Adoptive Transfer of Regulatory T Cells Improves Cardiac Function and Reduces Infarct Size

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Background: Naturally occurring regulatory T cells (nTregs) comprise 5–10% of peripheral CD4+ T cells. Landmark studies have pointed to their essential role in tuning down pathogenic and autoreactive immune responses. We were able to demonstrate that nTregs are capable of reducing the size of atherosclerotic lesions. These findings motivated us to investigate the potential involvement of Treg in myocardial ischemia.
General aim: To test the HYPOTHESIS that regulatory T cells have a potentially beneficial effect in myocardial ischemia.
Methods: Splenocytes were stained with Tregs markers. Functional suppression assays were performed by coculturing T effectors (Teffs) with Tregs from control and MI mice. For adoptive transfer assays, mice were injected Tregs, Teffs or PBS.
Results: The data point out that the levels of CD4+CD25highFOXP3 in splenocyte cells in mice undergoing LAD ligation are higher than in Sham ($p<0.02$). However, there is no statistically significant effect of MI on the suppressive properties of Tregs. We have shown that the amelioration of cardiac damage with Treg cell transfer was accompanied by decreased infarct area.
In Conclusion: Tregs appear to play an active role in the remodeling process after experimental MI.