ejection fraction ($82.54\% \pm 3.62\%$, $84.78\% \pm 3.43\%$, respectively) had significantly on 2 weeks after therapy ($n=6$, $p<0.05$). QT duration of BMSCs+rAd. SERCA2a group was significantly shorter than in the shame group, the mean value was significantly decreased 23.8% ($n=7$, $p<0.05$). Ventricular premature beats were also recorded in rats from shame group. MEA records suggested that isolated heart tissue beats in shame group were significantly slowed down and ventricular arrhythmias and atrioventricular block were recorded. The field potential duration of infarcted myocardium area in BMSCs group and BMSCs+rAd. SERCA2a group were significantly longer than those in shame group ($104.5 \text{ ms} \pm 25.43 \text{ ms}$, $107.67 \text{ ms} \pm 24.01 \text{ ms}$, $63 \text{ ms} \pm 20.34 \text{ ms}$; $n=6$, $p<0.05$). The conduction time was the shortest in BMSCs+rAd. SERCA2a group, the cardiac electroconduction activity could keep consistency and improve in myocardial infarction tissue.

Conclusions BMSCs and SERCA2a gene modified MSC transplantation could obviously enhance cardiac function and prevent heart failure, however, the latter could effectively improve electrical conduction between infarcted myocardium and block the occurrence of arrhythmia after myocardial infarction.

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THE CARDIOELECTRICAL ACTIVITY STUDY FOR THERAPY OF SARCOPLASMIC RETICULUM Ca^{2+} -ATPASE GENE MODIFIED BONE MARROW STEM CELL TRANSPLANTATION AFTER ACUTE MYOCARDIAL INFARCTION

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Objectives Comparison of bone marrow stem cells (BMSCs) transplantation and sarcoplasmic reticulum Ca^{2+} -ATPase (SERCA2a) gene modified BMSCs transplantation for therapy effects after acute myocardial infarction (AMI), as well as for assessment cardiac electrical activity.

Methods Made for AMI model in rats ($n=24$) and divided into 3 groups randomly: Saline group (shame group, $n=8$), BMSCs transplantation group (BMSCs group, $n=8$) and SERCA2a gene modified BMSCs transplantation group (BMSCs+rAd. SERCA2a group, $n=8$). After 2 weeks, cardiac function was evaluated by echocardiography and heart electrical activity was evaluated by electrocardiogram and microelectrode array (MEA) technology.

Results The transduction ratio of rAd. SERCA2a to BMSCs were 80% to 90%. Compared to shame group, BMSCs group and BMSCs+rAd. SERCA2a group could improve cardiac function, and