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Regulatory T cells is increased in peripheral blood and tumor microenvironment of patients with colorectal cancer

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The immune system spontaneously responds to tumor-associated antigens in peripheral blood of colorectal cancer (CRC) patients. Regulatory T cells (Treg) play an important role influencing the interaction between the tumor and immune system and thus the course of malignant diseases. However, the function of Tregs in the development of T cell responses and on the clinical course of CRC is not clear. Experimental tumor models in mice revealed that regulatory T cells inhibit antitumor immune responses. The aim of the this study was to demonstrate the possible involvement of Treg in immune

system impairment in patients with CRC. To this and, the phenotypes of lymphocytes, particularly Treg ($CD4^+CD25^+CD152^+FoxP3^+$), were analyzed in peripheral blood and *in situ* in 10 patients with gastrointestinal malignancies.

Compared with healthy volunteers, patients with CRC had a higher proportion of Treg in peripheral blood. In addition, Treg infiltration was significantly higher in CRC than in hyperplastic or healthy colon. Finally, depletion of Treg from peripheral blood mononuclear cells of CRC patients unmasked $CD4^+$ T cell responses, at least in an *in vitro* system, as observed by IFN-γ and IL-2 release, as well as proliferative capability, to the tumor associated antigen CEA.

These data show that Treg capable of inhibiting tumor associated antigen-specific immune responses are enriched in patients with CRC and that Treg could be related to immunosuppression and tumor progression in these patients. This finding suggests that the use of immunomodulatory therapy (also by manipulating Treg) to treat CRC patients may be an effective strategy.

Key words
Regulatory T cells; colorectal cancer