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Poster Sessions

Comparison of transplantation effects among cardiac progenitor cell types on the mitochondrial energy-producing ability after myocardial infarction in rats

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An impairment of mitochondrial energy-producing ability leads to the development of heart failure (HF) following myocardial infarction (MI). In this study, effects of cardiac progenitor cell (CPC) transplantation to the cardiac tissue after MI on the cardiac mitochondrial energy-producing ability were examined. MI was produced by ligation of the left ventricular coronary artery. Immediately after MI, Sca-1⁺, c-Kit⁺, or crude CPCs were injected into viable myocardium. Eight weeks after MI, animals without transplantation showed typical signs of HF. The mitochondrial oxygen consumption rate (mtOCR) of the viable tissue in rats with HF was reduced. In contrast, the cardiac function and mtOCR were preserved in CPC-transplanted groups. Furthermore, mtOCR in the rats with transplantation of crude CPC was slightly higher than other groups. These results suggest that the transplantation of CPCs contributes to a preservation of mitochondrial function, leading to an improvement of cardiac function. We also found that there were differences in cardioprotective effects among Sca-1⁺, c-Kit⁺, and crude CPCs.