PREOPERATIVE RIGHT VENTRICULAR VOLUMES DETERMINE RIGHT VENTRICULAR NORMALIZATION AND EVENTS LATE AFTER PULMONARY VALVE REPLACEMENT IN PATIENTS WITH TETRALOGY OF FALLOT

Poster Contributions
Hall C
Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: Functional Heart Assessment and Outcomes in Congenital Heart Disease and Hypertrophic Cardiomyopathy
Abstract Category: 9. Congenital Heart Disease: Adult
Presentation Number: 1118-265

Authors: Jouke Bokma, Michiel Winter, Thomas Oosterhof, Hubert Vliegen, Barbara Mulder, Berto Bouma, Academic Medical Center, Amsterdam, The Netherlands, Leiden University Medical Center, Leiden, The Netherlands

Background: In patients with Tetralogy of Fallot (TOF) longstanding pulmonary regurgitation leads to right ventricular (RV) dilation and dysfunction, and concomitant adverse clinical events. Previous studies revealed that normalization of RV volumes after pulmonary valve replacement (PVR) occurred in those patients with preoperative RV end-systolic volume (ESV) < 80 mL/m² or RV end-diastolic volume (EDV) < 160 mL/m². The aim of this study is to determine the relationship of preoperative RV volumes with long-term functional and clinical outcome.

Methods: In this retrospective, multicenter study all TOF patients who underwent successful surgical PVR and in whom cardiovascular magnetic resonance before, early after and late after PVR was available were included. RV normalization was defined as RV ejection fraction >48% and RV EDV < 108 mL/m². In addition, we determined adverse clinical events after PVR.

Results: A total of 50 TOF patients (64% male) who underwent PVR between 1995 and 2006 at a mean age of 29 (± 9) years were included. Cardiovascular magnetic resonance was performed before (0.6 ± 0.5 years), early after (1.0 ± 0.9 years) and late after (8.1 ± 2.8 years) PVR. RV EDV improved (173 ± 38 to 114 ± 27 mL/m², P=<0.001) early after PVR and remained stable at late follow-up (113 ± 27 mL/m², P=NS). RV ejection fraction was unchanged early after PVR (42 ± 9 to 44 ± 8%, P=0.11) and remained stable at late follow-up (45 ± 9%, P=0.18). 12 patients (24%) had RV normalization late after PVR. There was a statistically significant relation between preoperative RV ESV < 80 mL/m² or RV EDV < 160 mL/m² and late RV normalization (P=<0.001 and P=<0.001). Six patients (12%) had an adverse clinical event (1 death, 1 sustained VT, 2 heart failure, 2 redo-PVR) after PVR. No events occurred when preoperative RV ESV was < 80 mL/m² or RV EDV was < 160 mL/m² (P=0.02).

Conclusions: In patients with TOF, PVR results in a sustained hemodynamic improvement. Preoperative RV ESV < 80 mL/m² and/or RV EDV < 160 mL/m² are associated with late RV normalization and less adverse clinical events.