

# Promising Therapies for Brain Tumors

**E**very Monday morning at half past 7, a team of brain cancer experts gets together to present some of their most difficult cases. As brain images flash across the screen, neuro-radiologists evaluate their more subtle variations. Surgery? Drugs? Radiation? Experimental agents? Everyone on the team weighs in, each bringing his or her own unique perspective to the debate.

The Comprehensive Brain Tumor Center has recently expanded to include six neurosurgeons, three neuro-oncologists, a dedicated radiation oncologist, five nurses and a social worker. Patients benefit not only from the collaboration that routinely takes place among these highly experienced specialists, but also from promising therapies rarely available elsewhere. What's important is taking advantage of them promptly. "We want to see patients as soon as they start having symptoms," says neuro-oncologist John Laterra.

Patients undergoing surgery benefit from specialized preoperative imaging techniques such as diffusion tensor imaging, functional MRI, perfusion and PET imaging. Intraoperative tools include MRI, brain mapping and awake craniotomies—techniques that allow more complete resections with less chance of complications. Intraoperative chemotherapy, agents formulated for placement directly into the tumor to enhance delivery and reduce side effects, may also be used.

For those who are not candidates for tumor resection, early evaluation has

benefits as well. Take the case of a 52-year-old woman diagnosed elsewhere with a tumor on the brainstem. Tissue was never obtained because the brainstem—prime real estate holding the nerve centers for breathing, heart rate, eye movements and swallowing—has often been considered off-limits for surgery.

In fact, obtaining tissue in the brainstem is possible and often necessary to tailor the best therapy for each patient, but it requires an experienced team and sophisticated approach.

Without a tissue diagnosis, doctors had treated the patient with Gamma knife radiation followed by chemotherapy. She deteriorated, and by the time she arrived at Johns Hopkins, it was clear that a biopsy would have to be done.

Director of Neurosurgical Oncology Alessandro Olivi, a surgeon who has performed more than 35 of these delicate procedures since 2004, identified the part of the lesion with the highest likelihood of yielding a diagnosis. Traversing the brain diagonally, barely skirting the ventricle, Olivi's needle entered the brainstem and retrieved tissue.

Neuropathologist Peter Burger, a lead-



In a most delicate procedure, Alex Olivi, left, retrieves tissue from the brainstem so that a tumor can be precisely identified.

ing authority in interpreting brain samples, examined the specimen during the procedure when more tissue could be obtained if needed. The biopsy showed glioblastoma multiforme.

The most common and aggressive primary brain tumor, GBM is rare in the brainstem in adults, and treatment poses a significant challenge. Neuro-oncologist Jaishri Blakeley recommended temozolomide, a drug that is generally well tolerated and effective, although patients must be carefully monitored due to serious, potential side effects like thrombocytopenia, neutropenia and PCP pneumonia.

The patient was admitted to the hospital but was so ill from the progression of the disease she soon died. "It was only two months before she died that anyone knew the diagnosis," says Blakeley. "If she had come to us at the get-go, we could have made the diagnosis, offered her the best possible combination of chemotherapy and radiation as well as promising drugs in clinical trials, and possibly significantly improved her survival and quality of life." ■

To refer a patient to the Comprehensive Brain Tumor Center: 410-955-2252. Info: [hopkinsneuro.org/brain\\_tumor](http://hopkinsneuro.org/brain_tumor)

## PITUITARY TUMOR CENTER

# The Pituitary: The Legacy Lives On

**H**arvey Cushing may be best remembered for his successes in the operating room, but as any student of the legendary neurosurgeon will tell you, the study of the pituitary, the stowaway gland whose function remained stubbornly elusive to the physicians and surgeons of the early 20th century, was his first and greatest true love.

Cushing, who came to Hopkins in 1897 to train under William Halsted, published a seminal monograph on the pituitary 1912, the year he left for Harvard. He then pioneered the transsphenoidal approach to the pituitary. Though Cushing him-



self later abandoned the approach, this surgical corridor to the skull base eventually became the first-line method for removal of pituitary adenomas, and it remains so today.

Now Henry Brem, the Harvey Cushing Professor and director of neurosurgery, is continuing the work his namesake began more than a century ago here at Johns Hopkins. Along with two endocrinologists, Brem recently established the Pituitary Tumor Center, a comprehensive program managed by a team of endocrinologists, neuro-ophthalmologists, neuroradiologists and surgeons.

The surgical team, fully versed in the intricacies of operating on the pituitary gland, has further refined the transsphenoidal removal of pituitary adenomas with techniques that make the procedure safer and more effective. Intraoperative MRI makes it possible to guide and document the amount of tumor removal during surgery. A direct endonasal approach, versus the conventional sublabial approach, allows the mass to be removed via an incision in the lining of the nose. Endoscopic surgery now is being used as an adjunct for resection.

When tumors extend beyond the limits of the transsphenoidal operation, a more extensive operation requiring a craniotomy may be needed. But, says Brem, "we always try the least aggressive method first." ■

The Pituitary Tumor Center can schedule patients for multiple consults and tests during one visit.

Info: 410-955-4526 or [hopkinsneuro.org/pituitary](http://hopkinsneuro.org/pituitary)