

**The Serial changes in Myocardial Functions after Pediatric Hematopoietic Stem Cell Transplantation: from baseline to the 12th months**

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**Objectives:** To evaluate myocardial functions by tissue Doppler echocardiography (TDE) and serum N terminale Pro-brain natriuretic peptid (ProBNP) assay in children undergoing Hematopoietic stem cell transplantation (HSCT).

**Methods:** 39 children were evaluated by echocardiography at baseline, the 1st, 3rd, 6th and 12th month after HSCT. Baseline echocardiographic data of the patients were compared with those of 39 age-matched healthy children, as well as patient data after HSCT. Serum ProBNP was measured in patient group at baseline and the first month after HSCT. Our study was designed retrospectively and approved by the ethics committee of the hospital. Transplant types; Matched sibling donor (43%), Matched unrelated donor (42%), Autologous (10.2%) and Haploid HSCT(5%).

**Results:** All patient had normal the left ventricular ejection fraction (LVEF) before and after HSCT. Compared to control group, patient group had lower the tricuspid annular-plane systolic excursion rate and the early diastolic velocities (E') for both ventricles and greater the mean pulmonary artery pressure before HSCT. After HSCT, the E/A ratio and E' velocities for both ventricles had decreased for 3 months. The left ventricular diastolic functions returned to baseline level at the 6 months. However, the reductions in the systolic and diastolic myocardial velocities for tricuspid lateral annulus still persisted at the first year after HSCT. ProBNP values were elevated (>120 pg/mL) in 35.9% and 33.3 % of patient at baseline and the first month after HSCT, respectively (p>0.05). Eight patient had positive history of anthracycline exposure, and they had higher baseline ProBNP values (p>0.05). Although in normal limits, they had lower baseline LVEF and E' velocity for septum than patient without history of anthracycline exposure (p=0.024, p= 0.007). Ten patient died after HSCT due to non cardiac complication. They had relatively lower baseline LVEF and septal E' velocity than patient who survived (p= 0.012, p= 0.009). There was no significant correlation between baseline ProBNP and mortality (p>0.05).

**Conclusion:** HSCT procedures may result subclinical deterioration in myocardial functions during the first year of HSCT. Myocardial function should be monitored by TDE in HSCT recipients.