**INDUCTION OF ENDOGENOUS T REGULATORY CELLS IS EFFECTIVE IN TREATING HEART FAILURE AND HEART FAILURE-INDUCED LUNG REMODELING**

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Congestive heart failure (CHF) is associated with an increase of leukocyte infiltration, pro-inflammatory cytokines and fibrosis in the heart and lung. Regulatory T cells (Tregs) suppress inflammatory responses. We postulated that expansion of Tregs attenuates CHF progression by reducing cardiac and lung inflammation in a pre-clinical CHF model. We investigated the effects of Interleukin-2 (IL-2) plus IL-2 monoclonal antibody clone JES6-1 complexes (IL2/JES6-1) on transverse aortic constriction (TAC)-induced cardiac and lung inflammation and CHF progression in mice. We demonstrated that end-stage CHF causes massive increases of lung leukocytes such as macrophages and T cells, as well as relatively mild cardiac leukocyte infiltration. Administration of IL2/JES6-1 caused a ~6-fold induction of Tregs within CD4+ T cells in the spleen, lung and heart of mice. IL2/JES6-1 treatment of mice with existing TAC-induced left ventricular (LV) failure markedly reduced lung and right ventricular (RV) weight, and improved LV ejection fraction and LV end-diastolic pressure. IL2/JES6-1 treatment significantly increased Tregs, suppressed CD4+ T-cell accumulation, dramatically attenuated leukocyte infiltration including decreasing CD45+ cells, macrophages, CD8+ T cells, and reduced pro-inflammatory cytokine expressions and fibrosis in the lung of mice. Moreover, induction of Tregs by IL2/JES6-1 treatment also significantly attenuated TAC-induced LV hypertrophy fibrosis, and dysfunction. Our data indicate that increasing Tregs attenuates lung and cardiac inflammation, RV hypertrophy and further LV dysfunction in mice with existing LV failure, as well as the development of LV hypertrophy. These data indicate that strategies to properly expand Tregs are useful in preventing LV hypertrophy and dysfunction, and in treating heart failure.