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Chronic inflammatory factors, myeloid-derived suppressor cells and regulatory T cells in melanoma patients

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Tumor progression is driven by chronic inflammation that induces local and systemic immunosuppression. However, the correlation between inflammatory mediators, immunosuppressive cells and the clinical outcome of malignant melanoma patients was poorly investigated. In this study, we studied circulating inflammatory factors as well as myeloid-derived suppressor cells (MDSCs) and regulatory T cells (Tregs) in melanoma patients in the association with their clinical outcome. We demonstrated that levels of serum interleukin (IL)-1□, interferon (IFN)-□□and chemokine ligand (CXCL) 10 were significantly increased in advanced melanoma patients. Importantly, advanced melanoma patients with signs of progression displayed markedly elevated concentrations of IL-1□□and CXCL10 as compared to patients with stable disease. Moreover, an enrichment of circulating monocytic (Mo)-MDSCs significantly correlated with a decreased progression free survival of these patients. Furthermore, studying the role of MDSCs in ipilimumab treated patients, we found that increased numbers of MDSCs, as well as elevated nitric oxide (NO) production and programmed death ligand 1 (PD-L1) expression by these cells were negatively associated with response of melanoma patients to the ipilimumab treatment.

Taken together, our data suggest that the level of circulating MDSCs can be a new prognostic marker for advanced melanoma patients helping to identify those with high risk of disease progression and those who benefit from ipilimumab therapy.