Treating spinal metastases with fewer, higher doses of radiation reduces pain more effectively

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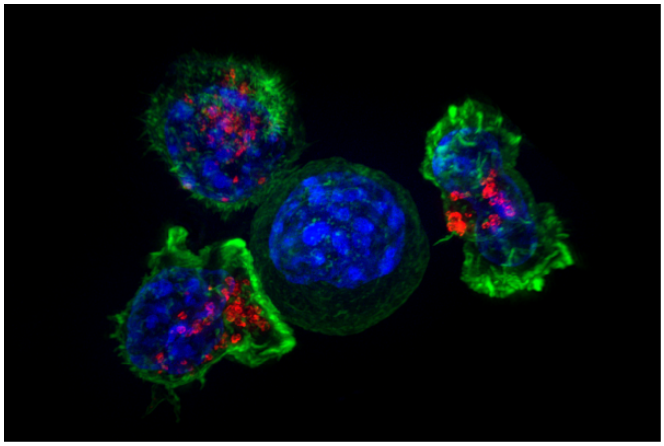

Killer T cells surround a cancer cell. Credit: NIH

A new study shows using fewer and higher doses of high-precision radiation therapy is a more effective approach for treating painful spinal tumors than conventional radiation therapy. More than twice as many patients treated with stereotactic body radiation therapy (SBRT) reported an enduring, complete reduction in pain, compared to those treated with conventional radiation. Findings from the Canadian phase II/III trial (NCT02512965) will be presented today at the American Society for Radiation Oncology (ASTRO) Annual Meeting.

"This is the first phase III randomized trial that has shown an improvement with dose escalation for painful spinal lesions," said lead author Arjun Sahgal, MD, a professor and deputy chief of radiation oncology at the Sunnybrook Health Sciences Centre of the University of Toronto. "Pain deteriorates a patient's quality of life and nobody with advanced cancer should have to endure this kind of pain. Patients with painful spinal metastases who meet the eligibility criteria should be offered this treatment."

Spinal metastases are lesions on the spine that have spread from cancer that first occurred elsewhere in the body. While cancer can spread to any part of the body, two-thirds of patients with cancer will experience bone metastases, most commonly in the spine; in fact, research has shown that 70% of patients with terminal cancer develop spinal metastases before they die. Tumors that grow in the spine can cause pain, bone instability and neurologic symptoms, such as weakness, difficulty walking and bowel and bladder problems. Once cancer has spread to the spine, it is rarely considered curable, though there are treatment options to help patients live longer with less pain.

Radiation therapy is commonly used to relieve the pain of spinal metastases, by shrinking the tumors and reducing inflammatory cells. It is delivered through multiple fractions of lower-dose, conventional radiation (CRT), or though SBRT, which allows radiation oncologists to target tumors precisely with very high doses of radiation in fewer fractions. No definitive standard-of-care dose has yet been established for radiation therapy to treat painful spinal metastases.

In this phase II/III study from the Canadian Cancer Trials Group, researchers randomized patients whose primary tumors (mainly in the breast, urinary tract or lung) had metastasized to painful spinal lesions. Patients were treated with either two SBRT fractions for a total dose of 24Gy (n=114), or five CRT fractions for a total dose 20Gy (n=115). Eligible patients reported initial pain scores of greater than two on a scale of 1-10 (with a median score of five) using the Brief Pain Inventory. Pain scores were measured again at three and six months.

Patients in both treatment groups experienced reductions in pain from spinal metastases. After three months, 35% of patients in the SBRT arm of the trial, compared to 14% of those in the CRT arm, reported a complete response rate, or no remaining pain from their lesions (p