

Prevalence of different forms of arterial hypertension and left ventricular hypertrophy in children after coarctation repair

Sendzikaite S. (1,2), Sudikiene R. (2), Tarutis V. (2), Lubaua I. (4,5), Silis P. (4,5), Litwin M. (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);

Clinic for Paediatric Cardiology and Cardiac Surgery, Children's Clinical University hospital, Riga, Latvia (4);

Riga Stradins University, Latvia (5)

Introduction

Arterial hypertension (AH) is a one of the main complications of coarctation of aorta (CoA) and may persist or develop even after successful CoA repair. Main risk factors of persistence or development of AH after CoA repair is persistent or de novo recoarctation with low blood pressure (BP) difference between the right arm and lower leg. The aim of the study was to evaluate BP status and prevalence of left ventricular hypertrophy (LVH) in a cohort of children after CoA repair with a right arm and lower leg BP difference below 20 mmHg.

Methods

AH was diagnosed according to ESH2016 guidelines and BP status was further defined according to ABPM classification. LVH was defined as left ventricular mass index above the 95th percentile for age and sex.

Results

67 patients (64.4% male) with a mean age of 12.4 ± 3.5 years, 3.1 ± 4.4 years after CoA repair were included in the study. 26 of 67 patients (38.8%) were normotensive. Overall, 26 of 67 (38.8%) had AH including 20 patients already treated with antihypertensive drugs and an additional 6 newly diagnosed as hypertensive. 8 (11.9%) had ambulatory prehypertension, 14 had white coat AH (WCH), 8 were in ambulatory prehypertension range and in 10 patients (14.9%) masked hypertension (MH) was diagnosed. In 3 of the 20 (15%) patients already on antihypertensive treatment BP was still in hypertensive range.

LVH was diagnosed in 25 of 67 (37.3%) patients including 3 of 9 (33.3%) hypertensive patients, 5 of 10 patients (50%) with MH, 8 normotensive, 3 with ambulatory prehypertension, and 6 patients with WCH (43%).

Conclusions

In children after correction of CoA but with low BP gradient between the right arm and lower leg, the prevalence of AH is high and affects 38.8% of patients. In addition, 14.9% of patients had MH. The prevalence of LVH was 37.3% in the group as a whole, including 50% of the patients with MH, and 43% of those with WCH. Our results indicate that children after CoA repair with persistent aortic blood flow abnormalities have high prevalence of AH and of LVH irrespective of BP phenotype.