Exercise Blood Pressure Response In Children After Aortic Coarctation Repair

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Objective: Despite successful repair of aortic coarctation, systemic hypertension can persist in a significant percentage of patient. The aim of this study was to assess blood pressure in children operated for aortic coarctation, both at rest and after exercise.

Material-Method: Nineteen children were operated upon for aortic coarctation. The patients data were compared with those obtained from 19 healthy controls of the same age. Demographic and clinical data including age at intervention, blood pressure at rest and on exercise, transthorasic echocardiography and treadmill exercise test results were evaluated. Results are compared statistically.

Results: Of the operated aortic coarctation patients 7 (%47) were female, 12 (%63) were male, of the control group 7 (47%) were female, 12 (63%) were male. Mean age of patients were 12.2±4.6 years and control group was 12.0±2.0 years. Both groups were compared for weight, height, arterial tension, heart rate and echocardiographic measurements, 24 hours blood pressure and on exercise pressure. Nineteen patients performed a treadmill exercise test. (Bruce protocol). The mean duration of exercise was 8.1 ± 2.3 minutes, mean peak heart rate was 154 ± 22 beats per minute and mean systolic pressure 140±26. Exercise times were found statistically shorter in patient group than control group (p<0.05). Fourteen (%73) patients had a hypertensive response during test, among whom only five (%26) had uncontrolled blood pressure at rest. Age at surgery and type of aortic coarctation repair were not associated with a hypertensive response on exercise (p<0.05).

Conclusion: Operated aortic coarctation patient have an alarming prevalence of hypertension. Due to abnormal blood pressure homeostasis, hypertension should be aggressively pursued by ambulatory blood pressure measure assessment and exercise stress testing in this population. In this study we found a significant prevalence of exercise induced hypertension in patients after successful aortic coarctation repair despite adequate blood pressure control at rest. Exercise induced hypertension was significantly related to higher peak gradient in the descending aorta and treatment with angiotensin receptor inhibited. These results highlight the complexity of the aortic coarctation population and show that, even after a good surgical result, several patients remain at high cardiovascular risk and require long term follow up.

Key words: aortic coarctation, exercise induce hypertension, children