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UCLA introduces triage protocol for patients with metastatic brain tumors

Neurosurgeons and radiation oncologists in the UCLA Brain Tumor Program routinely collaborate to provide the latest in high-tech care for patients with metastatic brain tumors, including minimally invasive surgery, whole-brain radiation, fractionated stereotactic radiation, stereotactic radiosurgery and laser-ablation therapy.

Now, these experts have created a single point of contact for all patients with metastatic brain tumors to provide easy and rapid access to optimal treatment solutions. In this enhanced, dedicated service, an internal triage staff immediately evaluates the patient's needs and offers a same-day or next-day appointment (or another time convenient for the patient) with a neurosurgeon, radiation oncologist or both.

The triage protocol is one example of the team's innovative approach to metastatic brain tumors, the most common brain tumor in adults. As cancer patients live longer because of more effective treatments, metastatic tumors — especially tumors that spread to the brain and spinal cord from other organs — are on the rise.

Laser ablation targets cancer cells in brain with focused heat therapy

Laser ablation surgery is the newest high-tech tool in the UCLA Brain Tumor Program's arsenal for treating metastatic brain tumors. This minimally invasive treatment — used for decades to treat other conditions — employs laser energy to heat and destroy cancerous cells from the inside out while sparing healthy tissue.

Guided by real-time magnetic resonance imaging (MRI), the neurosurgeon makes a tiny incision (about 4 millimeters) and a hole in the skull about the diameter of a chopstick. A thin, fiber-optic laser probe follows that pathway to the tumor location. Real-time MRI allows the neurosurgeon to track the area being heated. The extremely precise technique works well on tumors that are small, inoperable or have failed other therapies. With this minimally invasive approach, patients typically recover faster than with open surgery and are discharged from the hospital the next day.

"Laser ablation technology gives us the ability to access and treat some very deep-seated tumors that can be hard to reach with open-brain surgery," says Nader Pouratian, MD, associate professor of neurosurgery. "We're pleased to offer patients this advanced option."

UCLA specialists in brain metastases meet weekly at Brain Tumor Board meetings to discuss cases and devise the optimal treatment plan for each individual patient, weighing all medical and surgical options. This relieves the patient of the need to visit multiple offices.

Optimal surgical management

The decision among surgery, radiotherapy and radiosurgery involves many factors, including tumor type, tumor location and the patient's age and medical condition.

Surgical management to remove single tumors may be indicated when the primary disease is under control and the lesion accessible, large or life-threatening. In certain cases, surgical removal may be used for more than one metastatic tumor. Advanced brain-mapping techniques help pinpoint tumor locations.

As an alternative to adjuvant chemotherapy, UCLA neurosurgeons can in some cases place thin wafers containing a chemotherapy agent into the surgical cavity to help kill residual microscopic cancer cells at that location. This can be particularly helpful since most chemotherapies cannot get into the brain.

Advanced radiotherapy options

UCLA radiation oncologists and neurosurgeons take an individualized approach to treatment options, often recommending local radiation only, such as to the area surrounding a surgical resection.

Stereotactic radiosurgery (SRS), delivering a high dose of radiation in a focused, single treatment, is the first consideration for most patients with metastatic brain tumors. SRS offers a high rate of controlling tumors without the cognitive difficulties associated with whole-brain radiation. SRS is particularly useful for patients who are poor surgical candidates due to the risks associated with anesthesia.

UCLA was the first center in the United States to employ the Novalis shaped-beam SRS system. Other systems use circular beams of radiation, which can't conform to the irregular shapes of most tumors. Through sophisticated computer modeling, the width of the Novalis radiation beam can be changed at any point to deliver an even dose to irregularly shaped tumors. This allows the delivery of highly focal radiation to a tumor while safeguarding surrounding areas of the brain. In some cases, radiation doses can be spread over time, something clinical studies have shown can provide a therapeutic advantage, particularly for tumors near cranial nerves or critical regions of the brain.

Stereotactic radiosurgery may not be advisable in some instances, such as when there are multiple tumors, tumors are too large for radiosurgery or in cases of excessive brain swelling. In these cases, we will discuss other treatment options with the patient, including surgery, fractionated stereotactic radiation therapy, whole-brain radiation therapy or a combination of these treatment options.

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