

Sci-fi therapy fights brain tumors

Marilynn Marchione | The Associated Press

It sounds like science fiction, but a caplike device that makes electric fields to fight cancer improved survival for the first time in more than a decade for people with deadly brain tumors, final results of a large study suggest.

Many doctors are skeptical of the therapy, called tumor treating fields, and it's not a cure. It's also ultra-expensive — \$21,000 a month.

But in the study, more than twice as many patients were alive five years after getting it, plus the usual chemotherapy, than those given just the chemo — 13 percent versus 5 percent.

"It's out of the box" in terms of how cancer is usually treated, and many doctors don't understand it or think it can help, said Dr. Roger Stupp, a brain tumor expert at Northwestern University in Chicago.

He led the company-sponsored study while at University Hospital Zurich in Switzerland, and gave results Sunday at an American Association for Cancer Research meeting in Washington.

"You cannot argue with them — they're great results," and unlikely to be due to a placebo effect, said one independent expert, Dr. Antonio Chiocca, neurosurgery chief at Brigham and Women's Hospital in Boston.

Dr. George Demetri of the Dana-Farber Cancer Institute in Boston and a board member of the association hosting the conference, agreed but called the benefit modest, because most patients still die within five years. "It is such a horrible disease" that any progress is important, he added.

About the treatment

The device, called Optune, is made by Novocure, based in Jersey, an island near England. It's sold in the U.S., Germany, Switzerland and Japan for adults with an aggressive can-

cer called glioblastoma multiforme, and is used with chemo after surgery and radiation to try to keep these tumors from recurring, as most do.

Patients cover their shaved scalp with strips of electrodes connected by wires to a small generator kept in a bag. They can wear a hat, go about their usual lives, and are supposed to use the device at least 18 hours a day. It's not an electric current or radiation, and they feel only mild heat.

It supposedly works by creating low intensity, alternating electric fields that disrupt cell division — confusing the way chromosomes line up — which makes the cells die. Because cancer cells divide often, and normal cells in the adult brain do not, this in theory mostly harms the disease and not the patient.

What studies show

In a 2011 study, the device didn't improve survival but caused fewer symptoms than chemo did for people whose tumors had worsened or recurred after standard treatments. The U.S. Food and Drug Administration approved it for that situation.

A second study, in newly diagnosed patients, was stopped in 2014 after about half of the 695 participants had been tracked for at least 18 months, because those using the device were living several months longer on average than the rest.

The FDA expanded approval but some doctors were leery because the device wasn't compared with a sham treatment — everyone knew who was getting what. Study leaders say a sham was impractical, because patients feel heat when they get the real thing, and many would refuse to shave their heads every few days and use an inconvenient device for years if the treatment might be fake.

Some doctors said they would withhold judgment until there were long-term results on the whole group.

The new results

Now they're in: Median survival was 21 months for those given Optune plus chemo versus 16 months for those on chemo alone. Survival rates were 43 percent versus 31 percent at two years; 26 percent versus 16 percent at three

years, and 13 percent versus 5 percent at five years.

Side effects were minimal but included blood-count problems, weakness, fatigue and skin irritation from the electrodes.

"The device is now impossible to ignore ... it absolutely is an advance," said Dr. Andrew Lassarman, brain tumor chief at the Columbia University Medical Center/New York-Presbyterian Hospital. He consults for Novocure, as do some doctors running the study.

The latest National Comprehensive Cancer Center guidelines include Optune as an appropriate treatment for brain tumors. It's also being tested for pancreatic, ovarian and lung cancers; electrodes are worn on the belly or chest for those.

The price

A big issue is cost — roughly \$700 a day. Most U.S. insurers cover it but Medicare does not and "we are paying," said Novocure's chief executive, Bill Doyle. "We've never refused a patient regardless of insurance status."

The price reflects "an extremely sophisticated medical device, made in very low quanti-

ties," with disposable parts changed several times a week and a support person for each patient, he said. Plus 17 years of lab, animal and human testing.

That cost? "The round number is half a billion dollars," Doyle said.

One patient's experience

Joyce Endresen's insurance covers all but about \$1,000 a year for her device. "It's a great plan, and that's why I still work," said Endresen, 52, employed by a direct mail company in suburban Chicago.

She has scans every two months to check for cancer and "they've all been good," she said. "We celebrated two years of no tumor in December and went to South Africa."

Doctors say many patients won't try the device because of the trouble involved or because they don't want a visible reminder of their cancer. Not Endresen.

"I wear it and wear it proudly," she said. "It's an incredible machine and I'm fine not having hair."

FDA approves drug for aggressive multiple sclerosis

Linda A. Johnson | The Associated Press

U.S. regulators have approved the first drug for an aggressive kind of multiple sclerosis that steadily reduces coordination and the ability to walk.

The Food and Drug Administration approved Ocrevus last week after a large study found it slowed progression of the neurological disease and reduced symptoms.

While there are more than a dozen treatments for the most common form of MS, there's been

nothing specifically for people with the type called primary progressive MS. That type of MS is relatively rare, affecting about 50,000 Americans.

The drug also was approved for relapsing forms of MS, which progress more slowly.

It's given intravenously every six months. The drug was developed by Genentech, part of Swiss drugmaker the Roche Group. Genentech, based in South San Francisco, Calif., said the initial list price without insurance will be \$65,000 a year.

In primary progressive MS, the disease's course varies among patients, but symptoms gradually worsen from the start and there usually are no periods when symptoms subside.

Most of the estimated 400,000 Americans with MS have the relapsing-remitting type, in which symptoms can wane for months, even years, between flare-ups.

Symptoms are caused by the immune system attacking the fatty coverings on nerves in the brain and spinal cord that protect them, much like insulation on electrical wiring. As the coverings deteriorate, nerve "messages" aren't properly transmitted, disrupting movement and muscle control.

For patients with primary progressive MS, life span on average is shortened by six years, said Dr. Fred Lublin, director of the MS center at Mount Sinai Health System in New York City.

Since 1993, 14 drugs have been approved to slow the most common form of MS, but everything tested against primary progressive MS failed until now, said Lublin, a consultant to Genentech who was on the committee overseeing the study.

In the study testing Ocrevus for primary progressive MS, which involved 732 patients, Ocrevus had a "modest but definite slowing effect on the rate at which people develop disabilities," said Lublin.

Compared with study participants getting dummy infusions, patients given Ocrevus infusions had slower declines in walking ability and slower disability progression over nearly 2½ years.



The death of a rotator cuff

The rotator cuff is a group of four small muscles whose job it is to keep the head of the humerus (arm bone) centrally located in the glenoid fossa (socket) while the arm is moving. Each of the four muscles assists larger muscle groups when the arm moves in different directions. One of the four rotator cuff muscles, supraspinatus, assists with abduction of the humerus or raising the arm overhead from the side. Two of the four rotator cuff muscles, teres minor and infraspinatus, assist with externally rotating the humerus. The last of the four rotator cuff muscles, subscapularis, assists with internal rotation of the humerus.

At times a rotator cuff muscle can tear suddenly. This may occur with a fall or a powerful movement such as throwing a ball or swinging a racquet. But the vast majority of times the tear develops over time. The symptoms are typically pain that is worse at night and may affect sleeping. As time goes on there is gradually worsening of pain and eventually some weakness. Consequently, individuals may notice limitations in movement and activity.

One research paper (Hijjoka et al 1993) estimates that by the age of 60, there will be 60 percent of adults with some form of rotator cuff pathology. The question that must be

asked is why this condition is so common. The reason for this is the shoulder complex is comprised of several joints.

Two of the largest and most important joints are the Glenohumeral (GH) joint and the Scapula Thoracic (ST) joint. The GH joint is where the arm bone goes into the socket of the shoulder blade. The ST joint is where the shoulder blade glides along the rib cage. A rhythmic movement between the joints must exist for proper movement. If the arm is raised overhead to 180 degrees, the GH motion consists of 120 degrees and ST motion accounts for 60 degrees. An exercise to demonstrate this can be done by having someone hold your shoulder blade in a fixed position as you raise your arm and see how this feels. As you may notice, this exercise is very difficult to perform and may be painful. The reason for this illustration is that we spend much of our day and our lives in a position where our head is forward and mid back is in a forward position (flexed or slouched). Over the course of time, our mobility in our mid back and shoulder blades become less. This eventually increases pressure on our rotator cuff as we try to move our arm overhead and as we strength train. As a result, over time we develop tendonitis, micro-tears, and then eventually full thickness tears due to our poor posture. If

we started specific rotator cuff strengthening before we restore proper GH or ST movement, we will only make things worse.

Centerpointe Chiropractic and Physical Therapy will be hosting a FREE shoulder class on April 11th at 1 pm. The class will go over the importance of mobility/flexibility to the thoracic spine and upper extremity, posture, and strength/stability work. The class is designed for all individuals and will be modified according to each individual's capabilities, if needed. To register, go to our website at medinacenterpointe.com and click on the "Contact Us" tab or call our office at (330) 723-2225.

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The role insulin plays in the body

Metro Creative

Insulin plays a key role in metabolic functions in the body. People with diabetes have an intimate knowledge of insulin, particularly if they do not produce enough naturally. However, the rest of the public may be less knowledgeable about the role of insulin and its impact on overall health.

Insulin is produced in the pancreas of the human body. Its most important function is the way it interacts with glucose (blood sugar) to allow the cells of the body to use that glucose as energy. Insulin can be viewed as a type of key that unlocks the cells and enables glucose to enter. The pancreas senses when there is a spike in glucose in the bloodstream and reacts by producing insulin.

According to the Hormone Health Network, insulin also works to ensure the liver

stores excess glucose so that it is not actively in the blood. Stored glucose is called glycogen. This glycogen can be converted into fat when it is needed. Insulin also affects other metabolic processes, such as the breakdown of protein or fat.

If insulin is not being produced in the right amounts, the result is high blood sugar, or hyperglycemia. Chronic hyperglycemia is the hallmark of diabetes mellitus. Complications of high blood sugar include damage to the nervous system, kidneys, eyes, and the extremities.

Type 1 diabetes occurs when the pancreas fails to produce enough insulin. Supplementation with insulin will be necessary to avoid drastic changes in blood glucose levels.

When a person has type 2 diabetes, cells fail to respond to insulin properly. This is

referred to as insulin resistance. As the disease progresses, a lack of insulin may also develop. Typically with this type of diabetes, excessive body weight and not enough exercise are the culprits in insulin resistance. Eating a healthier diet and becoming more physically active can help reverse the condition.

Too little glucose in the blood (hypoglycemia) can make a person feel irritable, tired or confused. Low blood sugar can lead to loss of consciousness. That is why it is crucial that blood sugar concentrations remain relatively stable.

Without insulin, the body could not effectively make use of the energy obtained through eating and drinking. Insulin helps unlock cells so that glucose can be used to its full potential.

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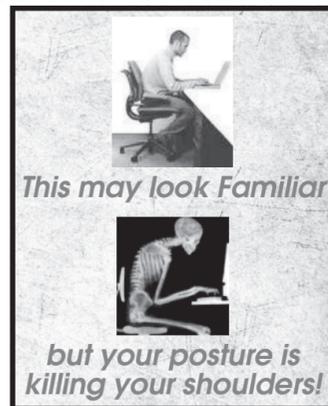
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