Stroke patient walks difficult path to recovery

In 2014, 43-year-old Richard Vierling was in North Dakota working for an oil field maintenance company. He woke up and couldn’t move the right side of his body. The first hospital he was taken to couldn’t help him; the second knew what was wrong and recognized his problem’s complexity. They sent Vierling to the University of Minnesota Medical Center where he became a patient of cerebrovascular neurosurgeon Ramu Tummala, MD.

Vierling had a rare congenital arteriovenous malformation (AVM) in his brain that had ruptured. “The blood became a big mass, basically destroying brain tissue,” said Tummala. “It’s a type of stroke because the net effect is the same.” Rather than a blood vessel blockage, which causes the more common ischemic stroke, Vierling had what’s known as a hemorrhagic stroke.

Tummala led a U of M team that took Vierling through three embolization procedures and a 10-hour surgery during which affected blood vessels were cauterized and the AVM removed. Then Vierling’s recovery process began.

A soft-spoken man, Vierling sometimes hesitates as he articulates his thoughts. His AVM affected his ability to speak, write and read. When he was relearning how to speak and read, he would pop a movie in, turn off the sound, and read the subtitles aloud…his own therapeutic invention. He also went through the exercises assigned by his U of M therapists every day, over and over.

Vierling would have to overcome several speed bumps on his road to recovery, but thanks to supportive family and friends – and his U of M care team – he continues to make progress. “Maybe this is as good as I’ll get, but I’m not going to stop trying,” he said. “If I don’t try, it will be. I want to know I did everything I could.”
INNOVATIVE MEDICAL DEVICE TARGETS MOST AGGRESSIVE BRAIN TUMOR

Glioblastoma multiforme (GBM) is one of the most aggressive brain cancers. Patients survive less than 15 months on average following diagnosis because the tumor tends to be highly resistant to standard treatments. Until now.

A medical device known as Optune® has been approved by the FDA to help these patients. The device, coupled with chemotherapy drug temozolomide (TMZ), has quickly become the standard of care for newly diagnosed GBM, according to Matthew Hunt, MD, Neurosurgery Department, who is certified to prescribe the device and is using it with his M-Health patients when appropriate.

“It isn’t a cure, but it has been demonstrated to extend the lives of people with glioblastoma,” said Hunt. A clinical study showed that patients treated with the device and TMZ lived on average three months longer than those treated with the drug alone.

The device consists of two insulated transducer arrays that are attached to the patient’s shaved scalp by stickers. The power supply is carried by the patient in a backpack and can be run by batteries or plugged into an electrical outlet.

The arrays generate low-intensity, alternating electrical fields called tumor treatment fields. The unique shape and special characteristics of rapidly dividing tumor cells make them susceptible to damage when exposed to these tumor treatment fields, which could halt tumor growth.

The device’s effect is highly selective. The tumor treatment fields alternate so rapidly that they don’t affect normally inactive cells or stimulate nerves and muscles. The intensity of the fields is so small that they also generate no meaningful increase in tissue temperature.

Patients have to wear the device 18 hours a day for “as long as we think it’s working,” noted Hunt. “The longer people use it, the better it works. The goal is to stop the tumor from growing.” Hunt, along with university neuro-oncology colleagues Emil Lou, MD, and Evidio Domingo-Musibay, MD, are certified to prescribe Optune to patients with GBM.

Optune is not for patients under 22 years of age or pregnant women. Learn more at https://www.optune.com.
CREATING SPACE FOR INNOVATIONS IN CARDIOVASCULAR DISEASE AND STROKE

L. Nick Hopkins, MD, FACS, a visionary neurosurgical leader, recently spoke during the 22nd annual Shelley N. Chou Lectureship in Neurosurgery on the U of M campus. His topic was Innovation in Cardiovascular Disease and Stroke.

Hopkins, a practicing neurosurgeon at the University of Buffalo in New York, had been the Neurosurgery Department chairman there for almost 24 years. Over those years, he helped shape the department into one of the most respected in the country.

Hopkins had a vision for how to stimulate new innovations for treating cardiovascular disease and stroke. That vision led to a public/private partnership, which created the Toshiba Stroke Center and Jacobs Institute at University of Buffalo.

Creative collisions
The building he created contains three sections. The top is devoted to basic research. The Stroke Center — where patients are treated – occupies the bottom. The Jacobs Institute is in the center. That’s where Hopkins sees creative “collisions” happening.

Neurosurgeons, cardiologists, neurologists, and other specialists, plus all the people interacting with the research group, have a natural reason for going to the Jacobs Institute. It’s where food is! As they run into each other in the hallways and the Institute’s conference rooms, spontaneous and planned conversations — that can lead to advances — have a chance to happen.

The Jacobs Institute also serves as an idea incubator. If people have something they want to develop, Hopkins can provide a place in the institute and some resources to help them.

Our own Vision 2033 mirrors what Hopkins created in Buffalo. “We are working toward disease-based centers for neuroscience patient care in which clinical and research components work together,” said Andrew Grande, MD. “We envision clinicians, basic science researchers, and industry reps running into each other and having the same kind of spontaneous, creative collisions.”

The Shelley N. Chou Lectureship brings a noted neuroscientist to the university to lecture on current advances in neurosurgery and related fields.

UMMC EARNS FOUR 2016 WOMEN’S CHOICE AWARDS

Earlier this year, the University of Minnesota Medical Center was ranked as one of the nation’s top hospitals when it comes to bariatric surgery, obstetrics, stroke and breast care, according to the Women’s Choice Award®.

This evidence-based designation is the only award that identifies the country’s best healthcare institutions based on robust criteria that consider female patient satisfaction, clinical excellence, and what women say they want from a hospital.

While each category has its own criteria for success, key measurements include meeting the highest standards outlined by the American College of Surgeons and the American Society for Metabolic and Bariatric Surgery.

“Women tend to be very selective when choosing hospitals,” said Delia Passi, CEO and founder of the Women’s Choice Award. “We take pride in helping them choose with confidence by verifying the hospitals that are the very best at providing patient care.”
Discovery

Department first in Midwest to install and use innovative robotic surgical assistant

On May 24, neurosurgical operating room staff at the University of Minnesota Medical Center (UMMC) took a leap into the future. Led by the Department of Neurosurgery’s Director of Stereotactic and Functional Neurosurgery Michael C. Park, MD, PhD, they performed a procedure on a patient using Medtech’s Robotic Surgical Assistant or ROSA™.

UMMC is the first center in the Midwest to install and use ROSA. Combining a computer brain with a flexible robotic arm, ROSA helps neurosurgeons such as Park do things like making pre-operative 3-D maps of a patient’s brain and creating precise surgical approaches and plans.

In the OR, pre-planning done by the surgeon with ROSA’s help acts as a sort of super-precise GPS. As a result, surgery may take less time, which is great for patients. That is especially true for depth electrode placement during stereotactic EEG procedures for epilepsy patients to determine the location of their seizures. “Multiple electrodes need to go in at different trajectories for different targets,” said Park. “After you set everything up, you simply go from one trajectory to the next and ROSA consistently positions itself accurately.”

That’s not all ROSA can help do. The robotic system’s inherent flexibility can help with many types of procedures.

Make no mistake, ROSA is not a substitute for the surgeon. “This doesn’t replace my hands,” noted Park. “It’s a steady robotic arm that can hold instruments firmly and in the correct position while I operate. It doesn’t do the surgery for me.”

“ROSA further enhances our world-class deep brain stimulation program,” observed Department Head Stephen Haines, MD. “And the creative minds in the department are looking for unique ways to use the system to continually improve what we do.”

Looking at survival time in dogs who have brain tumor surgery

Fourth-year resident, Molly Hubbard, MD, is trying to understand outcomes for naturally occurring canine gliomas, which serve as a model to test treatments for gliomas in humans. Human gliomas are among the most difficult brain tumors to treat.

For her research, Hubbard, under the leadership of Matthew Hunt, MD, Neurosurgery Department, and Elizabeth Pluhar, DVM, PhD, Department of Veterinary Medicine, used a database of dogs that underwent brain tumor surgery. “Dogs with a glioma of any type were our focus,” she said.

95 dogs were included; 70 had high-grade tumors. The team analyzed breed, date of surgery, median progression-free/overall survival times, and cause of death. Average survival after surgery was less than 200 days.

“The tumor grading classification correlated with median survival after surgery,” Hubbard said. “Further work needs to focus on survival after different therapies.” Doing so may help identify more effective human therapies.