THE FUNCTION OF REGULATORY T CELL ON MACROPHAGE ACTIVITIES IS DYSREGULATED FOLLOWING TRAUMA-HEMORRHAGE.

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Regulatory T cells (Tregs) are potent immune suppressors. It has been shown that Tregs activities are enhanced and contributed to the T cell suppression following trauma-hemorrhage (T-H). However, their effects on macrophage (MΦ) are less clear. Male C3H/HeN mice were assigned to sham, T-H (laparotomy, 90 min hemorrhagic shock, mean arterial pressure 35 mmHg, followed by resuscitation with Ringer's lactate [4x the shed blood volume]) and were sacrificed 3 days later. Splenic MΦ phagocytosis, CD206, CD14, MHC II and iNOS expression as well as NO and cytokine production were tested with or without Tregs presence. We found that sham Tregs were more potent than T-H Tregs in enhancing MΦ phagocytosis. MΦ phagocytosis was decreased if Tregs were depleted, in contrast, adoptive transfer of sham Tregs enhanced MΦ phagocytosis. Sham Tregs suppressed the MΦ expression of CD14, MHC II and iNOS but increased the expression of CD206, however, T-H Tregs did not possess such capability. T-H induced an increased production of NO by MΦ, while Tregs attenuated such effect. Finally, Tregs suppressed the TNF and IL-6 production of MΦ but enhanced that of IL-10. Moreover, T-H Tregs had more pronounced effects on affecting MΦ cytokine production compared to those of sham Tregs. In conclusion, Tregs regulate MΦ by activating MΦ via the alternative pathway; however, such regulatory capabilities of Tregs were altered following T-H. (#: p< 0.05 compared to other groups of the same condition, *: p<0.05 compared to sham Tregs, n=5/group).