

论著

转染VEGF₁₆₅ 基因的自体成肌细胞治疗心肌梗死的实验研究

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摘要: 目的: 将体外培养、纯化并转染VEGF₁₆₅ 基因的新西兰兔自体骨骼肌成肌细胞植入心肌梗死区,观测转染VEGF₁₆₅ 基因的成肌细胞移植对改善梗死区心肌运重建和心功能的影响。方法: 采用pcDNA3.1-VEGF₁₆₅ 和pcDNA3.1 质粒转染经体外培养及纯化的新西兰兔自体骨骼肌成肌细胞。结扎兔冠状动脉致局部心肌梗死后2周,分别于心肌梗死区移植转染VEGF₁₆₅ 基因成肌细胞(实验组,*n*=8) 和空载体成肌细胞(对照组,*n*=8),4周后观察心肌梗死边缘区毛细血管密度、植入细胞的形态鉴定和心功能改善情况。结果: 成功将pcDNA3.1-VEGF₁₆₅ 和pcDNA3.1质粒转染体外培养的兔自体骨骼肌成肌细胞,成肌细胞移植后能在梗死区种植成活、分化。实验组细胞移植区域的毛细血管密度较对照组高(*P*<0.05)。经Buxco 系统有创心功能测定显示: 实验组较对照组的左心室等容收缩期室内压最大上升速率[+dp/dtmax, (1607.23±102.67) mmHg/s vs (1217.77±89.91) mmHg/s] 和左心室等容舒张期室内压最大下降速率[-dp/dtmax, (1535.09±81.34) mmHg/s vs (1174.58±91.50) mmHg/s] 均有所改善。结论: 转染VEGF₁₆₅ 的成肌细胞能改善心肌梗死区域的血液供应,增加心肌收缩力,改善心功能。

关键词: VEGF₁₆₅ 成肌细胞 细胞移植 心肌梗死

Transplantation of autologous myoblasts transfected with VEGF₁₆₅ improves heart function after myocardial infarction in rabbits

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Abstract: Objective: To determine the improvements of post-infarction heart function after transplantation of autologous skeletal myoblasts transfected with VEGF₁₆₅ in rabbits. Methods: Myocardium infarction was induced in rabbits by left anterior descending coronary artery ligation. At 2 weeks, 1.75 × 10⁷ autologous skeletal myoblasts transfected with pcDNA3.1-VEGF₁₆₅ were infused into the region of MI via direct intramuscular injection; pcDNA3.1 served as a control. Results: The DAPI-labeled and Desmin-positive immunostained skeletal myofibers were found throughout the infarcted areas and border zones, and the density of blood capillary in the MI region transplanted by myoblasts with VEGF₁₆₅ was increased (measured 4 weeks later and compared with controls). Heart function was examined by the Buxco system and demonstrated that maximum dp/dt [(1607.23±102.67) mmHg/s vs (1217.77±89.91) mmHg/s] and minimum dp/dt [(-1535.09 ± 81.34) mmHg/s vs (1174.58 ± 91.5) mmHg/s] were improved in the heart transplanted with the transfected myoblasts(*P*<0.05). Conclusion: Autologous skeletal myoblasts transfected with VEGF₁₆₅ could ameliorate the blood supply in the MI region, and aid recovery of heart function more quickly in post-infarction hearts. This suggests an effective treatment for myocardium infarction.

Keywords: VEGF₁₆₅ myoblast cell transplantation myocardial infarction

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