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RESYNCHRONIZATION PACING FOR EARLY HEART FAILURE AMONG YOUNG ADULTS WITH REPAIRED CONGENITAL HEART DISEASE BASED ON CONTRACTILITY (DP/DT) NOT EF OR QRS

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Biography

Peter P Karpawich has underwent medical training at Hahnemann/Drexel University (Philadelphia), followed by Pediatric Residency at the University of Texas (Dallas) and Cardiology fellowship at Baylor University (Houston). He holds the academic rank of Professor at Wayne State University School of Medicine and is the Director of Cardiac Electrophysiology Services at the Children's Hospital of Michigan, Detroit, USA. He has authored/coauthored over 250 scientific publications, as well as two textbooks and 11 textbook chapters on cardiac electrophysiology, adult congenital heart diseases and cardiac device therapies. He currently serves as Editor and is on the Editorial Boards of several internationally-recognized cardiac journals and is routinely asked to review scientific manuscripts for publication. He is a fellow of the American College of Cardiology, American Heart Association, Heart Rhythm Society and the American Academy of Pediatrics.

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Introduction: Repaired congenital heart disease (CHD) patients (pts) often develop early heart failure (HF) simply based on anatomy. Although cardiac resynchronization pacing therapy (CRT) may be an effective alternative to heart transplant (HT), published implant guidelines, based on ejection fraction (EF) and QRS morphology, do not include pts with CHD or pacemakers. The purpose of this study was to pre-evaluate CHD pts with HF based on contractility response (dP/dt) to temporary CRT pacing to determine CRT efficacy prior to implant. Acute CRT benefit was defined as a >15% increase in indices over baseline.

Methods: From 1998-2017, 105 CHD pts including repaired Tetralogy of Fallot, transposition of the great arteries, single ventricle, and septal defects, were considered for HT (NYHA 3-4). Of these, 40 (mean age 22y, 27/40 with preexisting pacemakers) agreed to temporary CRT pacing with contractility measurements. Based on dP/dt response, pts either did or did not receive CRT. All pts was followed from 0.3-12 years (mean 4.5).

Results: Of 40 pts, 26 (62%) had a positive response (mean dP/dt 597 improved to 848 mmHg-sec, $p<0.006$) and received CRT implant. During follow-up (mean 5.3 years), all initially improved in NYHA class and HF symptoms. Of these pts, four underwent eventual HT (mean 4.7 years later), four died (two noncompliance (NC), one gunshot) and 18 remain clinically stable (NHYA class 1-3), off the HT list (repeat dP/dt mean 843 mmHg-sec). Of the 14 pts with a negative acute CRT response (mean dP/dt 635 vs. 662 mmHg-sec, p=NS), during follow up (mean 3.5 years), two underwent HT (mean one year later), six died awaiting HT (3 NC), and six remain on the HT list (NYHA 3-4).

Conclusions: CRT implant guidelines lack criteria for CHD pts including preexisting pacemakers. Pre-selecting pts by acute contractility response assures greater CRT efficacy and can delay need for HT.

Note: