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

*Häcker A.-L. (1,2), Reiner B. (2), Hager A. (1), Oberhoffer R. (1,2), Ewert P. (1), Müller J. (1,2)
Department of Pediatric Cardiology and Congenital Heart Disease, Deutsches Herzzentrum München,
Technische Universität München, Germany (1); Institute of Preventive Pediatrics, Technische
Universität München, Germany (2)*

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.