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**Decreased systolic function measured by Speckle tracking echocardiography in children with ESRD**

*Schoenmaker N.J. (1), Groothoff J.W. (1), van der Lee J.H. (2), Blom N.A. (3), Kuipers I.M. (3)  
Department of Pediatric Nephrology (1), Department of Pediatric Clinical Epidemiology (2),  
Department of Pediatric Cardiology Emma Children's Hospital AMC Amsterdam, the Netherlands (3)*

**Introduction**

Cardiovascular disease is the main cause of death in patients with End-Stage Renal Disease (ESRD) since childhood. In young adults with ESRD abnormal left ventricular geometry and function are correlated with a poor cardiovascular prognosis. Speckle tracking echocardiography (STE) is able to reveal early abnormalities in LV systolic function prior to manifestation of hypertrophy. Therefore, we aimed to assess LV systolic function using STE in children with ESRD and healthy controls.

**Methods**

26 children with ESRD and 24 healthy control subjects, matched for body surface area (BSA), were assessed with STE. Parameters related to LV systolic function (global longitudinal strain and global radial strain) were compared in the ESRD and control groups using linear regression analysis. Hypertension was defined as either a systolic or diastolic blood pressure > p95 of the Task Force Report normal values corrected for age and gender.

**Results**

Children with ESRD were older than their healthy controls, matched for BSA; mean age (SD) 13.4 (4.5) vs 10.5 (4.4) years, mean difference [95% Confidence Interval (CI)] 2.9 [0.4-5.5] years, ( $p=0.025$ ). At time of the echocardiogram, 15 children were treated with dialysis and 11 children had a kidney transplant. The median (range) time of renal replacement therapy (RRT) was 48 (1-208) months. Twelve of the 26 children (46%) with ESRD had hypertension for more than 3 months after start RRT. At time of the echocardiogram, 16 children (62%) used anti hypertensive drugs at time of the echocardiogram. After adjustment for age, the ESRD patients had a significant lower global longitudinal strain than the control subjects (mean (SD) 18.2% (2.9) vs. 20.5% (2.2), mean difference [95%CI] 1.8 [0.3-3.3],  $p=0.021$ ). There were no significant differences found for the global radial strain between these two groups. In this small sample size, we found no relation between systolic dysfunction and the duration of RRT, use of antihypertensive drugs or hypertension

**Conclusion**

Children with ESRD have significantly decreased LV systolic function, measured by global longitudinal strain, compared to healthy matched controls. Early identification of systolic dysfunction might improve the clinical management of these patients.