Jefferson Clinical Trials Combine Promising Targeted New Agents with Chemoradiation

Genome sequencing has led to the development by Jefferson’s Department of Radiation Oncology, in collaboration with the Departments of Surgery, Neurological Surgery and Medical Oncology, of clinical trials integrating new anticancer drugs with radiation therapy or chemotherapy. These new medications – some oral, others intravenous – serve as molecular agents, targeting the Achilles heel of tumors associated with various types of cancer in order to shrink them.

Some of the targeted molecular agents being tested through Jefferson clinical trials specifically inhibit the formation of new blood vessels in tumors. These are frequently known as antiangiogenic agents. Preclinical data indicates little likelihood that tumors will develop resistance to these agents.

“In order for tumors to grow, they require new blood vessels to deliver oxygen and nutrients,” explains Adam P. Dicker, MD, PhD, Professor and Interim Chair of the Department of Radiation Oncology at Jefferson Medical College (JMC) of Thomas Jefferson University, and Leader of the multidisciplinary Radiation Research and Translational Biology Program of the Kimmel Cancer Center at Jefferson.

“By blocking the formation of new vessels, we have been able to starve tumors. Since angiogenesis inhibitors are cytostatic (preventing the growth of a tumor) rather than cytotoxic (killing the tumor), we are using them in conjunction with radiation therapy or chemotherapy as a cancer treatment. We have demonstrated that these combinations of treatment can reduce the size of tumors and, therefore, be of clinical benefit to patients.”

Jefferson researchers are also using other molecularly targeted agents to inhibit the epidermal growth factor receptor (EGFR) as well as other molecular processes of the cancer cell.

Some Specific Clinical Trials

Recently, Dr. Dicker served as principal investigator of a phase II, open-labeled, safety study of the combination of Sunitinib®, which is an oral antiangiogenesis inhibitor, and radiation therapy for the treatment of patients with recurrence of brain cancer that had previously been treated with radiation therapy alone. The study demonstrated this combination to be safe and effective.

“We are currently accruing patients to a Phase II/ pilot trial of biologic therapy combined with chemoradiation for advanced head and neck cancer,” reports Mitchell Machtay, MD, Walter J. Curran Professor and Vice Chair of Radiation Oncology, JMC. “This study includes ‘conventional’ platinum-based induction and concurrent chemoradiation, but adds two biologic agents – the oral anti-EGFR drug erlotinib (Tarceva®) and the intravenous anti-VEGF (vascular endothelial growth factor) antibody bevacizumab (Avastin®).” A translational study from Jefferson’s Kimmel Cancer Center and Departments of Radiation Oncology and Pathology showed that high levels of VEGF within head and neck cancer tissue specimens were associated with poor outcome.

“We will soon open a Phase II clinical trial for patients with non-small cell lung cancer,” adds Maria Werner-Waski, MD, Associate Professor of Radiation Oncology, JMC, and Residency Program Director, Department of Radiation Oncology, Thomas Jefferson University Hospital. “Patients will receive chest radiotherapy along with erlotinib. Radiotherapy will consist of intense daily treatments condensed into two and a half days rather than a more standard interval of six weeks. Through combining radiation therapy and Tarceva, we hope to achieve better efficacy against lung cancer.”

Optimizing Treatment Strategies

Implementing antiangiogenesis agents continue the Department of Radiation Oncology’s more than 40 years of innovative clinical trials. “We spend a considerable amount of time and effort with scientists at Jefferson’s Kimmel Cancer Center to optimize the appropriate treatment strategies when combining these molecularly targeted agents with radiation and chemotherapy so we are able to bring them to the clinical setting,” Dr. Dicker concludes.

“We look forward to offering our patients a number of treatment options building upon the expertise developed at the Kimmel Cancer Center. Our goals are to improve the cure rate as well as the quality of life of cancer patients by reducing side effects associated with treatment.”

For more information about clinical trials being conducted by the Radiation Research and Translational Biology Program at Jefferson’s Kimmel Cancer Center, or to refer a patient, call 1-800-JEFF-NOW. Or visit www.JeffersonHospital.org/radonc