Functional Outcomes in children with Transposition of the Great Arteries after Arterial Switch Operation

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Objective: Despite decreasing mortality and morbidity in children with transposition of the great arteries (TGA) after arterial switch operation (ASO), recent studies still report functional impairments. This study analyzes intima-media-thickness (IMT), health-related physical fitness (HRPF) and health-related quality of life (HRQoL) in children after ASO.

Methods: In total, 68 children after ASO (12.9 ± 3.7 years, 19.1% female) were investigated between August 2014 and October 2017. The IMT was measured by ultrasound, HRPF was assessed by five tests of the FITNESSGRAM® and HRQoL was analyzed with a self-report questionnaire (KINDL-R). All test results were compared to a recent healthy reference cohort (RC: n=2116, 49.1% female) and adjusted for sex and age differences.

Results: Children after ASO had a significantly increase in IMT (TGA: 0.489 mm, SE: 0.006, RC: 0.465 mm, SE: 0.001, p<.001) and impairments in HRPF (TGA z-score: -0.58 ± 0.81, p<.001) compared to the RC whereas HRQoL did not differ between these groups (HRQoL score: TGA: 75.2, SE: 1.280, RC: 76.5, SE: 0.360, p=0.315). Neither the classification into simple and complex TGA, nor the statistical analysis regarding the coronary pattern, resulted in a significant difference in-between the groups for all health-related outcomes.

Conclusions: Children after ASO exhibit detrimental IMT and impaired HRPF. Long-term consequences of a thickened IMT remain unclear and demand further physiological analysis. But the need for long-term follow-ups is emphasized by this analysis and special promotion might be necessary to reduce impairments concerning health-related outcomes in children after ASO.