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Immunotherapy of renal cell cancer: The efficacy and challenges

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A doptive transfer of tumor reactive lymphoid cells has been one of the effective immunotherapies for eradicating advanced tumor burdens. We reported a phase II trial where patients with stage IV renal cell cancer (RCC) were vaccinated with irradiated autologous tumor cells admixed with BCG to induce vaccine-primed lymph nodes (VPLN). Lymphoid cells harvested from VPLN were secondarily activated in vitro, and were subsequently infused intravenously into the patients along with the concomitant administration of IL-2. Among the 34 evaluable patients who completed an initial course of cell therapy, there were 9 responses (27%). Overall survival of responders was significantly prolonged compared to non-responders (p<0.001). While the administration of in vivo primed and in vitro activated VPLN cells and IL-2 resulted in durable tumor responses in patients with advanced renal cell cancer, further improvements in therapy are needed. The inability to target cancer stem cells (CSC) with current immune approaches may be a significant factor for treatment failures. We recently identified CSC-enriched populations in two murine tumors (melanoma D5 and squamous cell cancer SCC7). Enriched cancer stem cells are immunogenic and significantly more effective as an antigen source compared with unselected tumor cells in inducing protective anti-tumor immunity. We found that selective targeting of cancer stem cells by CSC-primed antibodies and T cells represented the mechanisms involved in CSC vaccine-conferred anti-tumor immunity. Identifying and targeting cancer stem cells in renal cell cancer may lead to the development of more potent immunological approaches for therapy.

Biography

Qiao Li, Ph.D., a Research Assistant Professor in the Department of Surgery at the University of Michigan has had his research focused on tumor immunology and cancer immunotherapy. His work both in preclinical studies and in clinical trials has involved the treatment of different tumors, including patients with advanced renal cell cancer. These treatment approaches utilize various immune strategies, such as T cells, B cells, and dendritic cells as well as targeting of cancer stem cells. Dr. Li is a member of the American Association for Cancer Research and American Association of Immunologists.

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