

Danger signals and the development of new cancer vaccine strategies

Djordje Atanackovic

University Hospital Hamburg-Eppendorf, Hamburg, Germany

The absence of appropriate inflammatory danger signals in the anatomical area where a clinical cancer vaccine is administered may lead to an insufficient immune response. This view is supported by our recent finding that the addition of an immunological adjuvant is absolutely required for an effective immunization of cancer patients with recombinant MAGE-3 protein. On the other hand, even if sufficient numbers of tumor-specific T cells are generated, the absence of appropriate danger signals in the tumor environment may prevent a clinically effective homing of these T cells into the tumor tissue. This view is supported by our findings in two human models of tumor-T cell interaction. First, investigating the immune milieu within malignant effusions, we observed a diminished homing of memory effector-type T cells into the tumor environment caused by a reduced concentration of necessary chemokines within the effusion. Second, investigating tumors of patients with head and neck cancer, we observed reduced levels of chemokines attracting Th1-type and effector-type T cells. Derived from these findings we are currently developing clinical trials including new and hopefully more potent adjuvants in order to maximize a tumor-specific immune response.

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