

STING-Inhibitor after myocardial infarction

Lavinia Rech¹, Mahmoud Abdellatif¹, Maria Pöttler¹, Verena Stangl², Eva Ulcer²,
Muhammet F. Gülen³, Andrea Ablasser³, Peter P. Rainer¹

¹ Division of Cardiology, Medical University of Graz, Austria

² Diagnostic & Research Institute of Pathology, Medical University of Graz, Austria

³ Global Health Institute, Ecole Polytechnique Fédérale de Lausanne, Switzerland



Background

Myocardial infarction (MI) is one of the prevalent causes of death in the world, with some patients developing heart failure from myocardial remodelling after infarction. Inflammatory processes trigger remodelling post-MI. One inflammatory factor is Type 1 Interferon which can be released by cytosolic dsDNA, sensed via the STING-receptor. The aim of this study was to reduce this inflammatory response by inhibiting the STING-receptor and thus reduce post-infarctional remodelling.

Methods

Surgery was performed to trigger infarction for 30 minutes by ligating of the proximal LAD in 22 wildtype male mice (C57BL6/J), another 10 mice have undergone sham operation. Echocardiographic assessment of the endocardial systolic fractional area change (FAC) was carried out before, one day after and three weeks after surgery. The mice with ligation were separated into two groups with eleven individuals each, as well as the sham operated mice in five each group. One group was treated with the STING-Inhibitor while the other received a control substance. Treatment was applied intraperitoneally once per day for three weeks.

Results

- Procedural success was good as evidenced by immediate FAC decline in MI animals.
- One day post-op was already significant difference in FAC can be shown between the two groups of ligated mice (#)
- Three weeks post-op a highly significant FAC can be observed in the group treated with STING-Inhibitor compared to the control group within the ligated mice
- Fibrosis and Cross sectional area were significantly reduced in treated MI group compared to control
- The sham operated mice showed at no time differences between the two groups

Conclusion

STING-Inhibitor potentially improves outcome after a myocardial infarction.

