

Cardiovascular risk in adolescents and adults with congenital heart disease

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Introduction: There is an increasing number of patients with congenital heart disease reaching older age. They are probable at risk for acquired cardiovascular diseases similar to the general population. We investigated, whether diagnosis of congenital cardiac disease, exposure to cardiovascular risk factors or oxygen saturation at rest influenced the early manifestation of atherosclerosis.

Methods: Patients with congenital heart disease were included in our prospective study. The early manifestation of atherosclerosis was quantified by an increase in pulsewave velocity, augmentation index or central blood pressure; aerobic capacity by cardiopulmonary exercise testing.

Results: In total, 188 patients (89 females, 99 males) were analyzed. Median age was 33 years (range 12-74 years). Patients with congenital heart disease presented only little exposure to cardiovascular risk factors. Hyperuricemia was found in 21%, hypertension in 19%, hypercholesterolemia in 18%, hypertriglyceridemia in 17%, obesity in 17%, smoking in 4% and diabetes in 3%. None of these risk factors was found in 46%.

Patients with adiposity and hypertriglyceridemia had a significantly reduced peak oxygen uptake. Less exposure to cardiovascular risk factors resulted in a better aerobic capacity. On the other hand peak oxygen uptake was correlated to vascular stiffness measured as pulse wave velocity ($r=-0.225$, $p=0.005$) and augmentation index ($r=-0.371$, $p<0.001$).

Only patients with coarctation had best results for their aerobic capacity, despite they are particular at risk for atherosclerosis due to arterial hypertension and elevated central blood pressure.

Conclusions: Patients with congenital heart disease have low cardiovascular risk factors, maybe as a result of an intentional healthy lifestyle.