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HEMATOLOGY/ ONCOLOGY

CASE STUDY

TCR sequencing can identify and track glioma-infiltrating T cells after DC vaccination

Prins R, *et al.* (2016) *Cancer Immunology Research, OnlineFirst*
MARCH 2016

WHY IMMUNOSEQ?

The immunoSEQ assay enables accurate and quantitative assessment of tumor infiltrating lymphocytes (TILs)

TIL density and degree of repertoire overlap at different tissue sites determined by the immunoSEQ assay can predict response to DC vaccination therapy

amplify **discovery**™

CASE STUDY: TCR sequencing can identify and track glioma-infiltrating T cells after DC vaccination—
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BACKGROUND

- Glioblastoma (GBM) is a lethal solid CNS malignancy with a median overall survival of 12-18 months with conventional therapy
- Dendritic cell (DC) based vaccines can have a great therapeutic benefit in a subset of GBM patients

AIM

To determine if TIL content and repertoire profile could serve as predictive biomarkers of responses to DC vaccination therapy

METHODS

Peripheral blood samples and tumor biopsies were collected from 15 GBM patients enrolled in Phase I and II clinical trial. Post treatment tumor tissue was also available from 5 patients who experienced tumor recurrence.

1. Baseline: blood and tumor → gDNA extraction → **immunoSEQ® (TCRB)**
2. Interadermal autologous DC vaccination
3. Blood and tumor → gDNA extraction → **immunoSEQ (TCRB)**

RESULTS

Figure 1. Elevated TIL content in pretreatment tumor predicts outcome

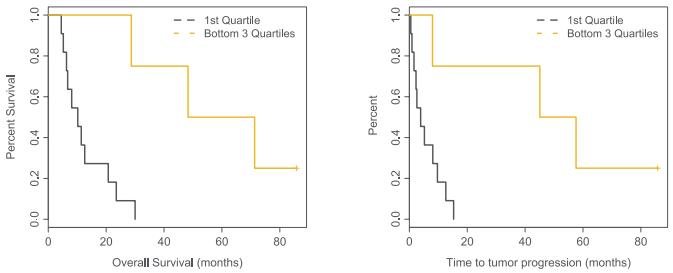

Figure 2. TCR overlap in blood and tumor is associated with survival

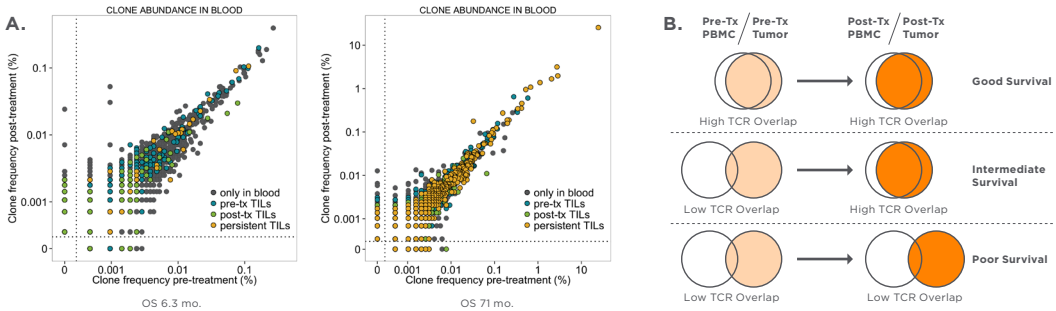

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Figure 1. Patients with high TIL content (in top quartile) had longer TTP and OS than the bottom 3 quartiles.

Figure 2.A. Pretreatment peripheral blood TCR sequences (x-axis) correlated with post-treatment peripheral blood TCR sequences (y-axis) and overlaid with presence of T-cells within the TIL populations.

Figure 2.B. TCR overlap model demonstrating the correlation with survival.

Figure 2.A.
Grey: TCRs only in peripheral blood
Blue: TCRs only in pre-treatments TILs and blood
Green: TCRs only in post treatment TILs
Orange: persistent TCRs in both sets of TILS and blood

CONCLUSIONS

- A higher TIL density in pre-treatment samples was correlated with improved clinical outcome
- Higher repertoire overlap in blood and tumor at pre- and post- therapy correlated with survival

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