Cancer Control January 2013, Vol. 20, No. 1

Ten Best Readings Relating to Cancer Immunotherapy


The interaction between the immune system and prostate cancer has been an area of research interest for several decades. The recent US Food and Drug Administration approval of sipuleucel-T and ipilimumab has stimulated broader interest in manipulating immunity to fight cancer. In the context of prostate cancer, the immunotherapy strategies that have garnered the most interest are the therapeutic vaccination strategies, exemplified by sipuleucel-T and PROSTVAC-VF, and immune checkpoint blockade of CTLA-4 and PD-1.


The authors showed that response to chemotherapy is in part regulated by the tumor immune microenvironment and that common cytotoxic drugs induce neoplastic cells to produce monocyte/macrophage recruitment factors, which in turn enhance macrophage infiltration into mammary adenocarcinomas. Blockade of pathways mediating macrophage recruitment, in combination with chemotherapy, significantly decreases primary tumor progression, reduces metastasis, and improves survival by CD8+ T-cell–dependent mechanisms, thus indicating that the immune microenvironment of tumors can be reprogrammed to instead promote antitumor immunity and improve response to cytotoxic therapy.


Tumors grow within an intricate network of epithelial cells, vascular and lymphatic vessels, cytokines and chemokines, and infiltrating immune cells. Different types of infiltrating immune cells have different effects on tumor progression, which can vary according to cancer type. This article discusses how the context-specific nature of infiltrating immune cells can affect the prognosis of patients.


Ipilimumab, with or without a gp100 peptide vaccine, compared with gp100 alone, improved overall survival in patients with previously treated metastatic melanoma. Adverse events can be severe and/or long lasting, but most are reversible with appropriate treatment.


Anti-PD-1 antibody produced objective responses in approximately 1 in 4 to 1 in 5 patients with non–small cell lung cancer, melanoma, or renal-cell cancer. The adverse-event profile does not appear to preclude its use. Preliminary data suggest a relationship between PD-L1 expression on tumor cells and objective response.


The potential for significantly improving the poor survival rate among patients with gastrointestinal cancer lies in understanding and exploiting the molecular biology of gastrointestinal tumors to investigate new therapeutic strategies such as specific immunotherapy. The authors focus on recent knowledge concerning the role of T cells and the use of T adoptive immunotherapy in the treatment of gastrointestinal cancers.


In late 2009 and 2010 the Society for Immunotherapy of Cancer convened to discuss collaborations to improve development and delivery of cancer immunotherapy. Nine critical hurdles identified by the representatives of the collaborating organizations are presented and discussed in this report. Each of these hurdles can significantly delay clinical translation of promising advances in immunotherapy, yet if overcome, they have the potential to improve outcomes of patients with cancer.


The morphological, phenotypic, and functional heterogeneity of myeloid-derived suppressor cells (MDSCs) demonstrates the plasticity of this immune suppressive myeloid compartment and shows how various tumors and infectious agents can have similar biological effects on myeloid cells despite the differences in the factors that they produce to influence the immune system. However, this creates ambiguity in the definition of these cells as well as confusion.
regarding their origin and fate. This review discusses recent findings that help to better clarify these issues and determine the place of MDSCs within the myeloid cell lineage.


Immunotherapy with interleukin-2 can cure 5% to 10% of patients with metastatic melanoma and renal cancer. Recent adoptive cell transfer (ACT) immunotherapies have improved cure rates in metastatic melanoma to 20% to 40%. Genetic engineering of T cells to express conventional alpha/beta T-cell receptors or antibody-based chimeric antigen receptors provides an opportunity to extend ACT to patients with common epithelial cancers.


The authors review the potential for immune-mediated anticancer activity of radiation on tumors. This can be mediated by differential antigen acquisition and presentation by dendritic cells (DCs), through changes of lymphocytes’ activation, and through changes of tumor susceptibility to immune clearance. In the future, radiation therapy approaches designed to optimize immune stimulation at the level of DCs, lymphocytes, tumor and stroma effects could be evaluated specifically in clinical trials. Careful study of the microenvironment of the irradiated tumor should lead to opportunities for putatively localized anticancer treatments to make the irradiated tumor a catalyst for systemic anticancer response.