Stereotactic radiotherapy provides excellent local control for lung malignancies

March 20 2012, By Gale Smith

(Medical Xpress) -- Image-guided stereotactic radiation therapy is well tolerated and very effective in locally-controlling lung cancer, Methodist Cancer Center researchers report in the April issue of the *Journal of Radiation Oncology*.

Radiation oncologist Bin Teh, M.D., led the four-year study of 84 patients with primary, secondary or recurrent lung cancer. The use of stereotactic body radiation therapy (SBRT) over the course of five treatments in a two-week period resulted in 100 percent local control of all recurrent and metastatic lesions; and 92.6 percent local control of primary lung malignancies.

"These patients were not candidates for open surgery. By offering them SBRT, we were able to provide good, long-term local control and improve quality of life with minimal side effects from the treatment," said Teh, the paper's senior author and a pioneer of SBRT at Methodist. "Advances in radiotherapy, including SBRT, allow us to provide a more precise delivery that is non-invasive, and we can focus on the cancer site while preserving critical surrounding normal tissue."

SBRT is a technique that precisely targets radiation to a tumor while minimizing radiation to surrounding normal tissue such as the heart, esophagus, lung, spinal cord, bronchial trees and blood vessels. This targeting allows treatment of small- or moderate-sized tumors in either a single or limited number of fractions. Teh has treated more than 500 patients with SBRT, also known as stereotactic ablative body

radiotherapy (SABR), for multiple tumor sites including lung, liver, spine, bone, lymph nodes, adrenal and kidney over the past eight years. Advances in image-guided radiotherapy (IGRT) also allow for more accurate treatment plans prior to radiotherapy.

Additional research to compare SBRT and open surgery is ongoing. Teh says current literature suggests SBRT is as good as open surgery, but patients tolerate SBRT better and there are no risks from anesthesia, bleeding, infection and recovery time.

Study patients received outpatient SBRT treatment five times over a two-week period, instead of the conventional daily radiation therapy over a six-to-eight-week timeframe. These patients received more potent treatments, delivering higher dosages of radiation each day, which resulted in better control of overall tumor growth.

Additional study co-authors from Methodist include Dr. Brian Butler, chairman of the department of radiation oncology; Drs. Arnold Paulino and Angel Blanco, radiation oncologists; Dr. Shanda Blackmon, thoracic surgeon; and Dr. Stephen Chiang, nuclear medicine radiologist.

Patients with pathologically proven malignant lung lesions were treated using SBRT with prescribed doses of 40, 50, and 60 Gy in five treatments. One hundred and three lesions were treated in 84 patients between June 2004 and June 2008, and 69 lesions in 56 patients were eligible in this analysis. No severe (grade >2) toxicities were noted. Two-year local control rates were 92.6 percent and 100 percent for primary and recurrent/metastatic groups, respectively.

Study patients were reviewed by the Methodist Cancer Center's multi-disciplinary thoracic tumor board, consisting of thoracic oncology surgeons; pathologists specializing in thoracic/lung cancer; diagnostic radiologists, including nuclear medicine physicians; radiation

oncologists; and medical oncologists. Patients with smaller tumor and higher dosage showed improved survival. The study suggests that dosage is important in the SBRT approach, but additional research is needed.

The research was supported by in part by a Grant-in-Aid 361 for Cancer Research from Cancer Fighters of Houston, Inc.

Provided by Methodist Hospital System