Society for Immunotherapy of Cancer

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Recent Discoveries in Cancer Immunotherapy Research Offer New Hope for Cancer Patients

NORTH BETHESDA (Friday, October 26, 2012)--- There are exciting new breakthroughs in cancer treatment and they are happening in immunology and immunotherapy. Soon to be the fourth treatment modality for patients, cancer immunotherapy has advanced from a promising line of research to a new cornerstone of cancer therapy. The Society for Immunotherapy of Cancer (SITC) members have pioneered the science of using the body's own immune system to fight cancer and some of these ground-breaking findings will be presented at the Society's Annual Meeting held October 26-28, 2012 in North Bethesda, MD, the world's largest meeting focused on cancer immunotherapy.

More than 800 of the brightest minds in cancer research focused on immunotherapy and immunology are expected to walk the halls of the North Bethesda Marriott including more than 240 scientific abstract presenters. Extending into the global arena, meeting attendees represent 24 countries and those most heavily invested in cancer immunotherapy research including academicians, industry, government regulators, patient advocates, clinicians and allied health professionals.

Vaccine offers new hope for patients with brain tumors

A vaccine that induces a T-cell response shown to kill tumor cells offers new hope for patients with the most common and deadliest form of brain tumors glioblastoma multiforme (GBM). At the Society for Immunotherapy of Cancer (SITC) 27th Annual Meeting today, John S. Yu, MD and colleagues from Immunocellular Therapeutics Ltd. presented results of a phase I study of 21 patients. The study evaluated the safety and immune responses to a cellular dendritic cell vaccine, ICT-107, made from the patient's white blood cells and armed with peptides that target six different tumor specific proteins found on glioblastoma tumor and cancer stem cells.

Patients received standard of care - surgery and chemo-radiation - followed by three vaccinations of ICT-107 every two weeks. Results showed that of the newly diagnosed patients, the median overall survival (OS) was 38.4 months and the median progression-free survival (PFS) was 16.9 months. These results compare favorably with the historical standard of care results of 6.9 months PFS and 14.6 months OS, respectively. At a median follow-up time of 40 months, six of the newly diagnosed patients remained tumor free. Further analysis of the level of expression of the target proteins on patient tumor cells showed longer survival in patients with higher levels of some proteins and studies of tumor in patients who relapsed showed decreases in some of the target proteins, including a marker of cancer stem cells.

These findings support the scientific rationale for using this therapeutic vaccine approach. Based on these promising results, a multi-center, randomized, double-blind, placebo-controlled phase II trial is underway to further evaluate the safety and efficacy of ICT-107, with results anticipated in 2013.

New cancer study shows FDA-approved immunotherapy induces immune response at site of prostate cancer tumor

Results of the first trial to assess the immune effects of administering sipuleucel-T within the prostate tissue to patients with localized prostate cancer (prior to planned surgery to remove the prostate) showed that sipuleucel-T induces an immune response at the site of tumor. Sipuleucel-T is an FDA-approved immunotherapy for the treatment of metastatic castrate-resistant prostate cancer.

As presented at the 27th Annual Meeting of SITC, Larry Fong, MD from the University of California San Francisco and colleagues conducted a neoadjuvant Phase 2 trial of sipuleucel-T in men with localized prostate cancer. Immune responses within the prostate were evaluated by determining the change in frequency of immune cells in the resected tissues following treatment, compared to the pre-treatment biopsies. Among the 37 patients who completed treatment, sipuleucel-T was associated with an increase in the number of immune cells (specifically CD4, CD8, and B lymphocytes) in the tissue surrounding the

prostate tumors. This increase in immune cells was not seen in 12 patients who underwent surgery, but did not receive sipuleucel-T. These findings provide evidence that sipuleucel-T induces an immune response at the site of tumor.

Altering T-cell glycolytic energy source may strengthen the immune system

A study by M. Sukumar, MD and colleagues, presented today at the 27th Annual Meeting of SITC, shows that altering a T-cell's diet can slow its metabolism and extend its life span, which might enhance the ability of the immune system to resist threats of cancer and infection.

Previous work by Nicholas Restifo has shown that T cells with the ability to persist in the body (memory T cells) seem to eradicate tumor better than their more short-lived and differentiated counterparts (effector T cells). After hypothesizing that that T cells with a more active metabolism may have an abbreviated life span, Sukumar and colleagues embarked on experiments designed to determine if an altered T cell diet can slow its metabolism, extend its survival, and mediate tumor regression in mice. Tests of adoptive transfer into immunocompetent mice showed that the 2-DG (specific inhibitor of hexokinase-2) treated CD8+ T cells had enhanced proliferation and survival capabilities compared to fully differentiated control T cells, and they exhibited potent antitumor activity.

The team is currently working toward the goal of identifying the novel metabolic pathways in human CD8+ T cells and modulating – or slowing – metabolism to generate optimal memory and enhance immune response against tumors. While addressing whether different T cell subsets utilize different nutrient substrate for their longevity remains to be solved, understanding the role of different metabolic pathways such as autophagy and amino acid metabolism such as glutamine catabolism will greatly facilitate research in the field of memory and protective immunity and may help for translation to the development of vaccines and immunotherapy of cancer.

Preliminary results from two novel therapeutic options that can extend the survival time for metastatic melanoma patients

Results from a study presented today at the SITC 27th Annual Meeting strongly suggest that one immune response approach outdistances another in terms of survival for patients with metastatic melanoma. Although surgery and/or radiation and/or systemic therapy allow many patients with this disease to achieve brief periods of disease control, the vast majority go on to die because of new metastases.

Recognizing that one of the limitations of current systemic cancer therapies is that they target the cancer cells that are prevalent in tumor masses rather than the tumor stem cells that are responsible for metastatic spread of cancer throughout the body, R.O. Dillman, MD at the Hoag Institute for Research and Education and colleagues conducted a randomized trial comparing two approaches to stimulating immune responses that target the tumor stem cells. The first approach entailed removing tumor cells (TC) from the patient's body, irradiating them or loading them with antigens, and injecting them back into the patient's skin. As the tumor cells died, the patient's dendritic cells (a type of antigen-presenting cell that initiates or reactivates immune responses) consumed them, thereby enhancing the immune response that targets tumor stem cells. The second, exogenous, approach entailed removing dendritic cells from the body, irradiating them or loading them with antigens, and then injecting these loaded dendritic cells (DC) back into the patient's skin.

Due to a premature end of financial support for the study, only 24 patients had been randomized to TC and 18 to DC but all patients received their assigned treatment. An analysis performed in 2011, at a time when 21 patients were deceased, minimum follow up was six months and median follow up of surviving patients was two years, showed superior survival in the DC arm: a 72% reduction in the risk of death for patients in the DC arm vs. 31% for those in the TC arm.

About the Society for Immunotherapy of Cancer

Founded in 1984, the Society for Immunotherapy of Cancer (formerly the International Society for Biological Therapy of Cancer; iSBTc) is a non-profit organization of nearly 600 clinicians, researchers, students, post-doctoral fellows, regulators, industry personnel, academicians and allied health professionals dedicated to improving cancer patient outcomes by advancing the science, development and application of cancer immunology and immunotherapy through our core values of interaction/integration, innovation, translation and leadership in the field. For more information about SITC, please visit the Society website at www.sitcancer.org.

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