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The Function of Regulatory T Cells in Cardiac Ischemia

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Background: Naturally occurring Regulatory T cells (nTregs) comprise 5–10% of both human and murine peripheral CD4+ T cells. Landmark studies have pointed to the essential role of Treg in induction of immune tolerance. Tregs act by diverse mechanisms to 'tune down' pathogenic and autoreactive immune responses. Accumulating data in our lab points to an active involvement of innate and adaptive immune systems in atherogenesis. We have previously demonstrated that nTregs are capable of reducing the size of atherosclerotic lesions (Mor et al, ATVB, 27: 893-901, 2007). These findings prompted us to investigate the potential involvement of Treg in myocardial ischemia.
Methods: Murine cardiac derived cells were stained with anti mouse FITC-CD4 and anti-mouse PE-CD25. CD4+CD25high (Tregs) level was calculated out of total cardiac CD4+ and of the total cardiac cells.
Results: Our preliminary data show that the levels of CD4+ CD25high in cardiac cells in mice undergoing LAD ligation are higher than in Sham (7.1% versus 1.2%) and control (0.4%) animals, seven days post infarct induction.
Conclusion: The data point out to the possible involvement of nTreg in the post-MI immune response, probably by taking part in the post-MI healing process. Further experiments are being performed to elucidate the functional activity of systemic and local Tregs following MI.