FIVE YEARS CLINICAL FOLLOW-UP OF PATIENTS TREATED WITH COMBINED DELIVERY OF INTRACORONARY AND INTRAMYOCARDIAL BONE-MARROW MONONUCLEAR CELLS

i2 Poster Contributions
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Background: The MYSTAR study revealed a moderate but significant increase in global left ventricular ejection fraction (EF) in patients receiving combined delivery of bone-marrow mononuclear cells (BM-MNC) either 3-6 weeks (Early group) or 3-4 month (Late group) post acute myocardial infarction (AMI), with no difference between the groups 3 months post-BM-MNC therapy. We have evaluated the effect of the cardiac stem cell therapy on long-term (5 years) clinical outcome.

Methods: Patients with recent AMI and EF between 30-45% were included in the MYSTAR study. The 5 year clinical follow-up (FUP) included the records of major adverse cardiac events (MACCE, defined as all-cause mortality, re-AMI, reintervention of the infarct-related artery (IRA) and stroke), implantation of automatic cardioverter-defibrillators (AICD) and hospitalization due to angina pectoris or heart failure. Kaplan-Meier survival analyses were performed to compare the clinical outcomes of the Early and Late groups.

Results: MACCE occurred in 16.7% of patients (10% in Early and 23.3% in Late groups, log-rank p=0.197) during the 5 years FUP. All-cause death occurred only in Late group (0% vs 10%, log-rank p=0.024). AICD was implanted in 6.7% and 10% of patients, hospitalization was necessary in 33.3% and 43.3% in the groups (non-significant), respectively. Patients with MACCE had a significantly lower baseline unipolar voltage value (UPV) of the intramyocardially injected area (6.2±2.7 vs 8.3±2.7 mV, p=0.025). Patients who died had significantly lower baseline 99m-Tc-Sestamibi tracer uptake (44.2±15.4% vs 58.4±15.6%, p=0.042), UPV (4.8±1.2 vs 8.3±2.7 mV, p=0.002) and local linear shortening (index of segmental wall motion disturbance) (7.4±3.2% vs 11.1±3.7%, p=0.021) in the injected area.

Conclusions: Combined delivery of BM-MNC leads to a favorable event-free survival rate in patients with a low (30-45%) EF post-AMI. Early (3-6 weeks post-AMI) cardiac stem cell therapy prevented death during the 5-year FUP. NOGA-derived baseline parameter might help to identify patients with significantly better long-term clinical outcome post-intramyocardial stem cell therapy.