Prevalence of Arterial Hypertension in Patients with Corrected Aortic Coarctation: Impact of the Concomitant Presence of Complex Congenital Heart Disease

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Introduction: The development of arterial hypertension is a known complication in patients after aortic coarctation (CoA) repair. The current study was designed to evaluate the difference in prevalence of arterial hypertension among patients with previous surgery for CoA. Population was dichotomized according to the presence of isolated CoA (iCoA) vs CoA associated with complex congenital heart disease undergoing biventricular correction (cCoA).

Methods: Patients with signs of kidney disease and/or an arm-to-leg gradient at rest > 10 mmHg or/and echocardiographic evidence of recurrent obstruction at the aortic arch, were excluded. We selected 235 children and the data were retrospectively analyzed after dividing them into two groups: 1) 148 iCoA, and 2) 87 cCoA. Patients were defined as hypertensive in the presence of antihypertensive treatment and/or when blood pressure at rest and/or during 24 hour ambulatory blood pressure monitoring (ABPM) was above 95th percentile, respectively for age and height (Pediatrics 2004, 114 (S): 555) and for height (J Pediatrics 1997;130:178).

Results: Patients with iCoA were significantly older than patients with cCoA (22±7yrs vs 16±7yrs; p<0.001), with a markedly higher prevalence of arterial hypertension (43% vs 20%). Difference in the prevalence of hypertension remained significant also in analysis of covariance correcting for differences in age among groups (p<0.001), demonstrating a risk of developing hypertension for patients with cCoA reduced by more than a half as compared to iCoA (odds ratio 0.48).

Conclusion: In the presence of CoA the association with complex congenital heart disease results in a significant reduced prevalence of hypertension. Systemic low flow and pressure in patients with cCoA might be associated with a lower rate of arterial hypertension, through the lack of stimulation of baroreceptor reflex in the prestenotic area, as speculated for the iCoA. Further studies are necessary to confirm our findings.