Antigen-specific immunosuppression promotes immune tolerance in renal cancer

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Abstract

Renal cancer affects over 400,000 people each year, and new treatment options are needed. A new study unraveled a paradox taking place in the immune systems of cancer patients. Myeloid-derived suppressor cells (MDSCs), driven by tumor cells, have the ability to suppress the immune responses of T cells, preventing T-cell recognition of tumor cells and allowing immune escape. However, mice and humans with renal tumors do not experience systemic immunosuppression. Researchers used mice to examine renal cancer-derived exosomes (RDEs), extracellular vesicles derived from tumor cells. They found that the proportion and activity of MDSCs in the spleen and bone marrow changed after internalization of RDEs. RDE-stimulated MDSCs inhibited T cell proliferation and cytotoxicity, and these effects were antigen-specific and driven by the molecule HSP70 in RDEs and TLR2 on MDSCs, explaining the targeted immunosuppression of the renal cancer-specific immune response. Although more research is needed to bring these findings to the clinic, the results suggest that targeting RDEs may improve anti-tumor immunity, providing hope for the development of novel immunotherapies for renal cancer.