

New algorithm decodes spine oncology treatment

February 6 2018, by Haley Otman



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To resolve the confusion and address the continually changing landscape of [spine oncology](#), a recent Michigan Medicine-led publication details a guide to explain the management of spinal metastases.

Published in *The Lancet Oncology*, the work is the result of reviewing all of the existing studies and pulling in experts from across the world to provide insight. The goal, says senior author Nicholas Szerlip, M.D., a neurosurgeon at the University of Michigan, is to get all providers on the same page.

First author Daniel Spratt, M.D., who with Szerlip co-founded U-M's multidisciplinary spine oncology clinic, says [patients](#) with spine metastases are commonly managed in silos without integrated care. A patient with a spine metastasis might see a variety of subspecialty doctors. Recommendations could range from pain management to more aggressive treatment, and referring providers don't always know what will come out of a referral to spine oncology experts, or when a referral is necessary.

"Spine oncology is such a multidisciplinary pathology," says Szerlip, an associate professor. "We wanted to form a transparent understanding so everyone, from the oncologists and primary care providers to fellow neurosurgeons who aren't specifically trained on this, could lean on one algorithm in language we can all understand."

Spratt describes the algorithm, a report from the researchers' new International Spine Oncology Consortium, as a step-by-step method designed to help comprehensively manage these patients as they grow in number and their life spans lengthen after diagnosis. He says the goal is to help providers treat the patient and not just the tumor, taking into

account the patient's performance status, life expectancy, burden of systemic disease and available treatment options.

"Most of the frameworks that have been available prior to this have focused on just surgery or just radiation," Spratt says. "This algorithm integrates all of the specialties together, including PM&R, radiology and medical oncology, to provide a much more personalized treatment approach for patients with metastatic [cancer](#) to the spine."

A different approach

Cancer can spread widely through the body, yet this algorithm specifically focuses on metastases to the spine. Researchers say a metastasis in the spine throws a wrench in typical treatment plans because of the sensitivity of the spinal cord. Quality of life can worsen much faster.

"A spine metastasis causes a lot of pain," Szerlip says. "People can live with metastases in other areas of the body without much discomfort, but bone pain hurts a lot, and the ability to treat a tumor near the spinal cord is less. Surgeries on other bones are much easier than surgeries on the spine, and less morbid."

Popular treatment paths address both the neurologic benefit and the oncologic benefit. That might mean a surgical decompression of the tumor, followed by radiation to attempt to control the cancer. Spratt is particularly excited about offering spine stereotactic body radiotherapy (SBRT), a form of high-dose radiation that requires just one to three treatments. Conventional radiation results in only about a 50 percent reduction in pain three months after treatment, and the cancer is eliminated for only a short time. Spratt says spine SBRT is a game changer, showing greater than 90 percent pain reduction and more effectively controlling tumor growth beyond one year post-treatment.

"With this technique, you've basically spared the spinal cord so you can give a much higher dose just millimeters away," he says.

Patients are living longer

Most patients who present with metastatic spine cancer know they have cancer and have had it for some time, Szerlip says. The cancers that most often lead to spine metastasis tend to be renal cell, breast, prostate, sarcoma and lung, the researchers say.

But not all patients who could benefit from a spine oncology clinic will set foot inside one. Szerlip and Spratt say their algorithm will also raise awareness for doctors who care for people with metastatic spine cancer.

"If you look back 10 or 20 years, you'd see people with spine metastasis lived in the order of months," Spratt says. "Now, with new systemic therapies, targeted therapies and immunotherapies, it may be years."

That means there is more opportunity to treat the cancer, to manage the patient's comfort and to prevent painful and debilitating compression that can result after a period of living with a tumor pressing on your [spinal cord](#).

Szerlip says not long ago, physicians were much less likely to send a spinal metastasis patient to a neurosurgeon because of the high morbidity of surgeries. Now, he says, spine oncology clinics can offer additional options and surgical procedures with less morbidity than in the past. However, these huge surgeries are still highly morbid.

A long-term project

The algorithm that leads to these treatment decisions takes the user

through a series of steps starting with an assessment of life expectancy. Then, the systemic burden of the disease is considered, followed by a calculation of how controlled the disease is, and then a consideration of systemic [treatment](#) options. It's the result of combing through 243 studies and learning about what other spine oncology clinics' practices look like.

However, Szerlip says much more data are needed to continue to develop best practices and prove that current efforts are most effective.

"Identifying which patients should get these treatments is also difficult," he says. The researchers are working with oncologists to help determine who will live long enough to benefit from these procedures.

He says basic science research will be important to continue to develop treatments specifically for spine metastases, because they develop differently than other metastases.

Jessica Webster Sendra contributed to this report.

More information: Daniel E Spratt et al, An integrated multidisciplinary algorithm for the management of spinal metastases: an International Spine Oncology Consortium report, *The Lancet Oncology* (2017). [DOI: 10.1016/S1470-2045\(17\)30612-5](https://doi.org/10.1016/S1470-2045(17)30612-5)

Provided by University of Michigan

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