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Brain, spine and spinal cord tumors are rare, and treating them is a complicated process. Physicians of the Brain and Spine Tumor Program at Froedtert & The Medical College of Wisconsin use teamwork and technology to help patients fight their cancer, while preserving the ability to move, think, feel and communicate.

EXTENDING LIFE, SUSTAINING LIVES

JIM SMYTH OF WHITEFISH BAY, WIS. WAS EAGER TO MAKE THE SALE.

In June 2001, he was working as a representative for a medical imaging company and had taken a group of physicians to Dallas to see a new MRI unit. When the scheduled patient failed to show up, Jim volunteered to hop in the scanner himself.

“I wanted to sell the equipment; I wanted to show how it worked,” Jim said. He ended up getting the deal – and the MRI caught the first picture of Jim’s brain tumor.

Weeks later, surgeons removed a large mass from Jim’s right frontal lobe. The prognosis was good, but in June 2004, the cancer returned. Another surgery, another large excision.

Jim now faced a limit. “I probably can’t have any more surgery, because they are getting close to the area of my brain that controls movement,” Jim explained. “If they go back any further, I’ll start having problems.”

ABILITIES AT RISK

For most brain and spine tumors, the primary treatment is surgery. The challenge is removing as much cancer as possible while leaving critical functions intact.

“It’s all based on the location of the tumor and on our ability to locate areas of function within the brain,” said Wade Mueller, MD, Medical College of Wisconsin neurosurgeon.

Dr. Mueller and his colleagues in the Brain and Spine Tumor Program at Froedtert & The Medical College of Wisconsin specialize in treating tumors growing in or near areas of complex function – for instance, areas that control movement, speech and memory.

One of their most important tools is imaging technology. Researchers at The Medical College of Wisconsin have developed MRI scanning techniques that assist in diagnosing and treating patients.

According to Dr. Mueller, these and other technologies make surgery safer by helping surgeons avoid critical structures. He also believes they make surgery more effective. “It’s very rare, however, that surgery is the only answer,” Dr. Mueller said. “Typically, surgery sets the table for chemotherapy and radiation.”

TARGETING THERAPY

Radiation oncologists who specialize in brain, spine and spinal cord tumors face the same challenge as surgeons – treating the cancer while sparing as much normal tissue as possible.

According to Christopher Schultz, MD, Medical College of Wisconsin radiation oncologist, new technologies are enabling physicians to more effectively “shape” radiation to a patient’s tumor. “That allows us to avoid



adjacent normal tissue, reducing or eliminating side effects,” he said.

Following his second surgery in 2004, Jim was encouraged to seek care at Froedtert & The Medical College of Wisconsin. Under Dr. Schultz’s direction, Jim had a series of 30 radiation treatments using three-dimensional treatment delivery. The radiation dose conformed to the size and shape of Jim’s tumor, substantially avoiding nearby normal brain tissue. At the same time, Jim began chemotherapy with Mark Malkin, MD, Medical College of Wisconsin neuro-oncologist. Dr. Malkin prescribed a year-long regimen of temozolomide, a new drug that attacks brain tumors by interrupting the molecular pathways critical to tumor function.

RESEARCH MAKES A DIFFERENCE

In January 2006, Jim’s cancer was in remission. He settled into a routine of monthly check ups with Dr. Malkin and an MRI every two months.

In April 2008, scans showed that the tumor had returned. Jim’s physicians discussed his case at the interdisciplinary brain tumor board (weekly meeting of all specialists for this program) and decided to put him back on temozolomide.

One thing in Jim’s favor was the recurrence was caught early, when the tumor was just the size of a pea. Credit goes to vigilant testing – and the fact that Jim was taking part in a special research project for an advanced imaging technique known as relative cerebral blood volume (rCBV) mapping.

rCBV mapping uses MRI technology to measure blood flow within the brain. “The rCBV detected an increase of blood flow to the tumor,” Jim said. It also helped confirm that the new finding was cancer, not just a delayed effect of radiation.

The rCBV study was led by Kathleen Schmainda, PhD, Medical College of Wisconsin medical physicist. It is part of a larger effort

known as the Translational Brain Tumor Research Program, funded in part by large grants from Advancing a Healthier Wisconsin (AHW). AHW is The Medical College of Wisconsin’s public health initiative created through endowed funds from the Blue Cross & Blue Shield United conversion to a publicly traded company.

Dr. Mueller, director of the program, said the effort is focused on developing new concepts for treating patients with brain tumors. “We are trying to more effectively apply promising research ideas to patient care.”

KEEP MOVING FORWARD

Jim began chemotherapy again last spring, and he soon received good news. “After two months, there was a visible reduction in the tumor,” he said. As of October 2008, Jim’s cancer was still shrinking, and physicians believe it was knocked back into remission.

Jim, now 47, continues to move forward with his life and devotes precious time to his wife and two girls.

Another passion is golf. “Just before my tumor was discovered, I bought a brand new set of clubs – and then I couldn’t use them for years!” Jim said. “Now I’m golfing again. Those golf clubs are a symbol of triumph over cancer.”

Golf plays a big role in one of Jim’s most important projects – the Smyth Brain Tumor Foundation. Jim’s foundation has sponsored several golf outings to raise money for brain cancer research and to help patients manage the financial impact of the disease. Jim’s fundraising efforts are just one expression of his fighting spirit.

“I want to beat it. I want to have the best doctors who can give me the best chance of survival – and I get that at Froedtert & The Medical College of Wisconsin.” ■