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Electrical pulse treatment pokes holes in hard-to-treat tumors
New minimally invasive therapy safely treats complex cancers, leaves healthy tissues intact

NEW ORLEANS (April 14, 2013)—A new, minimally invasive treatment that tears microscopic holes in tumors without harming healthy tissue is a promising treatment for challenging cancers, suggests a preliminary study being presented at the Society of Interventional Radiology’s 38th Annual Scientific Meeting in New Orleans.

“Irreversible electroporation (or IRE) is a new way to attack cancer, using microsecond electrical pulses to kill cancer at the cellular level without damaging healthy tissue nearby. It may be especially beneficial in treating liver, lung, pancreatic and other cancers that are close to blood vessels, nerves and other sensitive structures,” said Constantinos T. Sofocleous, M.D., Ph.D., FSIR, lead author and interventional radiologist at Memorial Sloan-Kettering Cancer Center in New York, N.Y. “IRE appears to be especially beneficial in people with cancer that has spread beyond the primary tumor who do not have good treatment options,” he added. “IRE uses strong electric fields to create tiny holes in the cell membrane, killing the cancer by disrupting the balance between the molecules inside and outside the cell—without resulting in other cell damage. This makes IRE potentially ideal for treating tumors close to sensitive structures,” said Sofocleous.

Whereas other treatments—such as surgery, or heating and freezing (also known as thermal ablation)—can damage healthy tissue near the tumor, IRE precisely perforates the cancer cells, posing fewer risks to major blood vessels, nerves, bile ducts and other vital structures, he said.

IRE has been shown to be safe in the treatment of cancers that have metastasized, or spread, to the liver, lung, bladder and the pelvic region. In this study, 25 participants with a total of 40 metastases to the liver from lung, pancreas, thyroid gland, prostate, uterus and uterine lining, ovaries and rectum primaries, were treated with IRE. The average size of the tumors was about two centimeters. IRE was used due to the location of the lesions, near critical structures that would be affected by thermal ablation. Researchers completed all 30 treatment sessions with no major complications, showing IRE to be safe enough for further investigation and expansion of its use to large clinical trials.

IRE is on the frontier of interventional radiology treatments that are nonsurgical and involve minimal risk and downtime for cancer patients. Interventional radiologist treatments involve making incisions the size of a pencil tip and use medical imaging to guide tiny instruments to the targeted tumors.

“Using the least-invasive treatments available, interventional radiologists are able to destroy entire tumors with a needle and image guidance,” said Sofocleous. “We often treat patients who have no other conventional treatment options or have such poor health that even minimally invasive surgery is too dangerous. Researchers are working to increase the effectiveness of IRE and eventually will test it against other treatments for these tumors, including radiofrequency ablation, microwave ablation and cryoablation,” he noted.

More information about the Society of Interventional Radiology, interventional radiologists and minimally invasive treatments can be found online at www.SIRweb.org.

Abstract 29: “Safety of Irreversible Electroporation (IRE) Treatment for Metastatic Disease in Humans,” M. Silk, T. Wimmer, G. Getrajdman, C.T. Sofocleous, J. Durack, S.B. Solomon, Memorial Sloan-

Highlights

- Minimally invasive electrical pulse treatment pokes microscopic holes in cancerous tumors without hurting healthy nearby tissue, research suggests.
- IRE appears to be beneficial in treating pancreatic, liver, lung and other challenging cancers, according to a study being presented at SIR 2013.
- While surgery and other treatments may damage blood vessels, nerves and other important structures, IRE precisely targets tumor cells, interrupting their growth at the cellular level.
- Interventional radiology treatments are an advance in medicine that generally replace open surgery and offer less risk, less pain and less recovery time compared to surgery.

Kettering Cancer Center, New York, N.Y., SIR 38th Annual Scientific Meeting, April 13–18. This abstract can be found at www.SIRmeeting.org.

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About the Society of Interventional Radiology

Interventional radiologists are physicians who specialize in minimally invasive, targeted treatments. They offer the most in-depth knowledge of the least invasive treatments available coupled with diagnostic and clinical experience across all specialties. They use X-ray, MRI and other imaging to advance a catheter in the body, such as in an artery, to treat at the source of the disease internally. As the inventors of angioplasty and the catheter-delivered stent, which were first used in the legs to treat peripheral arterial disease, interventional radiologists pioneered minimally invasive modern medicine. Today, interventional oncology is a growing specialty area of interventional radiology. Interventional radiologists can deliver treatments for cancer directly to the tumor without significant side effects or damage to nearby normal tissue.

Many conditions that once required surgery can be treated less invasively by interventional radiologists. Interventional radiology treatments offer less risk, less pain and less recovery time compared to open surgery. This year, SIR celebrates 40 years of innovation and advances in interventional radiology. Visit www.SIRweb.org.

The Society of Interventional Radiology is holding its 38th Annual Scientific Meeting April 13-18 at the Ernest N. Morial Convention Center, New Orleans. The theme of the meeting is 'IR Reaching Out,' adopted to illustrate the many ways the Annual Scientific Meeting provides valuable education to attendees with a broad range of diverse clinical interests and practice settings.

Local interviews and medical illustrations are available by contacting SIR's communications department staff: Ellen Acconcia, SIR communications manager/practice areas, eaconcia@SIRweb.org, (703) 460-5582, or Maryann Verrillo, SIR director of communications and public relations, mverrillo@SIRweb.org, (703) 460-5572.