Saturday, October 20, 2007

Star-Telegram

Brain implant offers hope for difficult-to-treat seizures

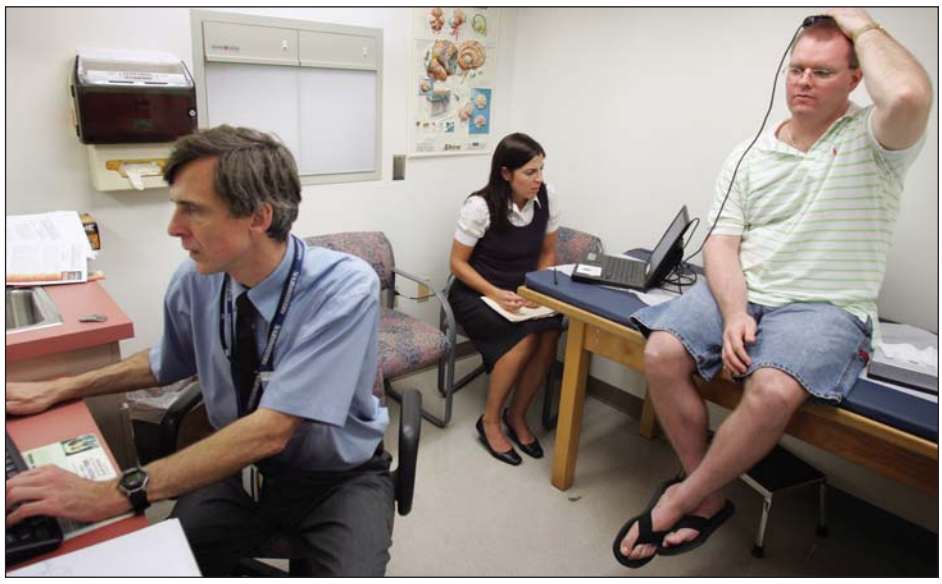
By JAN JARVIS

Jason Wright holds a device the size of cellphone against his scalp. He patiently waits as data from a device in his brain is downloaded into a laptop computer.

Within minutes, brainwaves appear on the screen, revealing seizures that are detected and suppressed with an electric current. Wright doesn't feel a thing. He only knows that since the neurostimulator was implanted in his brain, he is having fewer seizures.

"I do feel better," said Wright, 35. "And I'm not falling on the floor every two minutes with a seizure."

That's exactly what the implantable Responsive Neurostimulator System was designed to do. The device, which works on the brain much as a pacemaker does on the heart, is programmed to deliver a small amount of electrical stimulation when seizure activity is sensed.



JOYCE MARSHALL

Dr. Mark Agostini examines Jason Wright recently in Dallas. The gadget Wright holds to his head reads data from an implant.

The device could dramatically improve the lives of people whose epilepsy cannot be controlled with medication, said Dr. Mark Agostini, assistant professor of neurology at the University of Texas Southwestern Medical Center at Dallas. About 30 percent of the nearly 3 million people in the U.S. with epilepsy have seizures that do not respond to medication.

JOYCE MARSHALL

Jason Wright holds an implant like the one that's controlling his seizures. He is participating in a clinical trial at UT Southwestern for seizures that began after an accident when he was 19.

Wright, who is participating in a clinical trial at UT Southwestern, is among them.

He was 19 when he lost control of the four-wheeler he was driving and it flipped over on him. He broke his wrist and suffered a closed-head injury. Four years later, he started having seizures.

Once a free spirit with confidence to spare, Wright went through a personality change when the seizures began, said his mother, Barbara Whitaker. He had to quit his job, stop driving and give up his apartment. He moved in with his mother, who lives in the small town of Malakoff about 40 miles east of Corsicana.

His short-term memory was gone, and he had trouble recalling past events including the accident. He would forget people he met from one day to the next. The seizures ranged from mild to severe. Sometimes, he would stop in midsentence and stare, Whitaker said. When he came out of it, he would be disoriented.

Wright was having grand mal seizures several times a day, and he lived in fear that the next one might occur at a grocery store or another public place. He was constantly exhausted.

"When I had a bad one, I wouldn't feel like getting up for two days," he said.

He tried every medication for seizures, but nothing worked, Whitaker said.

Vagus nerve stimulation therapy, in which pulses of electricity are sent to the brain via a large nerve in the neck, also did not help. Surgery to remove a small area of the brain where the seizures began was not an option, because Wright had damage on both sides of his brain.

When he learned about the implant, he was eager to try it.

Since he received the implant in April, Wright has recorded each seizure in a diary. During the past month, he recorded 49 small seizures, but he had only two of the most severe kind.

Wright gets 3,000 stimulations a day that over time may make the seizures less likely to occur, Agostini said.

Twice a day, Wright downloads data by holding a gadget to his scalp that scans the chip in his brain. It then sends the data to a computer via a telephone line.

Whether the implant will eliminate seizures in people who do not respond to medication remains to be seen. When enough data is collected, the trial will end and the information will be presented to the Food and Drug Administration for approval, said Emily Mirro, a clinical research specialist with California-based NeuroPace.

Wright is optimistic that the implant will control his seizures over the long run.

"I hope someday that I get back to doing things that I once did," he said. "It's kind of hard to have a normal social life when your mother has to cart you around."

The Trial

What it is: A small device that contains a battery for power and a computer chip.

Where it goes: Underneath the scalp. One end of the lead is placed within or on top of the brain near the area where seizures start.

Who may participate: Participants must be age 18 to 70, have seizures that start from one or two areas of the brain and have tried two or more antiepileptic medications that did not work.

What commitment is required: Two to three years. Participants must keep a seizure diary, undergo surgery and see a doctor regularly.

Where the study is: The University of Texas Southwestern Medical Center at Dallas is one of two sites in Texas. The other is in Houston. Some 260 people are needed for the study nationwide.

For information: www.seizurestudy.com or 866-904-7907

Source: NeuroPace

Epilepsy

What is a seizure? A brief disturbance of electrical activity in the brain

How common are they? About 2.7 million Americans have epilepsy. Worldwide, up to 5 percent of people may have a single seizure during their lives.

What causes them? In about 70 percent of cases, there is no known cause. The rest are caused by brain tumors, head trauma, poisoning, infection and maternal injury.

When do they occur? Twenty percent of cases develop before age 5; 50 percent before age 25.

Source: Epilepsy Foundation

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