Research shows promise for microwave ablation (MWA) to relieve painful bone and soft-tissue tumors

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First-of-its-kind research presented today showed microwave ablation (MWA) therapy cut pain in half for patients with painful bone and soft-tissue tumors and took less time to complete than radiofrequency ablation. Pain relief lasted over 4 months on average and up to 15 months in some patients, according to results reported at the 29th Annual Meeting of the American Academy of Pain Medicine.

Approximately 10,600 new cases of soft-tissue sarcoma and 2,570 new cases of bone sarcoma were diagnosed in the United States in 2009, according to statistics published through the American Cancer Society. Managing the often-significant pain related to the tumors can be difficult. MWA is a relatively new therapy that has been applied to the management of various tumors, including those located in the liver, adrenal gland, thyroid and kidney, but had not yet been described for this indication, the study authors said.

Writing in a scientific poster, investigators from the Centre Hospitalier Universitaire, a university hospital in Besançon, France, stressed that results are preliminary but said percutaneous MWA treatment may be effective for patients whose pain from bone and soft-tissue tumors has been unrelieved by previous therapies.

"This technique may be applied to any patient suffering from bone tumor pain, mainly in patients suffering from bone metastases,

refractory to conventional therapies," said Adrian Kastler, MD, a resident in Interventional Pain Management and lead author. "The main advantage of ablation techniques is the fast pain relief obtained—immediately after the procedure—as opposed to delayed pain relief obtained with radiation therapy."

Many of the 13 patients in whom a total of 20 MWA procedures were performed showed signs of ongoing disease process. Of the 20 lesions, 16 had metastasized to the lungs, thyroid and other locations. Twelve of 15 bone lesions were osteolytic, showing degeneration of bone tissue. Before the procedure, the mean average pain score reported by patients was 7.29 out of a possible 10, as measured by a visual analogue scale (VAS). The lesions ranged in size from 12 mm to 120 mm.

MWA is performed percutaneously, or through the skin, by inserting small probes directly into a tumor that are then heated, resulting in thermal coagulation of the tissue. The investigators used an Acculis MTA-2 generator, a frequency source of 4.5 GHz and a 17-gauge antenna.

During the procedure, patients received local anesthesia and nitrous oxide. Insertion of the probe was guided by CT scan. The mean ablation time was 4.85 minutes and ranged from 1 to 13 minutes. Each cycle lasted an average of 30 seconds to 3 minutes, and there was an average of 4.2 cycles per ablation. The energy used was 60 watts on average.

Patients reported immediate pain relief of at least 50% for 19 of the 20 procedures with results lasting for an average of 4.36 months (range 0.5-15months). As with any needle procedure, bleeding or infection at the ablation site was a risk. The researchers reported only 1 complication: a secondary abscess at the site that required drainage.

The time to complete the ablation was less than is typical for

radiofrequency ablation, which can take up to 30 minutes depending on the size of the lesion being treated. Dr. Kastler said MWA allows more patients to be treated when time is a factor.

Dr. Kastler stressed that no manufacturer guidelines exist regarding bone or soft tissue but said the study demonstrated that the use of a short, low-powered cycle was safe. He called for further study using different parameters of intensity and time of ablation to set up guidelines based on tumor size. Eventually he expects the indication to reach beyond palliation.

"Our research showed that the use of MWA in bone and soft-tissue tumors is feasible and effective concerning pain palliation," Dr. Kastler said. "However, MWA needs to be studied in order to apply the same procedure in a curative intention."

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