

NON-TECHNICAL ABSTRACT

Prostate cancer is the leading internal malignancy in men and the second most common cause of cancer deaths. Current curative therapies for prostate cancer include surgery and external radiation therapy; however, both have potential significant morbidity and their impact on disease control has been less than complete, especially with radiotherapy. A novel approach to the control of cancer growth is gene therapy, a field that has progressed rapidly. Direct introduction of therapeutic genes into malignant cells in vivo may provide an effective treatment of solid tumors including tumors of the prostate. One system employs the interleukin-12 (IL-12) gene which codes for production of the very potent cytokine interleukin-12, in an effort to enhance local, and possibly systemic, cytolytic response against prostate cancer cells.

This study is designed to determine the safety of IL-12 gene therapy for patients with recurrence of prostate cancer after radiation therapy. Patients with recurrent prostate cancer after definitive radiation therapy do not have any standard treatment available that has been demonstrated to have a high degree of efficacy in curing the cancer or a reasonable degree of safety. The prostate cancer will be treated with prostatic injections of a replication-defective adenovirus vector delivering the IL-12 gene. Following virus injection, patients will be hospitalized for 24 hours for observation. Only one course of therapy will be administered. Each patient will be carefully monitored for toxic effects. Three to five patients will be tested with a low dose of virus and if there are no serious adverse side effects, the dose will be slowly escalated in subsequent groups of 3-5 patients or until unacceptable toxicity is reached. Effectiveness will be monitored by serum prostate-specific antigen (PSA), transrectal ultrasound of the prostate, prostate biopsy and comparison of survival times to historical survival times for patients with radiation recurrent prostate tumors. The primary objective of this initial study is to determine whether the treatment associated with significant toxicity.