Combined treatment of intractable ischemic heart disease with TML and endothelial progenitor cells-preliminary results of a therapeutic concept

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Objective:

Ischemic heart disease as the most frequent cardiovascular disease still implies a major health burden to western countries. In a certain amount of patients, conventional revascularization therapy is unsuccessful leaving these patients with disabling angina pectoris or congestive heart failure. Theoretically combining TMLR for signalling induction and pain relief and stem cell injection for regeneration support offers a promising treatment strategy for there otherwise intractable patient suffering from ischemic heart disease.

Methods:

Five patients with TML and stem cell therapy were evaluated. The pelvic bone was punctured and 300 ml of crude bone marrow were aspirated. Patients were operated “off pump”. Between 11 and 25 laser channels were created. In between the channels the stem cells were applied with 6 to 12 injections. Cell selection was carried out using magnetic cell separation. The patient follow up was 14.2±6.9 (mean+SEM).

Results:

NYAH classification improved significantly between preoperatively (mean 3.4) and three (mean 1.8) and six month (mean 1.8) postoperatively. When patients were asked to rank their complaints on a scale from 1 to 10, all patients described an immediate improvement postoperatively (7.4 preoperatively, 3.6 at three month and 3.2 at six month). An improvement in left ventricular ejection fraction was as well observed (48.8±13 preoperatively, 59.6±13 at three month (p=0.028) and 61.6±17 at six month (p=0.038 to preoperatively). The effect on LVEDV varied between the patients and did not reach statistic significance.

Conclusions:

In summery, the presented investigation demonstrated an increase in LVEF and better clinical performance by intramyocardial CD 133+ stem cells injection and TML therapy. The reason remains uncertain and may be explained by paracrine mechanism. It is still uncertain how long the observed effect will last, or if the better cardiac performance will lead to better life expectancy.