Early recognition and treatment of critical arrhythmias in adults after the atrial switch operation for transposition of the great arteries: remote monitoring vs standard follow-up

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Background: Adults with transposition of the great arteries (TGA) after atrial switch repair have an increased risk for arrhythmias and sudden cardiac death. We analysed whether a remote monitoring (RM) system as part of an implantable cardiac device contributes to timely recognition and improved treatment of critical arrhythmias in this patient population.

Methods: All consecutive TGA patients requiring a pacemaker or cardiac resynchronization therapy with or without implantable cardioverter defibrillator at the Medical University Graz, Austria and the German Pediatric Heart Centre St. Augustin, Germany between 2008 and 2011 were included. RM-detected arrhythmias, abnormalities of the cardiac device integrity and reaction times from event transmission until acknowledgement via email and clinical decision making were analysed and compared to standard follow-up.

Results: In 11 adult patients 17 arrhythmias were detected in 10 (91%) patients of whom 8 patients (80%) indicated no symptoms. Mean time interval from transmission to acknowledgement was 2.4 (0 - 4.5) days. Clinical decision making was advanced by a mean of 77.5 (10-197) days compared with conventional follow up and implied adaption of antiarrhythmic medication in 8 patients, electrical cardioversion in 2, overdrive pacing in 1 and radiofrequency ablation in 2 patients. A coronary sinus lead fracture was identified in one patient followed by successful replacement.

Conclusions: RM enables early detection of tachyarrhythmias followed by optimization of medical treatment and potentially life-saving antitachycardic interventions in adults after atrial repair of TGA.