

**Initial data of international study of early vascular aging in children with coarctation of aorta**

*Sendzikaite S. (1,2), Sudikiene R. (2), Litwin M. (3), Rybak A. (4), Obrycki L. (3), Jankauskiene A. (1) Paediatric Centre, Institute of Clinical medicine, Vilnius University, Lithuania (1); Centre of Heart and Chest surgery, Institute of Clinical medicine, Vilnius University, Lithuania (2); Department of Nephrology and Arterial hypertension, The Children's Memorial Health Institute, Warsaw, Poland (3); Department of Cardiology, The Children's Memorial Health Institute, Warsaw, Poland (4)*

**Introduction:** Despite the improved survival continued morbidity related to hypertension persists in 42–70% of patients after repair of coarctation of aorta (CoA). According to the recent literature CoA is classified as one of the highest cardiovascular risk condition. However data of early vascular aging development in this population remains scarce.

**Methods:** 48 patients (64.6% boys) aged  $12.7 \pm 3.7$  years (from 6 to 18 years old) and  $4.7 \pm 4.2$  years after CoA repair were included into the study. 24 hour ABPM, non-invasive oscillometric central blood pressure (CBP) measurement, left ventricular mass index (LVMI), carotid (cIMT) and femoral intima-media thickness (fIMT) were assessed in all patients. Endothelial function was gauged by right brachial flow mediated vasodilatation (FMD), with value less than 10% considered abnormal.

**Results:** Arterial hypertension (AH) was diagnosed in 35 patients (72.9%). 28 (58.3%) patients had a previous diagnosis of AH and received treatment with one, two or three antihypertensive agents, however all of them were still hypertensive on follow-up based on the 24 hour ABPM criteria. 7 patients (14.5%) were newly diagnosed with AH according to 24 hour ABPM results. Out of all hypertensive patients systolic central BP above 95<sup>th</sup> percentile was observed in 22 patients. Left ventricular hypertrophy was diagnosed in 22 patients (46.0%). Average right cIMT was 0.50mm, CI(0.48;0.52), while mean of normative cIMT values was 0.45mm. Right cIMT SDS was  $2.53 \pm 1.3$ . Average right fIMT was 0.27mm, CI(0.26;0.29), while average of normative fIMT values was 0.32mm, fIMT SDS  $-1.6 \pm 1.48$ . Right brachial artery FMD value was  $6.3\% \pm 6.0$  and 31 patients (64.6%) had FMD less than 10.0%.

**Conclusions:** Our results indicate high prevalence of non properly controlled AH in children after correction of CoA in spite of antihypertensive therapy with more than one antihypertensive agent. Children after CoA repair present also signs of subclinical arterial injury and disturbed endothelial function. Lower fIMT in femoral arteries might suggest disturbed pattern of blood flow in aorta despite CoA repair.