

**Study of cardiac function and cardiovascular risk factors in pediatric end-stage renal disease**

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**Introduction.** Cardiac disease is a leading cause of morbidity and mortality in children with end-stage renal disease (ESRD). The mortality rate caused by cardiovascular disorders is up to 1000 times higher in children with ESRD compared to healthy children.

**Methods.** We analyzed a group of 20 pediatric maintenance dialysis patients with a mean age of 14.1  $\pm$ 3.7 from our tertiary referral center. 10 were on peritoneal dialysis and 10 on hemodialysis, with a mean duration of 30.7  $\pm$ 26.8 months.

The main focus was the transthoracic ultrasound evaluation of myocardial damage, namely on the presence of left ventricular hypertrophy (LVH). The left ventricular mass (LVM) was calculated and indexed to the power of 2.7 and 2.16, respectively. The type of LVH was assessed using the relative wall thickness (RWT). Statistical analysis was performed using Microsoft Excel 2013. We studied their relationship with traditional and uremia-specific cardiovascular risk factors by calculating the Pearson correlation coefficient and the R<sup>2</sup> determination coefficient. The result was considered significant if the corresponding two-tailed p-value was <0.05.

**Results.** 70% of the patients had LVH, with no significant differences between the two types of renal replacement therapies, 40% presented with eccentric hypertrophy and 30% had diastolic dysfunction. In about 20% of them, the assessment of the ejection fraction and of the shortening fraction showed a reduction <50% and <27%, respectively. There was a significant correlation between the LVM Index (LMVI) and both high Systolic and Diastolic Blood Pressures, with values >95th percentile in 9 patients (45%), despite receiving prior medication. There was a significant negative correlation between the hemoglobin level and the LVMI. Statistically significant correlations between LVMI and elevated phosphorus levels were also obtained, but not for serum lipids, transferrin or homocysteine.

**Conclusions.** Echocardiography is an extremely useful tool that provides valuable information for diagnosing and monitoring heart disease in patients with ESRD. In our small-sized study group, there was a high prevalence of LVH. Until the possibility of kidney transplantation, which can greatly improve the cardiac function, the management of risk factors (arterial hypertension, anemia, etc.) is required for reducing cardiovascular complications in ESRD pediatric patients.