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The three year experience in treatment of dilated cardiomyopathy by bone marrow derived cell intramyocardial implantation in childhood

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Introduction. Dilated cardiomyopathy is a serious disease in pediatric age due limited conservative therapy and heart transplantation as a final option. Due to the lack of transplantation we have looked for another possibilities. Bone marrow derived progenitor cell (BMCs) transplantation is becoming a promising method of treatment in adult population and there are a few cases in pediatrics described. Based on this, we have done the BMCs transplantation in seven patients since May 2009.

Methods. The seven patients had been admitted for the BMCs transplantation in age 4 month to 17 years. The inflammatory basis was excluded by laboratory investigations. Seventeen to ninety million BMCs were isolated and as suspension of physiologic saline with heparin given to patients by intramyocardial injection in the interventricular septum under echo control. There is complete 1 year follow-up for six patients. The results of method were controlled by echo EF measurements by Simson's, ECG changes, CTR at x-ray and NT-proBNP levels. The data analysis was made by descriptive and mathematical statistic methods. The statistical significance was determined by t-Test ($p=0.05$).

Results. One year following BMCs transplantation we observed increase of ejection fraction, The average basal EF was 33.5%. We observed increasing up to 54% ($=9.54$, $p=0.00154$) in 6 month period and up to 54,5% ($=10.82$, $p= 0.00315$) after one year. The difference between basic data and results after 6 and 12 months was statistically significant, but there was no difference between 6-month and 12-month data. The results were within the confidence interval in all measurements. Also there was correlation observed in ECG and echo improvement and CTR and BNP level decrease.

Conclusions. We found the improvement of patient's condition after intramyocardial administration of bone marrow cells. We can do the first judgement about efficiency of procedure after six month evaluation.