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Follow-up of Coarctation of the Aorta: a single-centre experience

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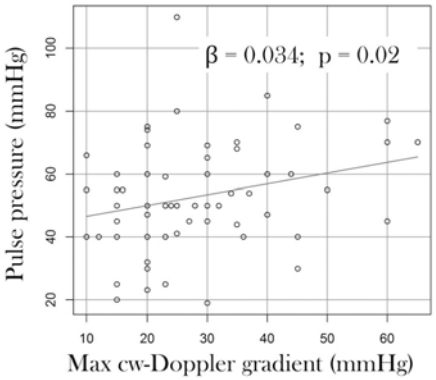
Introduction: Coarctation of the aorta (CoA) is an important treatable cause of secondary arterial hypertension. Left ventricular hypertrophy (LVH) is a marker of organ damage induced by CoA and is associated with a poorer prognosis**.**
Methods: To identify clinical and instrumental predictors of hypertension and LVH, we retrospectively evaluated 147 patients with CoA, examined for a starting or already on-going follow-up between 2010 and 2017. Medical records were reviewed regarding patient profiles, concomitant congenital heart defects, surgical and percutaneous procedures, echocardiographic evaluations and exercise treadmill testing. R statistical software was used for analysis. Since numeric variables were not normally distributed, non-parametric tests were performed.
Results: Median follow-up period was 5 years (IQR: 2-7 years) and median age at the last follow-up was 12 (IQR: 4-18) years. There was a higher prevalence of male patients (63%). 21.4% of patients presented aortic arch hypoplasia and 68.3% of them had associated congenital heart defects. Total study population showed two clusters of patients according to the age of presentation of CoA: within the first year of life (117 patients, 78.6%) or > 1 year (30 patients, 21.4%). Baseline characteristics and follow-up data are summarized in the table below. Late hypertension developed independently from recurrent CoA (χ^2 test, p=ns). Peak trans-isthmic aortic Doppler gradient (PG_{Ao}) at follow-up was significantly related to hypertension and LVH (Mann-Whitney test, p=0.02 and p=0.01 respectively). PG_{Ao} showed a trend of correlation with systolic blood pressure (SysBP) in total population (Spearman's correlation, p=0.09) and a significant correlation with SysBP in patients on anti-hypertensive medical treatment (Spearman's correlation, p=0.04). PG_{Ao} was a predictor of pulse pressure in total study population (β = 0.034; p = 0.02; Figure). Compared with other surgical techniques, patients treated with patch aortoplasty had higher rate of recurrent CoA (χ^2 test, p=0.002) and hypertension (χ^2 test, p=0.02) at follow-up. Hypertensive response to exercise treadmill testing showed association with the onset of late hypertension (χ^2 test, p=0.05).



Conclusions: Peak trans-isthmic Doppler gradient at follow-up was strongly related to hypertension and LVH and can have a prognostic value. Hypertensive response to exercise treadmill testing was associated with development of LVH.

		Total (n=147)	I cluster (n= 117)	II cluster (n= 30)	P value
Age at diagnosis		29.9 (6.7 - 11.8)	14 (4 – 30) d	6.5 (3.25 - 10.25) y	<0.001
1st Treatment	Surgery	83%	92%	46.7%	<0.001
	Percutaneous	12%	5.0%	40%	<0.001
	None	5%	3.0%	13.3%	<0.01
First treatment age		29.9 (14.4 – 172.4) d	29.9 (10.8 – 59.9) d	7 (3 - 13) y	<0.001
Recurrent coarctation		28.3%	30.4%	24%	0.08
Hypertension		55.%	53.2%	65.5%	0.06
LVH		44.7%	43.9%	46.6%	0.08