer based ECG device

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Objective:
To study the potential detection and location of myocardial ischemia using the novel computer based CARDIOVISOR 6C™ system. Aim of this study was to evaluate sensitivity, specificity and the possible clinical use of the system.

Methods:
30 patients, scheduled for coronary artery bypass grafting (CABG), were enrolled into the study protocol. All patients were studied prior to and at the 3rd postoperative day after CABG. The system is based on an analysis of the cardiac electric excitation processes with a 3D visualization. It consists of an ECG transponder, a 4-lead ECG system and USB connector to a personal computer. Obtained results were compared with clinical data focusing on ischemic alterations.

Results:
CARDIOVISOR detected pre – operative ischemia with a sensitivity of 100%. No peri- or postoperative ischemia were observed neither by clinical data, such as cardiac enzymes, regular ECG nor by the CARDIOVISOR system. The system allowed a detailed three dimensional location of myocardial ischemia, superior to regular ECG in all cases.

Discussion:
CARDIOVISOR allowed safe detection and three dimensional location of myocardial ischemia with a sensitivity and specificity of 100%. Furhter studies on a larger scale focusing on the potential to detect and locate perioperative ischemia are warranted.