INSIGHTS INTO EARLY VASCULAR AGING IN CHILDREN WITH COARCTATION OF AORTA (CoA)

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INTRODUCTION

Despite the improved survival [1-3] morbidity related to hypertension (AH) persists in 42–70% of CoA patients [4-9].

CoA is classified as one of the highest cardiovascular risk condition [1]. Hypertension and premature atherosclerosis tend to develop early in life even after successful surgical or interventional treatment [10-11].

THE AIM OF THE STUDY

to define frequency of AH and vascular markers after successful surgical or interventional isolated CoA treatment

METHODS

- 24 hour ABPM
- Non-invasive oscillometric central blood pressure (cBP)
- Left ventricular mass index (LVMi)
- Carotid intima-media thickness (cIMT)
- Femoral intima-media thickness (fIMT)
- Endothelial function by right brachial flow mediated vasodilatation (FMD)
21 patients
6 - 18 years old
12.0 ± 4.2
7.7 ± 5.1 years after CoA repair

PATIENT CHARACTERISTICS

Gender:
- Boys: 81%
- Girls: 19%

Age at CoA correction:
- Newborn age: 30%
- 1-3 years old: 35%
- 6-9 years old: 25%
- 11-15 years old: 10%

CoA correction type:
- Operation: 67%
- Balloon: 5%
- Stent: 28%
RESULTS 1 (AH PREVALENCE)

21 patients

- 14 (66 %) hypertensive according to 24 ABPM
- 7 (34 %) normotensive

- Systolic cBP above 95‘th percentile in 8 patients
- 5 patients treated with 1 medicament: BAB, ACF-I
- 6 patients with combination of 2 medicaments: ACE-I + BAB, ACE-I + CCB
- 1 patient with combination of 3 medicaments: ACE-I + BAB + CCB
- 2 patients with newly diagnosed hypertension
LVH in 6 (43%) of all hypertensive patients

Average right cIMT 0.50 mm, CI(0.47;0.52)

Average right fIMT was 0.27 mm, CI(0.25;0.32)

Right brachial artery FMD value was 5.5% ± 2.96

Mean normative rcIMT value 0.45 mm. Right cIMT SDS 2.41 ±1.1

Mean normative fIMT value 0.32 mm. fIMT SDS -1.35 ± 1.43

13 patients (62%) FMD less than 10.0%. Significant endothelial dysfunction
Our results indicate high frequency of AH in children after CoA correction in spite of antihypertensive therapy with more than one antihypertensive agent.

Children after CoA repair present 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.