MOBILIZATION OF ENDOTHELIAL PROGENITOR CELLS AND NEOINTIMA FORMATION AFTER IMPLANTATION OF EPC-CAPTURE STENTS IN NSTE-ACS (JACK-EPC RANDOMIZED TRIAL)

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Aim was to investigate the association between the number of circulating endothelial progenitor cells (EPCs), levels of chemoattractants and neointima formation 6 months after implantation of EPC-capture stents, EPCS (Genous, OrbusNeich) and bare metal stents (BMS) in patients with NSTE-ACS.

Methods: 60 patients were randomized for implantation of EPCS (n=30) or BMS (n=30) [JACK-EPC trial; NCT00494247], received 80mg atorvastatin prior to PCI followed by 80 mg/day and 600 mg loading dose of clopidogrel. Neointima formation was assessed after 6 months by QCA (in-stent late loss (LL), binary restenosis) and IVUS (neointima volume, neointima volume index). Inclusion criteria: de novo lesion >70% in native coronary artery, target vessel diameter 2.5-4.0mm, lesion length ≤30mm. Exclusion Criteria: diabetes, cardiogenic shock, bleeding, thrombocytopenia, other stenoses requiring revascularization, previous revascularization, left main stenosis >50%, allergy to statins.

Results: Both groups presented mostly with type B2/C lesions (EPCS: 53.3/30%; BMS: 50/30%). Rates of MACE were comparable in both groups, without in-stent thrombosis. Mean stent length was 20.1±8 and 19.9±10mm and mean stent diameter 3.0±0.97 and 3.1±0.88mm, respectively. In both groups the number of circulating EPCs at admission was significantly higher than after 6 months (admission: median 4,7 (1.2-6.9) and 4,9 (0.7-6.8), p=0.15; follow-up: 1.8 (0.2-3.1) and 1.8 (0.3-3.5), p=0.67). Number of mobilized EPC at admission was negatively correlated with neointima volume measured by IVUS (r=-0.46, p=0.03) and in-stent LL in QCA (r=-0.37, p=0.043). Patients with in-stent restenosis after 6 months had less circulating EPCs at admission (3.0 vs. 4.5, p=0.002), but comparable number of EPCs after 6 months. No differences in plasma levels of chemoattractants (VEGF, SDF-1, G-CSF, HGF) and expression of endothelial markers (VE-cadherin, von Willebrand factor) were found in patients with and without restenosis.

Conclusions: In patients with NSTE-ACS treated with EPCs-capture stents the early mobilization of EPC is significantly correlated with neointima formation after 6 months.