

Usefulness of NT-pro-BNP in evaluation of the stage of heart failure in infants with ventricular septal defect.

Skiendzielewski J., Werner B.

Department of Pediatric Cardiology and General Pediatrics, Warsaw Medical University

Introduction: Ventricular septal defect (VSD) is one of the most common congenital heart diseases. In some patients hemodynamical disturbances are clinically important and manifestations of heart failure (HF) appear.

Aim: The aim of the study was to assess if serum NT-pro-BNP levels correlate with clinical severity of HF in children with VSD.

Methods: In 34 children aged 38-338 days (mean 130 ± 81 days), 15 boys and 19 girls VSD was diagnosed by physical examination, ECG, chest X-ray and two-dimensional echocardiography. Pulmonary hypertension was excluded in all patients. HF was diagnosed based on anamnesis and physical examination. All patients were classified by a single observer to the adapted NYHA functional class, the modified Ross score and the New York University Pediatric Heart Failure Index (PHFI). In all of them serum NT-pro-BNP levels were assessed. The results were compared to the control group of 31 healthy children matched for age and sex with the study group. Statistical analysis was obtained by using t-Student test and Pearson's correlation coefficient with the level of significance.

Results: The mean values of NT-pro-BNP were significantly higher in the study group than in healthy infants ($74,9 \pm 73,7$ vs. $23,7 \pm 21,1$ fmol/l, $p < 0,0005$). In 24 children with VSD signs and/or symptoms of HF were present (failure to thrive in 13, diaphoresis in 9, prolonged feeding time in 5, tachypnoe and dyspnoe in 14, retractions in 22, resting sinus tachycardia in 9, hepatomegaly in 11, decreased peripheral perfusion in 3). In subgroup of children with HF levels of NT-pro-BNP were significantly higher ($p = 0,001$). The values of NYHA grade were: min. 1 - max. 3 (mean $1,72 \pm 0,74$ points), Ross score: 0-10 ($4,11 \pm 3,26$) and PHFI score: 0-14 ($5,29 \pm 4,08$) and NT-pro-BNP level correlated with the severity of HF: $r = 0,58$ ($p = 0,003$); $r = 0,51$ ($p = 0,002$); $r = 0,64$ ($p = 0,00005$) respectively. Pharmacological treatment of HF was introduced in 19 infants and 25 were qualified for cardiosurgery.

Conclusions: Serum NT-pro-BNP level correlates to severity of HF in children with VSD and could be helpful in therapeutical approach.