

INTERROGATING THE TUMOR MICROENVIRONMENT IN RENAL CELL CARCINOMA: A SPATIAL PROTEOMICS STUDY

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There is a clinical need to identify prognostic markers that can help predict which patients with non-metastatic clear cell renal cell carcinoma (ccRCC) will develop metastatic disease after nephrectomy.

We performed a spatial proteomics study to assess the immune cell populations of interest in ccRCC tumors and their correlation with progression after surgery. Both a research (n=83) and a validation cohort (n=46) consisting of ccRCC tumors with and without progression after radical nephrectomy were interrogated using highly multiplex immunostaining, and a spatial analysis was performed to determine specific spatial patterns between the tumor and immune cells.

We found that higher levels of CD8⁺ T cells were correlated to a lower risk of progressive disease. Patients with recurrence after surgery had more exhausted CD8⁺ T cells in the tumor microenvironment. We demonstrated that patients who progressed to metastatic disease had shorter distances between CD8⁺ T cells and RCC cells.

Our study shows CD8⁺ T cell infiltration within ccRCC tumors could be a valuable prognostic biomarker.

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