



Effect of sphingosine-1-phosphate and myoblast transplantation on rat acute myocardial infarction

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ABSTRACT. In this study, we investigated the effects of sphingosine-1-phosphate (S1P) combined with myoblast transplantation on the treatment of acute myocardial infarction and provided a foundation for its clinical application. A rat model of acute myocardial infarction was established by ligating the anterior descending branch of the coronary artery. Serum-free media, myoblasts, myoblasts with S1P liposomes, or myoblasts with liposomes were then injected into the infarcted area. Apoptosis of the transplanted cells was assessed after 24 and 48 h, and changes in heart function and myocardial infarction area were assessed after 4 weeks. After transplantation of S1P into myoblasts, myocardial function was improved compared to that in the other groups. Specifically, the apoptosis of transplanted cells and the area of myocardial infarction decreased significantly ($P < 0.01$), while cardiac function significantly

improved ($P < 0.01$). The efficacy of S1P and myoblast transplantation on acute myocardial infarction was significantly better than that in the control group (i.e., injection of myoblasts and liposomes) and the serum-free medium group, demonstrating the feasibility of joint S1P and myoblast transplantation for treating myocardial infarction.

Key words: Acute myocardial infarction; Apoptosis; Cell transplantation; Myoblast; Sphingosine-1-phosphate