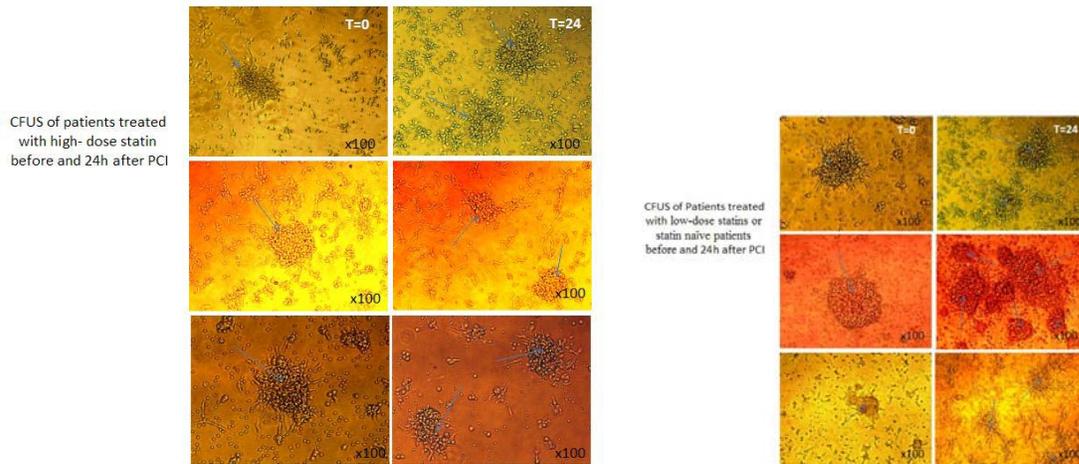


Effect of High Dose Statin Pretreatment on Endothelial Progenitor Cells after PCI (HIPOCRATES Study)

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Background: Pretreatment with high-dose statins given before percutaneous coronary intervention (PCI) has been shown to have beneficial effects. The mechanism of these lipid-independent beneficial statin effects is unclear. Circulating endothelial progenitor cells (EPCs) have an important role in the process of vascular repair, by promoting re-endothelialization following injury. We hypothesized that statins can limit the extent of endothelial injury induced by PCI and promote re-endothelialization by a positive effect on EPCs. We, therefore, aimed to examine the effect of high-dose statins given prior to PCI on EPC profile.

Methods: Included were patients, either statin naïve or treated chronically with low-dose statins, with stable or unstable angina who underwent PCI. Patients were randomized to receive either high-dose atorvastatin (80 mg the day before PCI and 40mg 4 hours before PCI) or placebo. EPCs profile was examined before PCI and 24 hours after it. Circulating EPC levels were assessed by flow cytometry as the proportion of peripheral mononuclear cells co-expressing VEGFR2, CD133 and CD34. The capacity of the cells to form colony forming units (CFUs) was quantified after 1 week of culture.

Results: Sixteen patients (mean age 61.8 ± 7.9 years, 14 men) were included in our preliminary data, of which 8 received high-dose atorvastatin prior to PCI. The number of EPCs CFUs before PCI was 196.0 ± 69.9 vs. 107.9 ± 40.8 CFUs/plate in patients treated with high-dose atorvastatin vs. placebo, respectively ($p=0.02$). The number of EPC's CFUs after 24h was 233.6 ± 68.7 vs. 175.0 ± 51.3 CFUs/plate in patients treated with high-dose atorvastatin vs. placebo ($p=0.1$). There were no differences in FACS levels between the groups.

Conclusion: In these preliminary results, there is a trend towards higher EPC CFU levels in patients treated with high-dose atorvastatin, both before and after PCI. These findings could account for the beneficial effects of statins given prior to PCI.