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Congenital Heart Disease

LONGITUDINAL EXERCISE PERFORMANCE IN PATIENTS WITH D-LOOP TRANSPOSITION OF THE GREAT ARTERIES AFTER ARTERIAL SWITCH OPERATION

Poster Contributions
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Authors: *Joseph D. Kuebler, Ming Hui Chen, Jonathan Rhodes, Boston Children's Hospital, Boston, MA, USA*

Background: The first patients to undergo a successful arterial switch operation (ASO) for d-transposition of the great arteries are now entering their fourth decade of life. Past studies of ASO survivors' exercise function have yielded conflicting results. We therefore undertook this study to describe the current function of ASO survivors, to identify factors related to inferior exercise performance and to determine whether their exercise function tends to deteriorate over time.

Methods: Patients with palliative surgery prior to ASO, ventricular hypoplasia or severe valvar dysfunction were excluded from the study. Data from cardiopulmonary exercise tests (CPX) in which the peak respiratory exchange ratio was <1.09 were also excluded. We identified 113 patients who met entry criteria and had 186 CPX at our institution between 1/2002 and 1/2013; 41 patients had at least 2 qualifying CPX.

Results: Mean age at the time of the initial test was 16.7 ± 0.7 years. Peak oxygen consumption (VO2) averaged 84.3 ± 2.4 %predicted. Peak VO2 was lower among patients with repaired ventricular septal defects (81.9 ±3.6 vs. 86.2 ± 2.9 %predicted; p<0.05) and among patients with ≥moderate pulmonary artery stenoses (77.2 ± 4.9 vs. 86.5 ±2.5 %predicted; p < 0.05). Surgery prior to 1991 was also associated with a lower peak VO2 (81.0 ±3.4 vs. 87.0 ± 3.0 %predicted; P<0.01). The mean % predicted peak heart rate was 91.7 ± 1.1%, with no significant difference between any of the subgroups. Non-diagnostic exercise-induced STT changes developed in 10 patients (12 studies). In the subgroup with at least 2 exercise tests, the annual decline in %predicted peak VO2 was quite slow (-0.76 percentage points/year; p=0.04 vs. expected normal age-related decline).

Conclusion: The exercise capacity of ASO survivors is well preserved and is only mildly reduced compared to normal subjects. Moreover, there is only a slight deterioration in exercise capacity over time. VSD repair, residual right sided obstructive lesions, and earlier surgical era are associated with worse exercise performance.