

New technique alleviates painful bone metastases

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A high-dose of ultrasound targeted to painful bone metastases appears to quickly bring patients relief, and with largely tolerable side effects, according to new research presented by Fox Chase Cancer Center scientists at the 49th Annual Meeting of the American Society of Clinical Oncology on Monday, June 3.

During the procedure, known as MR-guided focused ultrasound, doctors direct a concentrated beam of energy to specific nerve endings that are causing pain in [bone metastases](#). These patients typically have a significant amount of discomfort—half of [study participants](#) rated their pain at least a 7 out of 10—but within a handful of days, most said they felt significant relief.

Although Fox Chase patients received [local anesthesia](#) during the procedure, the most commonly reported side effect was pain—which can often be alleviated with additional anesthesia, says study author Joshua Meyer, MD, attending physician in the Radiation Oncology Department at Fox Chase. "That's [temporary pain](#), which is gone as soon as the procedure is over," he says. "The whole reason we're doing the procedure is for the pain relief that comes afterwards. And that's relatively quick—we see a response by a day or so, and within three days of the procedure most patients are reporting a significant improvement."

Specifically, 67% of the 107 treated patients said their pain was "much improved" after the treatment, and that relief continued through the end of the three-month study. In comparison, among a group of 35 patients

that received a "sham" treatment—they entered the machine but did not receive the intervention—only 20% reported some pain relief, Meyer and his colleagues reported.

During the procedure, patients enter into an [MRI machine](#), which allows clinicians to direct a cone of ultrasound energy at specific, targeted bone sites that are causing pain. The MRI also acts as a thermometer to measure the temperature deep within the body created by the high dose of energy, which generates enough heat to burn the nerve endings that are causing pain.

Although pain relief was durable until the end of the study at 90 days, it's not clear how much longer the pain relief lasts, says Meyer. "We've had reports of patients experiencing pain relief up to a year or more outside of the study."

Typically, patients with bone [metastases](#) are treated with radiation, which shrinks the bone cancer that is putting pressure on [nerve endings](#), causing pain. This technique also treats the cancer (MR-guided focused ultrasound may not), but often takes weeks before patients experience [pain relief](#), and not all will respond, says Meyer. In addition, others may not be eligible to receive additional radiation, if they have limited bone marrow function, for instance, he notes. The latest research didn't compare the effectiveness of the ultrasound technique to radiation, but the response to ultrasound appears "within the same ballpark of that in previous studies with radiation."

MR-guided focused ultrasound has been approved by the U.S. Food and Drug Administration, and is available at Fox Chase Cancer Center, as well as a handful of other facilities around the country.

Provided by Fox Chase Cancer Center

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