1071 Transthoracic three-dimensional imaging of coronary artery flow
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The determination of the coronary flow reserve by transthoracic Doppler echocardiography during adenosine stress offers the possibility of detection of restenosis mainly in the left anterior descending artery (LAD). However, there is only a small number of hospitals in Germany performing this technique. Non-invasive measurements of coronary flow reserve by ultrasound mainly due to the necessary expertise and training of this procedure. One problem for visualization of coronary arteries using 2D-echocardiography is the threedimensional course of the vessels. Thus, the aim of the present study was to analyze the feasibility of threedimensional visualization of coronary artery flow by 3D4D color coded echocardiography.

Methods and results: Investigations were performed in 15 patients (pts) using a Vivid 7 ultrasound system (GE Healthcare) with the 3V-probe. In all pts 2D visualization of parts of the coronary arteries was possible by 2D color-coded imaging. A full color coded volume set was acquired within a time interval of 8 heart cycles during breathhold. Complete coronary artery flow was illustrated by changing tissue transparention of the full data set. In all pts flow velocities of the LAD could also be detected with 2D colored imaging using the 3V probe, but in only 11 of 15 pts a threedimensional flow reconstruction was possible. The distal parts of the right coronary artery (RCA) were detected in only 2 pts. The 3D reconstruction of RCA flow was only partially possible. In one case the direct visualization of a stenotic flow detected as could be shown by angiography after the echocardiography.

Summary: 3D visualization of coronary artery flow is possible. Thus, an innovative new diagnostic feature for the non-invasive measurement of coronary flow by echocardiography is available. However, for clinical routine technical improvements are still necessary.

1072 Independent association between coronary flow velocities at rest and left ventricular filling pressure in arterial hypertension
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Purpose: Hypertensive patients free of coronary artery disease often present altered coronary blood flow (CBF) because of pressure overload and left ventricular (LV) hypertrophy. Little is known about the influence of LV filling pressure (LVFP) on CBF in hypertension. Aim of the present study was to evaluate possible association between LVFP and CBF at rest by Tissue Doppler and transthoracic Doppler assessment of distal left anterior descending artery (LAD) in a population including both normotensive and hypertensive subjects.

Methods: After exclusion of patients with coronary disease (angina and/or ECG signs at rest/maximum treadmill exercise), diabetes mellitus, congestive heart failure and primitive/valvular cardiomyopathy, 12 normotensive subjects and 33 recently onset, never treated hypertensive patients underwent transthoracic echocardiography including color-guided Doppler measurement of CBF diastolic peak velocities in distal LAD and Tissue Doppler of mitral annulus. The average of lateral and septal annular early diastolic velocity (Em, cm/s) was determined and transmural E velocity/Em ratio (E/Em) calculated as index of LVFP. The population was divided in 2 groups: 31 with normal LVFP (=>E/Em ratio<8) and 14 with increased LVFP (E/Em ratio >8).

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