

Non-technical Abstract

Over 240,000 patients will be diagnosed with prostate cancer and a majority of patients will have inoperable advanced disease for which there is no cure and the prognosis dismal. Prostate cancer will kill 45,000 men this year (one patient will die every 15 minutes) and the deaths from prostate cancer are increasing every year by 3% because fewer men are dying from cardiovascular disease. Current standard therapy is androgen ablation by castration, surgically or chemically, but prostate cancer cells become androgen resistant, resume growing, and kills the patient. Clearly, new strategies to combat advanced prostate cancer are greatly needed.

We are studying the possibility of slowing the growth of metastatic prostate cancer by inhibiting "oncogenes" (growth-promoting genes) within the cancer cells. The purpose is to introduce gene sequences which block the growth or spread of prostate cancer cells by blocking the function of specific oncogenes by a genetic engineering technique called antisense. As advanced prostate cancer uniformly overexpresses oncogene c-myc, we have selected this oncogene for inhibition in these initial studies. By transferring antisense sequences into prostate cancer cells, using a disabled mouse virus called a "vector", we change gene expression within the cancer cells so the cancer cells now grow more slowly and their spread is diminished.

Experiments in mice have shown that the transfer of antisense c-myc sequences into prostate cancers using viral vectors, resulted in a marked decrease in the growth and spread of the cancer. In similar breast cancer studies, we have found no evidence of spread of the virus to other tissues within the body, and no apparent ill effects from the viral vectors. Based upon these findings, we propose a human clinical trial for patients with widespread prostate cancer. In this study, patients will undergo injection of viral vector into the cancerous prostate in an attempt to induce regression of the cancer and to stop the spread of the cancer cells. This goal will allow patients to die with prostate cancer from natural causes and not from prostate cancer. The patient population will consist of men with advanced prostate cancer who have failed standard therapy and who have an expected survival of a 6 to 18 months.