Precision radiation therapy may improve survival rates of some lung cancer patients

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A radiation therapy that uses multiple radiation beams to target tumors precisely has been shown to eliminate the primary tumor and ultimately may improve survival rates for lung-cancer patients unable to undergo surgery, according to UT Southwestern Medical Center physicians who led a national clinical trial of the treatment.

In a study appearing in the March 17 issue of *The* Journal of the American Medical Association, primary lung cancer did not recur in nearly 98 percent of the 55 participants who received stereotactic body radiation therapy (SBRT). More than half of these patients - 56 percent - were alive three years after diagnosis, while less than 20 percent ultimately died of metastatic lung cancer.

Dr. Robert Timmerman, vice chairman of radiation oncology at UT Southwestern, is lead author of the study and the principal investigator of the Radiation Therapy Oncology Group (RTOG) 0236 trial - the first North American multicenter study to test SBRT in this patient population.

SBRT is a noninvasive procedure that delivers radiation beams to a tumor in a concentrated, extremely precise manner. Each of these beams is relatively weak and causes very little damage when traveling through the patient's body. When all the beams converge at the tumor, however, their cumulative effect delivers an extremely potent high dose aimed at destroying the target cells with great precision.

In this study, the 55 patients diagnosed with early-stage non-small cell lung (NSCL) cancer were unable to have their tumors surgically removed because of unrelated medical conditions, which left many of the subjects quite frail. Instead of conventional radiation therapy, which is often offered to such patients and is administered in 20 to 30 outpatient treatments, the participants were treated with SBRT during three outpatient treatments.

"Despite the high potency of the treatment, fewer than 20 percent of these extremely frail patients experienced a serious health decline," said Dr. Timmerman, who is considered one of the top international experts on stereotactic radiotherapy. "We believe these findings justify SBRT as a standard of care treatment for lung cancer in patients with serious medical problems like emphysema, heart disease and strokes.

"Primary tumor control is an essential requirement for the cure for lung cancer," he said. "SBRT as delivered in this clinical trial provided more than double the rate of primary tumor control as conventional radiotherapy described in earlier reports."

Dr. Timmerman said the patient outcomes in this study were better than researchers had expected and are similar to the risks for healthier patients who undergo radical surgery - the standard treatment for early-stage NSCL cancer for the past century.

"The findings support ongoing clinical research that is investigating the use of SBRT in healthier patients who currently undergo surgery for their early-stage NSCL," Dr. Timmerman said. "SBRT is fast, convenient and very effective."

Provided by UT Southwestern Medical Center