

Radiofrequency ablation for pain palliation in patients with spinal metastases



Radiofrequency ablation (RFA) is a reliable tool for the treatment of various pain conditions as well as the destruction of some types of soft-tissue tumors, such as liver or lung lesions, when conventional surgery is not an option. In recent years, however, RFA has emerged as a highly successful approach to alleviating the intense pain experienced by cancer patients with bone metastases. UCLA is one of only a few centers in the country with experts trained to offer RFA for this type of palliative care and is working with oncologists throughout the region to identify patients who may benefit.

Need for improved palliative care

Image-guided RFA is a minimally invasive treatment that harnesses radiofrequency energy to heat and kill cancer cells. The procedure is typically performed in an outpatient setting with the patient under conscious sedation. A needle electrode is placed through the skin and energy is passed into the tumor to destroy it. The use of RFA to treat refractory bone metastases stems from an urgent need for improved palliative care and pain relief.

Improving quality of life for patients with spinal metastases

Image-guided RFA offers significant advantages over persistent use of narcotics for patients receiving palliative care, says Pablo Villablanca, MD, professor of radiology and director of the Interventional Spine Service and the Radiology Department Pain Service at UCLA.

“The biggest problem with narcotics is they are not very effective for pain caused by metastatic spinal lesions,” he says. “We can do so much better. Image-guided RFA provides an opportunity to make a difference.”

The device used by UCLA is steerable, which allows for a controlled burn, minimizing the risk of side effects and producing high rates of complete and long-lasting pain relief. Patients are often able to resume work and other activities, Dr. Villablanca says.

“It’s so rewarding to see patients walk again and enjoy their lives and their professions,” he says. “We need to reach out to the community and let people know this procedure is available. We have the expertise and very good outcomes consistent with what’s in the literature.”

Metastasis to bone, particularly vertebral metastases, eventually occurs in 30 to 75 percent of patients diagnosed with breast, prostate or lung cancer. Radiotherapy and chemotherapy are first-line treatments for these individuals. When conventional treatments fail, patients are often prescribed high doses of opioid analgesics for pain control. This strategy has come under scrutiny, however, as the country grapples with an unprecedented surge in opioid addiction and addiction-related deaths. Moreover, opioid therapy often fails to fully alleviate metastasis-related spinal pain and leaves patients heavily sedated, without the ability to engage with their families and friends or in activities they enjoy.

Precise targeting of lesions

In contrast, RFA can provide significant, durable pain relief to patients after a single session, reducing or eliminating the need for narcotics and providing patients with dramatic improvements in quality of life. Recent technological advances have boosted the precision, safety and efficacy of RFA to the spine. The system incorporates a bipolar navigational instrument that allows the interventional radiologist to measure distal and proximal temperature and deliver heat to a tightly defined target. Computed tomography (CT) guided precision navigation is critical to protecting the spinal cord and surrounding healthy tissue.

Spinal metastasis and removal of tumors may result in a weakened spine. During the procedure, the system can also be used for kyphoplasty, a procedure to stabilize the spine with a cement called polymethylmethacrylate (PMMA). Kyphoplasty minimizes the risk of compression fracture in a weakened spine. If a fracture and metastasis are present, RFA will treat the tumor and PMMA cement will stabilize the bone. Pain from the fracture will then decrease. Additionally, the system can be used to obtain osseous tissue for analysis.

Low risk of adverse events

Studies show RFA for spinal metastases results in clinically significant pain relief for 90 percent of patients. Pain relief is often immediate, or pain subsides within a few days. The procedure takes about one hour. Patients treated for metastases to the spine, like those treated for lesions in the iliac or sacrum bones, are typically released as early as a few hours after the procedure. Adverse events are rare but can include bleeding, infection and damage to arteries or nerves.

Unlike many other cancer-pain management treatments, image-guided RFA for bone metastasis can be repeated, if necessary, although most patients do not experience pain recurrence. While indicated for patients with bone metastasis who have failed conventional therapies, RFA may also be an option for patients who decline radiotherapy. RFA does not prevent patients from receiving chemotherapy or radiotherapy at a later time. The procedure is contraindicated in patients with metastases that have extended into the spinal canal.

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