Dendritic cell generation and CD4+CD25high FOXP3+ regulatory T cells in human head and neck carcinoma during radio-chemotherapy.

Abstract:
Regulatory T cells (Treg) and dendritic cells (DC) play an important role in tumor immunity and immune escape. However, their interplay and the effects of anti-cancer therapy on the human immune system are largely unknown. For DC generation, CD14+ monocytes were enriched by immunomagnetic selection from peripheral blood of advanced head and neck squamous cell carcinoma (HNSCC) patients and differentiated into immature DC using GM-SCF and IL-4. DC maturation was induced by addition of TNF-α. The frequency of CD4+CD25highFOXP3+ Treg in HNSCC patients was analyzed before and after radio-chemotherapy (RCT) by four-color flow cytometry. In HNSCC patients, the frequency of Treg (0.33 ± 0.06%) was significantly increased compared to healthy controls (0.11 ± 0.02%), whereas RCT had variable effects on the Treg frequency inducing its increase in some patients and decrease in others. After six days in culture, monocytes of all patients had differentiated into immature DC. However, DC maturation indicated by CD83 up-regulation (70.7 ± 5.5%) was successful only in a subgroup of patients and correlated well with lower frequencies of peripheral blood Treg in those patients. The frequency of
regulatory T cells is elevated in HNSCC patients and may be modulated by RCT. Monocyte-derived DC in HNSCC patients show a maturation deficiency ex vivo. Those preliminary data may have an impact on multimodality clinical trials integrating cellular immune modulation in patients with advanced HNSCC.