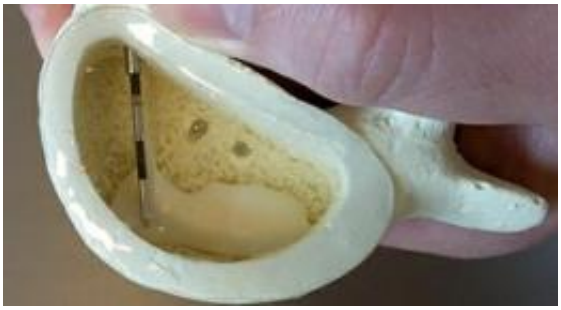
Medical Xpress

Single session ablation relieves misery of cancer that has spread to the bones

April 3 2012, By Brian Donohue



The radiofrequency ablation probe's tip, with positive and negative contacts, produces a larger, more predictable area of ablation. Credit: Brian Donohue

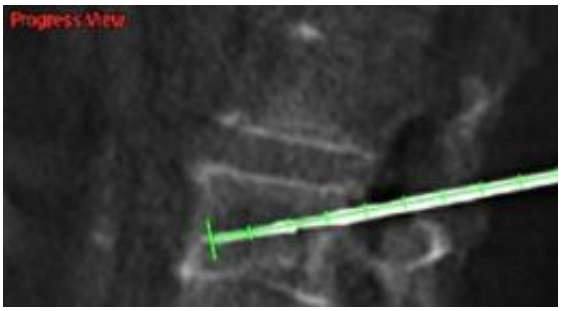
(Medical Xpress) -- Radio frequency ablation (RFA) enables doctors to destroy abnormal growths, quell arrhythmias and halt nerves' transmission of pain signals.

Needlelike RFA probes generate heat that chars tissues within a millimeter or two of the probe's tip. This is fine for small targets but the technology has been limited by its short range – the charred tissue impedes more distant ablation – and by somewhat unpredictable heat patterns caused by single-polarity probes (two or more probes have been needed to conduct energy).

Recent advances have overcome these challenges, thereby increasing RFA's utility against cancer.

“The range increases to a sphere about the size of a ping-pong ball. If you need to ablate a malignant tumor, this type of device is effective,” said Dr. Michael Gofeld, a specialist at the UWMedicine Center for Pain Relief at UW Medical Center-Roosevelt.

New probes are internally water-cooled, which dissipates the heat around the needle such that tissue is ablated but without residual char. This extends the instrument’s reach. Also, the placement of positive and negative conductors on one probe creates a predictable zone of ablation.



Real-time CT scans of the spine (here depicting one of four planes) confirm that the probe follows its planned entry angle and depth. Credit: Michael Gofeld

Cancer specialists typically refer patients to Gofeld to relieve pain after chemotherapy and multiple external-beam radiation therapies have failed against the metastases. A metastases is cancer that has moved to another part of the body from its original location. Gofeld frequently treats people whose lung, kidney or breast cancer has spread, excruciatingly, to the pelvis or spine. Metastatic prostate cancer is most prone to invade bone but its accompanying pain is more diffuse, he added.

“Patients with a bone metastasis receive radiation therapy as the standard of care,” he said, “but a large portion of them are not candidates because

of vital organs located nearby or because they have exceeded the maximum radiation dose. About 30 percent of patients don't respond to radiation at all. Others cannot lie still for the treatment because of pain."

For these patients, some cancer specialists may perceive hospice care and high-dose opioid painkillers as the lone remaining options. Gofeld instead would propose RFA – and as an earlier consideration, too.

"There are two goals here: first is palliation of disease. If we ablate the metastasis, we are slowing its potential invasion of other organs, so it is disease-modify ing. Second, we aim for symptom palliation, that is, the pain," Gofeld said.

Cooled RFA is approved by the Food and Drug Administration – but strictly to relieve pain. Employing it to combat cancer currently constitutes off-label use. In Europe RFA is approved for both goals. Gofeld thinks similar U.S. approval is inevitable. He is advocating for a patient registry that would support such an application.

The big-picture aim is to improve life quality for the 300,000 Americans each year diagnosed with bone metastasis, a population surviving longer by dint of more effective chemotherapies. Metastatic growth that causes vertebral compression or collapse in the spine, however, would leave an otherwise able patient incapacitated.

"External-beam radiation cannot prevent vertebral collapse; it creates sclerosis of the bone," Gofeld said. "[With RFA] you can reduce the pain and halt the spread of disease in the spine, and then deliver glue in the same procedure to reinforce the vertebra and prevent imminent fracture. This helps people retain their autonomy in a way that standard-of-care therapy cannot."

He contrasted a single, 40-minute RFA procedure with a typical

10-session course of radiation therapy that might spur side effects of fatigue, hair loss and skin and nerve damage.

“RFA is primarily palliative but can be a complementary treatment for patients with an isolated metastasis. If a patient is a legitimate candidate for an external beam radiation, do that,” Gofeld said, “but patients who fail or are not candidates for external beam radiation, or who don’t want that – they have another option.”

Provided by University of Washington

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