Ventricular function: pathophysiology / Ventricular function: new insights

**P5743 | BENCH**
Pressure reflection in the pulmonary circulation by echocardiography in patients with left heart disease indicates reactive pulmonary hypertension

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**Background and aims:** The two hemodynamic profiles in Left Heart Disease (LHD) with Pulmonary Hypertension (PH), passive PH with increased pulmonary venous pressure and reactive PH with increased Pulmonary Vascular Resistance (PVR), cannot be distinguished non-invasively. We hypothesized that echocardiographic signs of Pressure Reflection (PR) in the pulmonary circulation can be used to diagnose reactive PH.

**Methods:** The study comprised 122 patients that were divided into three groups: patients without PH (No PH, n=61), patients with PH (pulmonary artery mean pressure, PAMP>25 mmHg) and normal PVR (Passive PH, n=29) and patients with increased PVR (Reactive PH, n=32). Echocardiography and Right Heart Catheterization (RHC) was performed within 24 hours. Three PR variables were selected: the acceleration time in the Right Ventricular Outflow Tract (RVOT), the time interval between RVOT peak velocity and peak tricuspid regurgitant velocity (time delay T), and the peak RVOT velocity (Vmax).

**Results:** The mean SD age was 50±14 years, and the percentages of males was 63%. Sixty-eight patients (56%) underwent RHC due to known or suspected LHD whereas 23 patients had dilated cardiomyopathy. Thirty-one patients (25%) were heart transplant recipients, 6 patients (5%) had cardiac amyloidosis and 15 patients (12%) were miscellaneous. No patient included in the study had PH or increased PVR due to other causes than left ventricular dysfunction. Sixty-six percent of patients with Reactive PH had mild to moderate PH (PAMP 25-40 mmHg). The proportion of patients with pulmonary capillary wedge pressure<15 mmHg was 14% in No PH, 97% in Passive PH and 74% in Reactive PH. The area under the ROC curve for PR variables was 0.82 to 0.89. With three major criteria present the likelihood of PVR>3 WU increases 27.3 fold (positive likelihood ratio) and absence of minor criteria decreases the likelihood 8.3 fold (negative likelihood ratio).

**Conclusions:** Echocardiographic assessment of PR in patients with LHD can be used to identify or exclude reactive PH. Patients with reactive PH often have mild to moderate rather than severe PH.

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**P5744 | BENCH**
Expression evaluation Cas-3 and Bcl-2 in the reorganization of left ventricular myocardium female rats in conditions hypoestrogenism and experimental heart failure

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**Purpose:** To study the role of the expression of Cas-3 and Bcl-2 in the reorganization of myocardium in female rats in hypoestrogenism (hypo-E) and experimental heart failure (EHF).

**Methods:** The research was done on 25 adult outbred female rats: 20 rats served as a control. 2 months after ovarietomized 10 animals modeled EHF by the method of VI Inchnoy [2000] by subcutaneous injection for 14 days (d), 0.1 ml of a 1% solution phenylhydrazine hydrochloride followed by swimming to the deep fatigue. 5 rats decapitated on day 14 d, 5 rats — 28 d after the EHF. The left ventricular (LV) myocardium was examined with light microscopy, immunocytochemistry (Cas-3 and Bcl-2 protein expression) and morphometry.

**Results:** In the myocardium of rats were in a state hypo-E 2 months (m), there was a reorganization of muscle and non-muscle cells. Heteromorphism detected cardiomyocyte (CM), the displacement of their nuclei to the periphery, areas of heteromorphism detected wall thickness and the number of CM. At 14 d, the EHF showed signs of dystrophy, damage and reeducation CM; registered karyopyknosis, paranuclear edema, a local destruction of a sarcoplasm. At 28 d after the EHF in the myocardium increased as the number of atrophic changes and hypertrophied CM, there was a significant increase in the volume density (VD) of the stroma, diffuse infiltration of mononuclear cells. Morphometric data showed an increase in diameter CM (8.25 ± 1.5 μm at 2m hypo-E; 9.01 ± 1.15 μm 14d and 8.38 ± 1.26 μm at 28d EHF vs. 7.77 ± 0.75 μm in control, p<0.05); decrease VD CM (60.5 ± 6.6% at 2m; 81.4 ± 3.7% at 14d and 75.29 ± 4.8% at 28d EHF vs. 84.2 ± 2.51% in control, p<0.05); be an increase in the number of Cas-positive CM (0.5 ± 0.04% at 2m, 0.1 ± 0.12% at 14d and 0.6 ± 0.12% at 28d EHF vs. 0.1 ± 0.01% in control, p<0.05); increased in all groups of Bcl-2-positive CM (1.2 ± 0.03% at 2m, 1.1 ± 0.01% at 14d EHF vs. 0.2 ± 0.04% in control, p<0.05; 0.5 ± 0.1% at 28d EHF).

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**P5745 | BEDSIDE**
Left ventricular assist device implantation improves glycemic control in patients with diabetes and advanced systolic heart failure

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**Purpose:** Mechanical circulatory support is increasingly used for patients with advanced systolic heart failure (HF), many with comorbid diabetes. It has been hypothesized that patients with diabetes who receive a continuous flow left ventricular assist device (LVAD) may experience improved glycemic control after implantation for LVAD implantation due to improved LV function. We hypothesized that patients with diabetes who receive a continuous flow LVAD may experience improved glycemic control after implantation. Patients with diabetes who received a continuous flow LVAD (Heartmate II®) who received a continuous flow LVAD (Heartmate II®) may experience improved glycemic control after implantation. Patients with diabetes who received a continuous flow LVAD (Heartmate II®) may experience improved glycemic control after implantation for LVAD implantation due to improved LV function. We hypothesized that patients with diabetes who receive a continuous flow LVAD may experience improved glycemic control after implantation. Patients with diabetes who received a continuous flow LVAD (Heartmate II®) may experience improved glycemic control after implantation for LVAD implantation due to improved LV function. We hypothesized that patients with diabetes who receive a continuous flow LVAD may experience improved glycemic control after implantation for LVAD implantation due to improved LV function. We hypothesized that patients with diabetes who receive a continuous flow LVAD may experience improved glycemic control after implantation for LVAD implantation due to improved LV function. We hypothesized that patients with diabetes who receive a continuous flow LVAD may experience improved glycemic control after implantation for LVAD implantation due to improved LV function.

**Methods:** Prospective, single-center registry encompassed 216 consecutive (HF) patients who were implanted with CRT-D or ICD. The whole population was divided into CRT-Group (n=112; 51.9%) and ICD-Group (n=104; 48.1%). All patients completed the Beck Depression Inventory (BDI-II) and underwent a psychiatric examination at the time of implantation. The assessment of psychiatric status was repeated at 3, 6, 12 months after implantation. Data on long-term follow-up were screened to identify patients who developed a composite endpoint defined as death or hospitalization for HF decompensation.

**Results:** Depression was recognized in 52 (46.4%) patients from CRT-Group and in 36 (34.6%) patients from ICD-Group (p=0.078). However, the median score in BDI-II at the time of implantation was significantly higher in CRT-Group. The significant reduction in BDI-II score was observed in CRT-Group 6 and 12 months after implantation. Data on long-term follow-up were screened to identify patients who developed a composite endpoint defined as death or hospitalization for HF decompensation.

**Conclusions:** Depression is a common mental disorder in patients with congestive HF. During long-term follow-up a CRT-implantation was associated with the significant reduction in the median score in BDI-II, while the significant increase was observed after an ICD-implantation. Depression was the independent predictor for a composite endpoint in CRT population, but not in ICD-Group.