**P-19**

## Cardiac Resynchronization in a 1½ Year Old Girl With Dilated Cardiomyopathy

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Introduction
Cardiac resynchronization has become an established tool for end stage heart failure in adults. In children experience with this kind of therapy is limited to a few series and case reports. Criteria of responders are not well defined in the pediatric age group. We report a case of successful CRT in a toddler with dilated cardiomyopathy (DCM) who was not eligible for heart transplantation (HTX).
Patient and Methods
A girl, 1 month of age, presented with heart failure and was diagnosed with DCM caused by HHV6 infection. She remained stable under medication for 5 months, when repetitive administration of Levosimendan was started. HTX was refused by the parents. At the age of 1½ years (height 74 cm, weight 8.9 kg) she underwent mitral valve repair (downsized 28 mm Carpentier prosthetic ring) due to progressive annulus dilatation and additional volume load of the left ventricle. At the same time epicardial leads for biventricular pacing were implanted (right atrium: Medtronic 5071; right and left ventricle: Enpath Myopore). After a honeymoon of 6 months following mitral valve reconstruction the left ventricular function deteriorated and the leads were connected to a CRT device (Medtronic Consulta™), placed intraabdominally. AV delay was optimized and interventricular delay was programmed to 20 ms according to echocardiographic evaluation.
Results
Echocardiography revealed regression of left atrial area (18 to 5.4 $cm^2$) as well as left ventricular diameter (56 to 41 mm) within 9 months following CRT onset. Ejection fraction rose from 23 to 50%. Functional class improved from NYHA III to I, the values of B natriuretic peptide dropped from >35000 to less than 600 pg/ml. Postcapillary pulmonary hypertension was no longer present. The patient is showing excellent physical and mental development.
Conclusion
Additionally to pharmacological treatment, CRT is a viable option for the pediatric heart failure patient. Epicardial lead implantation makes this strategy applicable for younger patients, starting in infancy. CRT allows for bridging till HTX and yields potential as definitive therapy of heart failure.