

Targeted radiation controls metastatic kidney cancer

DALLAS – Aug. 1, 2019 – Investigators at UT Southwestern Medical Center’s [Simmons Comprehensive Cancer Center](#), who are members of the [Kidney Cancer Program](#), report an innovative strategy for treating advanced kidney cancer. In a longitudinal study published today in the [International Journal of Radiation Oncology, Biology, Physics](#), researchers show how the use of a powerful, targeted radiation technique called stereotactic ablative radiotherapy (SAbR) can effectively treat metastatic disease while delaying the need for systemic (drug) treatments, which often come with side effects.



Metastatic kidney cancer is uniquely challenging because the disease can act so differently from one patient to the next. When a tumor metastasizes and spreads to other parts of the body, it does so with varying degrees of severity. Some kidney cancer patients have oligometastatic disease, from the Greek word oligos meaning “few,” and have a small number of metastases. With a limited number of tumors, investigators discovered that it is possible to control the disease by tightly targeting the tumors with high doses of radiation that kill the cancer.

In the study, 47 patients received ablative radiation to a combined 68 tumors, resulting in control rates of over 90 percent two years after the radiation therapy. Most patients received one course of radiation with some receiving up to three rounds to target tumors that appeared after the initial SAbR treatment, according to Dr. [Raquibul Hannan](#) (pictured above), radiation oncology co-leader of the Kidney Cancer Program and co-corresponding author of the study – along with Drs. [Robert Timmerman](#) and [James Brugarolas](#). Remarkably, two and a half years later, nearly 40 percent of patients did not need any additional treatment beyond SAbR. While this follow-up time is relatively short, the results suggest that for some patients, radiation alone may be enough to control their disease long term. This finding could have a significant impact on patients’ quality of life, since radiation therapy was well tolerated, while systemic, or whole-body drug treatments like targeted therapy and immunotherapy often include a myriad of unpleasant and even toxic side effects.

While metastatic disease could not be ultimately controlled with local radiation alone for some patients, SAbR delayed the use of systemic therapy by 15 months, on average. Importantly, the duration and effectiveness of subsequent drug treatment was seemingly unaffected by SAbR, suggesting that SAbR may provide a survival benefit to patients and preserve their quality of life while leaving the door open for follow-up therapies, if needed.



“This is a potential paradigm shift in how we view and treat advanced disease by outright delaying the use of systemic therapy until otherwise necessary,” Dr. Hannan said.

Dr. Timmerman (*pictured left*), a SAbR pioneer and Fellow of the American Society for Radiation Oncology, echoed the novelty of the approach. “What is truly innovative is the use of SAbR to control the cancer not just initially, but while it remains oligometastatic,” he said. “To my knowledge, this is the first time that SAbR was used in such a manner in any cancer type.”

The study builds on a long-standing tradition of pioneering radiation therapy approaches at UT Southwestern, where the largest series of avant-garde SAbR treatment for kidney cancer was recently reported ([Wang et al., 2017](#)).

“This is an approach worth considering for selected patients,” said Dr. Brugarolas, Director of the UT Southwestern Kidney Cancer Program. “The study shows how multidisciplinary care can bring new treatment options for our patients.”

The oligometastatic treatment paradigm is being evaluated in a prospective phase two clinical trial ([NCT02956798](#)) led by Drs. Hannan and Brugarolas, which is currently accruing patients at UT Southwestern. “A national study is also under consideration,” Dr. Hannan added.

Dr. Hannan is an Associate Professor of Radiation Oncology and Immunology. Dr. Timmerman, Professor of Radiation Oncology and Neurological Surgery, holds the Effie Marie Cain Distinguished Chair in Cancer Therapy Research. Dr. Brugarolas, Professor of Internal Medicine, holds the Sherry Wigley Crow Cancer Research Endowed Chair in Honor of Robert Lewis Kirby, M.D. Also contributing to the study were Dr. Yuanyuan Zhang, Jonathan Schoenhals, Alana Christie, Dr. Osama Mohamad, Chiachien Wang, Dr. Isaac Bowman, Dr. Nirmish Singla, Dr. Hans Hammers, Dr. Kevin Courtney, Dr. Aditya Bagrodia, Dr. Vitaly Margulis, Dr. Neil Desai, Dr. Aurelie Garant, and Dr. Hak Choy. Dr. Hammers is a Eugene P. Frenkel, M.D. Scholar in Clinical Medicine, and Drs. Bagrodia and Desai are both Dedman Family Scholars in Clinical Care. Dr. Choy holds The Nancy B. and Jake L Hamon Distinguished Chair in Therapeutic Oncology Research.

About UT Southwestern Medical Center

UT Southwestern, one of the premier academic medical centers in the nation, integrates pioneering biomedical research with exceptional clinical care and education. The institution’s faculty has received six Nobel Prizes, and includes 22 members of the National Academy of Sciences, 17 members of the National Academy of Medicine, and 15 Howard Hughes Medical Institute Investigators. The full-time faculty of more than 2,500 is responsible for groundbreaking medical advances and is committed to translating science-driven research quickly to new clinical treatments. UT Southwestern physicians

provide care in about 80 specialties to more than 105,000 hospitalized patients, nearly 370,000 emergency room cases, and oversee approximately 3 million outpatient visits a year.

###