

Mildly functional decline of left ventricle is detected by systolic time intervals in pediatric patients with chronic peritoneal dialysis

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Background: Cardiac depression often appears in adults with hemodialysis for chronic renal failure. Chronic peritoneal dialysis (CPD) is selected in pediatric patients with chronic renal failure. There are few reports to mention systolic time intervals (STI) in pediatric patients with CPD. We investigated cardiac functions by measurement of STI in pediatric patients with CPD. Methods: The medical records of 12 patients with CPD were reviewed. Patients ranged in age from 1 year to 14 years (median 4 years). We used 12 healthy children as control who were matched sex and age. Echocardiographic data of left ventricle were compared between the two groups. On STI the ratio of preejection period to ejection time (PEP/ET) and isovolumetric contraction time-ET ratio (ICT/ET) were employed as index of systolic function. The ratio of isovolume relaxation time to ET (IRT/ET) was employed as diastolic function. Results: Initiation age of CPD was between 4 days and 14.7 years (median 6 months). Duration of CPD was between 6 months and 4.2 years (median 2.3 years). The values of PEP/ET were higher in patients with CPD than those in controls (0.29 vs 0.24, $p=0.0035$). There were no differences in ICT/ET. The values of IRT/ET were higher in patients with CPD than those in controls (0.15 vs 0.083, $p=0.023$). The dimension of left ventricle, ejection fraction, the ratio of E wave to A and deceleration time of E wave were not different. In patients with prolong PEP/ET the levels of creatinine were elevated (6.8mg/dl vs 3.3mg/dl, $p=0.027$); those of phosphate elevated (5.9mg/dl vs 4.2mg/dl, $p=0.027$). Conclusions: We showed abnormality of left ventricular function by STI in pediatric patients with CPD. Contrastingly left ventricular dysfunctions were not detected by M-mode and pulsed Doppler method. Myocardial contractility was mainly measured by STI. Even if myocardial contractility disturbed mildly, pump function was commonly reserved. Maybe we see petty dysfunctions of ventricle by STI. In pediatric patients with chronic failure dialysis mostly extends over a long period. We should follow up cardiac functions by systolic time intervals in pediatric patients with CPD, even if cardiac functions look normal by routine echocardiogram.