

POSTER PRESENTATION

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B cells in tumor draining lymph nodes act as efficient antigen presenting cells in cancer patients

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Introduction

Overall Survival of patients with muscle invasive urothelial bladder cancer MIBC remains around 50% (5 years), albeit some improvements by combining neoadjuvant chemotherapy with radical surgery. Our previous work has demonstrated that *in vitro* expansions of sentinel node-acquired autologous tumor specific CD4⁺ T cells are promising for adoptive immunotherapy [1]. In order for naive T helper cells to become activated, they need effective APCs, presenting tumor antigens. In another study, we observed that B cells in cancer patients were tumor antigen experienced and from their phenotypes we suggested a CD4⁺ T cell dependent anti-tumoral response [2]. In this study, we report a flow cytometric investigation of tumor draining lymph node (sentinel node) derived B cell activation by autologous tumor extract in patients with MIBC.

Methods

Sentinel nodes (SNs) from 28 patients with MIBC were detected by a Geiger meter at cystectomy after peritumoral injection with radioactive isotope. Lymphocytes were isolated from freshly received SNs where they were stimulated with autologous tumor extract in a sterile environment. After cultivation for 7 days, the cells were analyzed by multi-color flow cytometry using FASCIA (Flow cytometric Assay of Specific Cell-mediated Immune response in Activated whole blood).

Results

Patients displayed an increased B cell activation in SNs after stimulation with autologous tumor extract compared

to when SN acquired lymphocytes were stimulated with autologous extract of macroscopically non-malignant bladder. CD4⁺ T cells from SNs were activated and formed blasts after co-culture with SN acquired B cells in the presence of tumor antigen. However, CD4⁺ T cells were not activated and did not blast when co-cultured with B cells incubated with HLA-DR-blocking antibodies. This indicates antigen presenting ability of SN acquired B cells.

Conclusions

We demonstrate sentinel node acquired B lymphocytes can be activated in culture upon stimulation with autologous tumor extract but not with extract of non-malignant epithelium of the bladder, after 7 days. Lower number of sentinel node acquired CD4⁺ T cells cultured with HLA-DR blocked CD19⁺ cells in presence of tumor antigen, indicate functional antigen presenting ability of B cells in sentinel nodes. The role of B cells as APCs in human T cell anti-tumoral response should be further explored, as well as their usefulness in adoptive immunotherapy.

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