Objective. To study the dynamics of circulating bone marrow CD133+, against primary period of a ST segment elevation myocardial infarction (STEMI), and to determine the relationship between the CD 133+ level and some parameters of left ventricle (LV) remodeling.

Materials and methods of research. The study included 19 patients with primary a STEMI the average age was 59 ± 17 years. All patients underwent PCI with reperfusion of the infarction-related coronary artery. The mean recanalization time was 5 (4, 6) h. Using EchoCG, final systolic volume (CSR), terminal diastolic volume (BWW), LV ejection fraction (LVEF) was measured admission, 3rd, 7th and 21st day of STEMI. The CD133+ cells level was determined by flow cytometry of venous blood samples in the same periods. There was a control group of healthy volunteers (6 males) the average age was 41 ± 9 years (absolutely healthy).

Results. Carrying out an individual analysis of CD 133+ cells level circulating in patients with acute myocardial infarction, they found a multidirectional, nonlinear dynamics of their content by the 3rd day of MI. Due to this dynamics, all patients were divided into 2 subgroups: the 1st subgroup consisted of the patients with initially low level and it’s further increasing on the 3rd day of MI, the 2nd subgroup - patients with a decrease level to a 3-m day of illness. Intragroup and intergroup differences were revealed on different days of the disease (p <0.05). A positive correlation was established between the relative amount of CD133+ cells in patients of the 2nd subgroup on the 7th day of MI and LVEF on the 21st day (R = 0.7, p = 0.02).

Also, a relationship was found between the low absolute amount of CD 133+ cells in the first day of acute myocardial infarction and signs of chronic heart failure (CHF) after 6 months of the disease (p <0.05). Namely: in patients of the first subgroup, 6 months after of acute MI, minimal clinical manifestations of CHF were observed. This fact confirms that a high release of CD133+ cells into the peripheral channel is associated with a favorable course and disease prognosis.

Conclusion: We showed the response of marrow to acute myocardial infarction, as release of CD133+ cells into the blood. It was found that the high mobilization of these cells both on the 1st day of MI and during the whole observation period was associated with a favorable course and disease prognosis, according to improvement of clinical and echocardiographic parameters.