

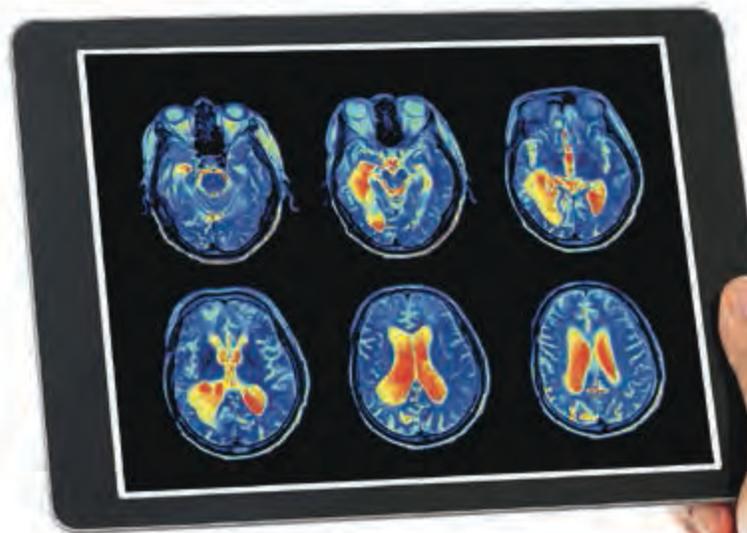
The Brain Stem

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FROEDTERT & THE MEDICAL COLLEGE OF WISCONSIN
Brain and Spine Tumor Program
9200 W. Wisconsin Ave.
Milwaukee, WI 53226
866-680-0505
froedtert.com/cancer
Editor: Tracy Erlitz, BSN, RN
414-805-6001



App Developed at MCW Helps Monitor Brain Functions During Surgery

An app developed by the Medical College of Wisconsin, in partnership with the University of Wisconsin-Milwaukee, gives surgeons a new tool to monitor brain function during surgery.

Designed for operating room use on an iPad, the NeuroMapper app generates tests that the surgical team gives patients during brain surgery to “map” the brain’s terrain.

“The goal of brain mapping during surgery is to locate important

functional areas of the brain and avoid them so patients have less risk of developing cognitive changes from the surgery,” said neuropsychologist and app developer David Sabsevitz, PhD.

To preserve important areas, surgeons wake patients during surgery and test their language and other functions. “In the past, this involved bringing props such as photos into the operating room, which had some limitations,” Dr. Sabsevitz said.

NeuroMapper allows the surgical team to test a wide range of functions and

record patient responses. To determine if these responses predict outcomes, Dr. Sabsevitz is establishing a research consortium of academic medical centers around the U.S., which will use NeuroMapper in brain surgeries and share their data. This should yield more systematic brain mapping protocols across the field, Dr. Sabsevitz said. “It could change the way we do things in the operating room.”

NeuroMapper was built by the App Brewery at UWM, which provides students with hands-on experience with app development. ■

Physician Profile: Neuro-oncologist Fernando Santos-Pinheiro, MD

As the newest addition to the renowned group of experts at the Froedtert & the Medical College of Wisconsin Brain and Spine Tumor Program, I treat patients with primary brain and spinal tumors, such as glioblastomas, oligodendrogliomas and meningiomas, as well as metastatic disease to the central nervous system, commonly seen in people with lung, breast and skin cancers. My essential role as a neuro-oncologist is to provide a very personalized and specific treatment for each patient. In addition to treating primary brain and spine tumors with a variety of FDA-approved chemotherapies, chosen based on a tumor's unique molecular markers, the Brain and Spine Tumor Program offers ongoing clinical trials for a variety of newly diagnosed and recurrent tumors. Ask your doctor if a clinical trial is the right option for the management of your condition as this may be a valuable opportunity to try new therapies.

In my practice, my first priority is my patients' quality of life and well-being. As cancer patients are living longer, it is imperative that we make these extra years a joyful,

pain-free time. Therefore, part of my practice focuses on the neurologic complications of cancer, including headache, seizures, neuropathy, depression and cognitive impairment. These are among the most common neurologic symptoms caused by the cancer or by a certain treatment modality (chemotherapy, radiation therapy).



Fernando Santos-Pinheiro, MD

I was born and raised in Sao Paulo, Brazil, where I finished medical school. In 2010, I moved to the United States. I have completed a research fellowship in noninvasive brain stimulation at Harvard Medical School, residency in neurology at Cleveland Clinic, a fellowship in epilepsy at Dartmouth, and a fellowship in neuro-oncology at MD Anderson Cancer Center. Training in multiple institutions has helped me build a broader and more independent approach to patient care and provided a unique opportunity to see a wide variety of patients. ■

Tracking Down Brain Tumors

A major challenge in brain cancer treatment is spotting tumors when patients have a recurrence of their cancer. Previous brain surgery and radiation therapy treatment can alter brain tissue, “muddying the waters” and making it difficult to read brain scans. “It’s important for us to filter all of that out to know if a tumor is coming back,” said radiation oncologist Joseph Bovi, MD.

Work by radiologist and biophysicist Kathleen Schmainda, PhD, and the Froedtert & the Medical College of Wisconsin Advanced Imaging team in Radiology simplifies the work of spotting brain tumors. Dr. Schmainda pioneered a technology known as Relative Cerebral Blood Volume (RCBV).

Because tumors form haphazard networks of blood vessels to feed their rapid growth, RCBV uses magnetic resonance imaging (MRI) to pinpoint brain areas with new blood vessel formation and increased perfusion or blood flow. RCBV requires more MRI images but only adds a few minutes to the overall exam.

Multiple studies show RCBV to be “a consistent and reliable technique,” Schmainda said. Her RCBV



methodology was used in a national clinical trial conducted by the American College of Radiology Imaging Network (ACRIN), which suggested that RCBV can be used to predict brain cancer outcomes.

The technology is now the subject of a large Phase II clinical trial approved by ECOG-ACRIN, a

(Continued on Page 3)

Management of Spine Tumor Pain

Hesham Soliman, MD, MS

Recent advances in chemotherapy and radiation therapy allow cancer patients to live longer, and alleviating debilitating symptoms caused by cancers in the spine can improve their quality of life.

Tumors of the spine mandate a multidisciplinary approach. The treatment plan is largely dependent on the type and extent of tumor and sensitivity to chemotherapy and radiation therapy. Primary tumors originating in the spinal column are treated differently than metastatic tumors and tumors of the spinal cord.

Although in most cases chemotherapy and radiation therapy offer cure or control of these tumors, surgery also plays an important role. Surgical intervention for tumors of the spinal cord and spinal column is generally reserved for preserving neurologic function and preventing paralysis. In certain situations, surgery would be necessary prior to radiation therapy to obtain a diagnosis if a biopsy is not possible or to minimize the risk of irreversible radiation injury to the spinal cord by creating enough space between tumors and the spinal cord.

Pain has always been a challenging presentation in spine disease. While surgery might not be the best option for isolated back and neck pain due to degenerative spine disease (disc herniations, osteophytes, bone spurs and spinal stenosis or spondylosis), this is not the case with tumors of the spine.

Spine tumors can cause various types of pain. A sharp radicular pain, or pain that radiates into the arms, legs or chest, is likely due to pinching of nerve roots. Decompression of the nerve roots may provide pain relief. Mechanical pain reflects spine instability due to a



Hesham Soliman, MD, MS

tumor, causing pain in the upright position (sitting or standing) and relief when lying down. Fusion surgery of the spine could enhance spine stability and alleviate mechanical pain.

Biologic pain, persistent axial pain that does not change in intensity with positional change, is another type of cancer pain. It is due to swelling and inflammation caused by tumor that has infiltrated the bones. Biologic pain, however, does respond to NSAIDs, steroids, radiation therapy and cement injection.

As a neurosurgeon and director of spinal oncology, I have seen the volume of surgical spine tumor cases at the Froedtert & the Medical College of Wisconsin Clinical Cancer Center at Froedtert Hospital campus rival those at national centers.

In addition to the latest technology, we have built a strong collaboration between neurosurgeons, orthopaedic surgeons, plastic surgeons, cardiothoracic and vascular surgeons, interventional radiologists, oncologists, radiation oncologists and palliative care teams. At the Clinical Cancer Center, we collaborate in two weekly tumor board meetings to discuss how to best serve our cancer patients.

With innovative treatment modalities and trials in chemotherapy and radiation therapy, we strive to provide efficient and effective world-class care for our cancer patients. Our superior expertise and outcomes have led to a higher volume of referrals, even from regional health care competitors and the Veterans Affairs system. ■

Brain Tumors *(Continued from Page 2)*

multidisciplinary scientific organization that conducts cancer biomarker research. Patients with brain cancer typically have brain scans every two to three months to monitor their cancer. In some cases, RCBV reveals new blood vessels before a tumor appears on standard MRI. “It allows us to pick up changes before a patient has symptoms so we can consider changing gears with a

different therapy or restarting chemotherapy to keep the patient symptom-free longer,” Dr. Bovi said.

The Froedtert & MCW Neuroradiology team is “incredibly robust,” Dr. Bovi said. “As a physician who often relies on brain imaging, I feel blessed to be able to work with such a capable and vital group.” ■



Support Groups and Events

The Froedtert & the Medical College of Wisconsin Cancer Network offers support groups and sponsors events of interest to brain tumor patients and their families. For more information about our support groups, please visit froedtert.com, or call 414-805-3666 or 800-272-3666 (unless otherwise noted).

BRAIN TUMOR SUPPORT GROUP

The Brain Tumor Support Group is for patients and family members looking for information and encouragement. Meetings are designed for open discussion of concerns related to brain tumors with many sessions featuring speakers who focus on a variety of topics specific to this disease.

YOUNG ADULT ONCOLOGY GROUP

Children's Hospital of Wisconsin offers the Young Adult Oncology Group for cancer survivors (on and off treatment) ages 18 to 39. This group provides survivorship support, education and social activities.

CANCER CAREGIVERS SUPPORT GROUP

This support group is for friends, family members or others caring for people with cancer. It promotes open communication of feelings, as well as provides relaxation and stress relief. Various topics of interest to the caregiver are also presented. This group is made possible by donations to Froedtert Hospital Foundation.

EPILEPSY SUPPORT GROUP

This support group is open to people with epilepsy, their family members and caregivers. Each month, a guest speaks on topics of interest related to seizures.

CALENDAR

Brain Tumor Support Group

Third Tuesday of each month
Froedtert & MCW Clinical Cancer Center
at Froedtert Hospital campus
Meets monthly. Times and locations vary.

For information, please see the listing in the Hope Clinic at the Clinical Cancer Center, or call 414-805-3666 or 800-272-3666.

Cancer Caregivers Support Group

Fourth Tuesday of each month
(No meeting in December)
5:30–7 p.m.
Clinical Cancer Center
at Froedtert Hospital campus
Conference Room J, Lobby Level
Various speakers are offered.

Young Adult Oncology Group

Meets monthly. Dates and times vary.
Sponsored by Children's Hospital of Wisconsin, the Medical College of Wisconsin and the Clinical Cancer Center.

More information: Kristin Bingen, 414-955-4148 or kbingen@mcw.edu.

Epilepsy Support Group

Fourth Wednesday of each month
(No meeting in November or December)
6:30–8 p.m.
Froedtert Hospital
2NT Conference Room
North Tower, Second Floor

For questions, concerns or suggestions, please call Linda Allen, RN, Epilepsy Program coordinator, at 414-805-3641 or LeeAnn Lathrop, MSW, social worker, at 414-805-2894.

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