Breakthrough Procedure Uses Electricity To Target Tumors

Interventional radiologists at Cancer Treatment Centers of America (CTCA) at Midwestern Regional Medical Center (Midwestern) performed the first Nanoknife procedure in Illinois, using electricity to target hard to access tumors. The technology, called NanoKnife®, uses electrical impulses to effectively break up tumors and destroy cancer cells that may otherwise be inoperable or allow for few treatment options due to their proximity to major arteries, airways and other vulnerable tissues. The NanoKnife procedure is commonly used to treat tumors located in the liver or pancreas.

"This is an innovative procedure that is specifically made for treating patients with cancerous tumors in high-risk locations," said Kenny Yoo , MD, interventional radiologist at CTCA at Midwestern. "Despite the name, there is no cutting involved. The minimally invasive treatment uses needles to supply an electrical current to the tumor's cancerous cells, which disbands the tumor."

Interventional radiologists use guided imagery to assist in locating the cancer and strategically place up to six needles around the exterior of the tumor. A generator device is then turned on to deliver a low, direct current of energy to the tissue, which punctures several nanometer-sized holes in the tumor, causing the cells to be unbalanced and die. Depending on the complexity of the tumor, the procedure takes approximately two to four hours to complete, at which time the patient is under general anesthesia.

"The NanoKnife technology allows us to pinpoint the exact location of the tumor and deliver energy to that specific area only, thus sparing healthy tissue and delicate areas of the body nearby," said Yoo.

Because of the precision it offers, NanoKnife is safe to perform near critical structures such as the gallbladder, diaphragm, bile ducts, bowel, and major blood vessels. It can be used to treat tumors in or near the liver, pancreas, kidney, retroperitoneum, adrenal glands, lymph nodes, pelvic or other soft tissue masses. The procedure offers an array of benefits to the patient, including minimal pain, few side effects and a short hospital stay since it is a minimally invasive procedure as opposed to open surgery. Additionally, the procedure can also be repeated if new tumors develop.

"This is an exciting advance that allows us to wage a better war against cancers that previously have had few options for treatment," said Yoo. "As a cancer hospital, we are committed to offering a wide range of treatment options so we can offer patients individual treatment plans based on their unique cancer."

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