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EFFECTS OF ERYTHROPOIETIN ON ENDOTHELIAL PROGENITOR CELL TRANSPLANTATION AFTER MYOCARDIAL INFARCTION IN MICE

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Objectives Previous studies suggested that transplantation of endothelial progenitor cells (EPC) could improve cardiac function after myocardial infarction (MI). However, survival of transplanted EPC seems unsatisfactory. The purpose of the present study was to

determine whether erythropoietin could ameliorate survival of transplanted EPC and further improve cardiac function after MI.

Methods We cultured and identified EPC which obtained from enhanced green fluorescent protein (EGFP) transgenic BALB/c mice. EPC with or without EPO were transplanted into peri-infarct myocardium after permanent ligation of the left anterior descending coronary artery. Transplanted EPC were detected 7 days after transplantation. Expressions of iNOS and eNOS in the border zone were measured 3 days after surgery. Apoptosis in the border zone and cardiac function was assessed 4 weeks after surgery.

Results EGFP positive cells were much more in the hearts treated with EPC and EPO than in those treated with only EPC 7 days after transplantation $p<0.01$). The expression of iNOS in the border zone was decreased $p<0.01$) while eNOS was further increased $p<0.05$) in EPC and EPO treated hearts compared to only EPC treated ones. Apoptotic index was lower and left ventricular fractional shortening was higher after EPC and EPO treatment compared with only EPC treatment $p<0.05$, both comparisons).

Conclusions Compared to only EPC treatment, EPO along with EPC transplantation could further improve cardiac function after MI at least partly by ameliorating survival of transplanted EPC, decreasing iNOS expression and increasing eNOS expression.