ABSTRACTS

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Swan-Ganz catheter assessment of aortic stenosis: Comparison with echocardiography

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Background: Hemodynamic assessment of aortic stenosis in the catheterization laboratory accurate determined by the transvalvular gradient. The most widely used invasive technique for more than a decade has been performed with a Langston® Dual Lumen Catheter (Teleflex – Morrisville, NC), which has a 6Fr outer catheter and a 4Fr inner lumen enabling simultaneous measurement of left ventricular (LV) and aortic (AO) pressures. The catheter was recalled in March 2020 due to several instances of separation of the inner catheter during power injection. This leaves cardiologists without a straightforward technique for simultaneously measuring LV and AO pressures in the cath lab. A commercially available Swan-Ganz thermodilution pulmonary artery catheter can be used to obtain this gradient via a single arterial puncture. The catheter has similar advantages like Langston® Dual Lumen Catheter over other methods used to measure the gradient in aortic stenosis, but without safety concerns. However, it has not been critically evaluated.
Method: In order to assess the performance and accuracy of this catheter compared to the standard echocardiography pressure gradient, we studied 20 patients with aortic stenosis using Swan-Ganz thermodilution pulmonary artery catheter systems and standard transthoracic echocardiography.
Result: Calculated aortic valve areas in these groups of patients ranged from 0.23 cm2 to approximately 1.65 cm2. Correlation between gradients obtained by the two methods was strong as evaluated by regression analysis with an r value of 0.79 (r2=0.637). No complications were encountered while using the Swan-Ganz catheter system.
Conclusion: We conclude that the Swan-Ganz thermodilution pulmonary artery catheter provides accurate data in the hemodynamic evaluation of aortic stenosis.

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Hypertension as an intensification factor of metabolic and inflammatory deviations in patients with non-alcoholic fatty liver disease

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Background: Arterial hypertension (HT) is of the main cardiometabolic pathologies, affecting about 30% of the population, and about 50% of patients with HT have non-alcoholic fatty liver disease (NAFLD). Convincing evidence suggests a bidirectional effects of pathologies.
Objective: to study the effect of HT on the course of NAFLD in patients with comorbidity of pathologies.
Methods: We examined 63 patients with HT I-II grade in combination with NAFLD in non-alcoholic steatohepatitis (NASH) stage and 52 patients with isolated NASH. The control group consisted of 20 relatively healthy volunteers. Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) were determined by spectrophotometric method. The C-reactive protein (CRP) levels were evaluated using a highly sensitive method (hs-CRP ELISA) (Biomerica, USA). HOMA-IR was calculated according to the generally accepted formula. Statistical analysis was performed according to standart methods.
Results: There were significantly more cases of moderate (41.27%) and severe (7.94%) steatohepatitis in HT and NAFLD group, while in the group with isolated NASH moderate NASH was only in 7.69% of patients (df=1, $\chi 2$ =16.657, p<0.001), and no cases of severe pathology were determined (df=1, $\chi 2$ =4.315, p=0.038). CRP level averaged 7.90 mg/l (SD 1.57) in patients with HT and NAFLD versus 6.55 (SD 1.61) in patients with isolated NAFLD and 2.07 mg/l (SD 0.33) in control values (p<0.001).
Liver enzymes were also significantly increased in patients with HT and NAFLD. ALT in comorbid patients averaged 79.00 IU/l (SD 13.86), that was higher, than in NAFLD group (69.00 IU/l (SD 9.88), p<0.001) and in control group (20.00 IU/l (SD 5.50), p<0.001) in 1,14 and 3,95 times, respectively. AST level was 75.05 IU/l (SD 14.60) in patients with HT and NAFLD versus 54.00 IU/l (SD 6.88) in isolated NAFLD patients and 16.50 IU/l (SD 5.00) in control results (p<0.001).
The HOMA-IR in HT and NAFLD patients was 4.67 mmol/L×μOD/ml (SD 0.66) versus 3.40 (SD 0.47) in group with isolated NAFLD and 2.28 (SD 0.26) in control group (p<0.001).
Conclusion: NAFLD is much more severe in patients with HT, and its course is associated with a more pronounced inflammatory response and more striking liver enzymes changes, that may be a consequence of increased insulin resistance. These data allow us to draw conclusions about the serious negative impact of HT on course of NAFLD in patients with this comorbidity.