S126 Abstracts

749 Impedance cardiography (ICG)-clinical usefulness evaluation of the method in patients with coronary heart disease (CHD) in comparison with transhoracic echocardiography
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Background: The two well described techniques of noninvasive hemodynamic measurements are Doppler ultrasound and impedance cardiography. The clinical usefulness of ICG is still controversial as a method of cardiac output (CO) estimations. This method is based on the underlying changes in thoracic electrical bioimpedance and because blood is a better conductor than any other tissue, the pulse synchronous variations of blood volume in the thoracic aorta are used for calculating different hemodynamic parameters. This blood volume changes are determined by measurement of the electrical impedance of the thorax to electrical alternating current. For this reason any changes in anatomical conditions, blood flow pattern or electrical current flow cause inaccurate values and some cases limiting this method should be considered.

Transhoracic echocardiography (TEE) is a commonly accepted method of noninvasive hemodynamic measurements. Systolic and diastolic volumes were calculated using geometric assumptions such as method of discs. Stroke volume is then the difference between diastolic and systolic volume of LV (when EF is stroke volume expressed as a percentage of the diastolic volume).

Objective: The aim of the project was to estimate usefulness of ICG in the clinical use in hemodynamic measurements, in the patients qualified for coronary artery bypass grafting (CABG).

Material and methods: The measurements have been done in the preoperative period of hospitalization, among 60 consecutive, hemodynamically stable patients, admitted for the CABG. During the research the following values were measured: CO, CI (Cardiac Index), STR (Systolic Time Ratio), LVET (Left Ventricular Ejection Time), SV (Stroke Volume), SI (Stroke Index), using TTE and ICG. Statistical analysis was used to compare results obtained by both methods.

Results: There were no significant differences between mean SV values and its variations obtained by both methods (p>0.05). Significant correlation has been observed between the following parameters: SV-ICG and SV-TTE, SV-ICG and EF-TTE, STR-ICG and EDV-TTE, PEP-ICG and SV-TTE (p<0.05).

Conclusions: Based on the available literature and the preliminary results, ICG seems to be an accurate and simple method in estimation of hemodynamic parameters. It seems to be a supplement of TTE and also a useful method in the qualification of borderline patients with no ECHO examination for CABG. ICG offers easy and fast-to-beat assessment of SV, what measurement is not included in the standard technical demanding ECHO protocol.

MYOCARDIAL VELOCITY IMAGING (DMI) – OTHER

760 5 Predictive value of pulsed tissue Doppler imaging derived variables to identify patients with acute inferior myocardial infarction with likelihood of significant multivessel coronary artery disease
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Objectives: To investigate that early tissue Doppler imaging (TDI) assessment of non-infarct myocardial region in the supplement with acute inferior MI can predict those with likelihood of significant multivessel coronary artery disease (CAD).

Patients and methods: Patients sample included 180 patients with acute inferior MI and were stratified into: group I: included 115 patients with concomitant non-infarct descending (LAD) artery disease and group II: included 65 patients with without concomitant LAD disease. Reference group: 2 subjects with normal coronary angiogram to get normal standard values of TDI. Transhoracic echocardiography with TDI and coronary angiography were performed for all patients.

Results: Linear regression analysis revealed that there was a significant correlation between CA stenosis at non-infarct region and SMI velocity and Em/Am ratio of TDI at non-infarct region; Y(dependent variable) =11.5-0.05X-0.2; p<0.05). The CA stenosis was significantly associated with the existence of ECG chest leads ST-segment depression, ST-depression >2 mm and coronary collaterals (p<0.05). Kappa coefficient value (K) indicated that there was a good agreement between SMI and Em/Am ratio and coronary angiography (K=0.823 & 0.815, respectively). Predictive indices revealed that impaired SMI, Em, Am velocities of TDI are indicators to predict CA stenosis in the non-infarct region. Sensitivity was 86%, specificity 82%, positive predictive value 88%, 85%, negative predictive value = 77%, 79%, respectively. Receiver operating characteristic (ROC) curve data revealed that the cut-off value of SMI & Em/Am ratio to predict predict patients with likelihood of significant multivessel CAD.

MYOCARDIAL VELOCITY IMAGING (DMI) – OTHER

784 Peak systolic velocity not Tei index appears to be most reliable to differentiate coronary healthy subjects from those with coronary artery disease
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Background: Left ventricular (LV) Tei index that is the ratio of isovolumic times and ejection time has been claimed to be a powerful index of LV performance. Tei index (lower the better; 0.9 being the cut-off) however has never been tested using colour tissue Doppler echocardiography, the modality that has excellent temporal resolution at high frame rates. The main purpose of the study was to investigate whether the index could differentiate coronary healthy from coronary artery disease (CAD).

Methods: 17 non-consecutive patients with angiographically (CAG) confirmed CAD and 9 subjects without (No-CAD) were recruited from the stress echocardiography core lab. After the subjects were diagnosed as confirmed CAD and 9 subjects without (No-CAD) were recruited from the stress echocardiography core lab. Digital images were post processed at rest and during peak stress (5 µg/kg/min) was used immediately after ligation.

Results: TDI parameters such as Em, Am velocities of TDI are indicators to predict CA stenosis in the non-infarct region. Sensitivity was 86%, specificity 82%, positive predictive value 88%, 85%, negative predictive value = 77%, 79%, respectively. Receiver operating characteristic (ROC) curve data revealed that the cut-off value of SMI & Em/Am ratio to predict predict patients with likelihood of significant multivessel CAD.