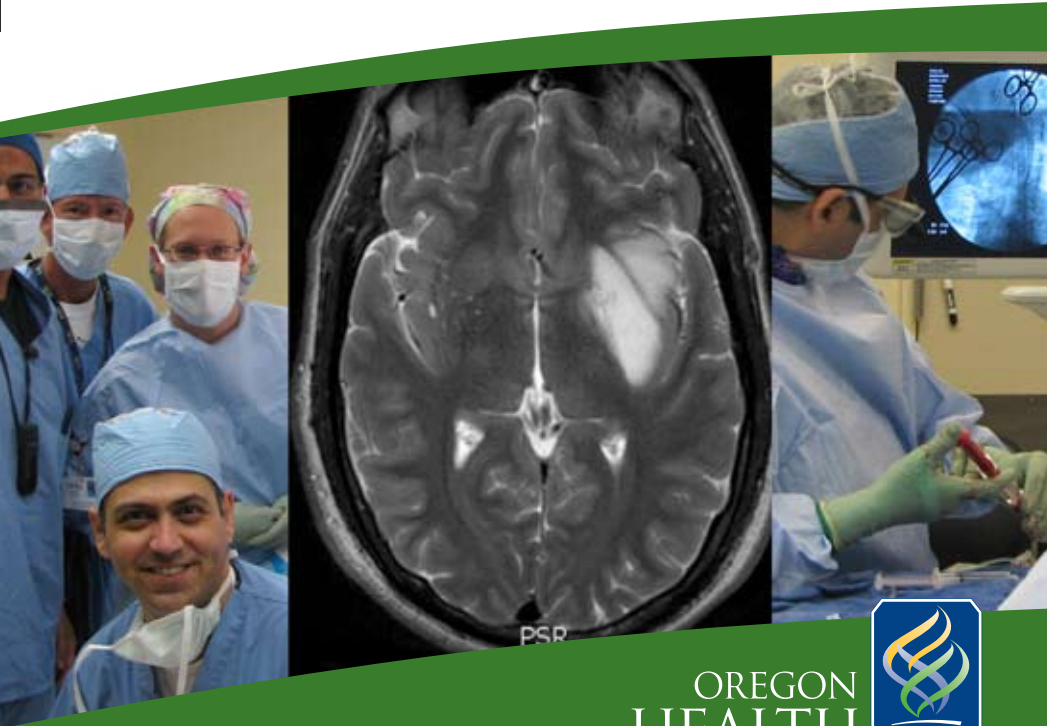


Neurosurgical Case of the Month by Aclan Dogan, MD

October 2009:

Left Frontotemporoinsular Mass



Left Frontotemporoinsular Mass

Patient history and diagnosis

An otherwise healthy 29-year-old male presented with headaches, reported experiencing bad smells in the absence of potentially foul-smelling objects (olfactory seizures), mild dizziness and nausea. Over the past 2 weeks, headache medications had proved unsuccessful. Past medical history was significant for asthma, headache and seizure. There was no past surgical history. Brain magnetic resonance (MR) images (Fig. 1) revealed a left frontotemporoinsular mass. The patient was referred to neurosurgery to discuss treatment options.

Neurological Examination Results:

Mental status: Normal consciousness, orientation, affect and fluency
Cranial Nerves: 2nd - 12th intact on detailed examination
Motor: Normal strength, muscle bulk, and tone
Sensory: Intact to pinprick and light touch
Cerebellar: Normal finger-to-nose and rapid alternating movements
Gait: Normal, tandem and romberg negative
Deep Tendon Reflexes: Present and normo-active
Pathologic Reflexes: Absent

Imaging Results

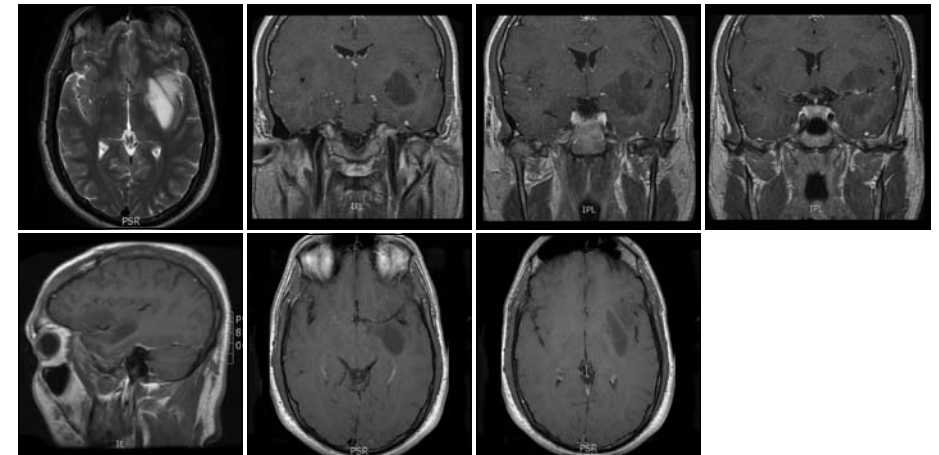


Figure 01: A hyperintense T2 and hypointense T1 signal is evident within the left sub insular white matter, which extends into the anterior left temporal lobe and into the inferior right frontal lobe. The T2 signal demonstrates a mass effect that is irregular in shape. The mass measured approximately anterior-posterior 5.3 cm by transverse 3.2 cm, the bulk within the insula.

Plan and Surgical Treatment

Primary differential pathological considerations included a low-grade glial tumor such as a grade II or III astrocytoma or oligodendroglioma.

Treatment strategies for a lesion like this would be stereotactic biopsy, chemotherapy and radiation treatment. Surgically, depending on pathological

Left Frontotemporoinular Mass

diagnosis, a left frontotemporal stealth guided craniotomy and subtotal resection of the frontal and temporal part of the tumor or a left frontotemporal stealth guided craniotomy and gross total resection of the tumor by the transsylvian approach would be the options. The later approach carries the risk of weakness on contralateral side of the body (hemiparesis), total paralysis of the arm, leg, and trunk on the contralateral side of the body (hemiplegia) and the impairment of language ability (aphasia).

I determined that it was possible to remove this mass with minimal morbidity by opening the sylvian fissure widely using a meticulous microsurgical technique and paying attention to the important anatomical landmarks. Angiographic information is crucial to locating the position of the lenticulostriate arteries, which in turn is crucial to determining the extent of intraoperative surgical resection. Extending the surgical resection medial to the first lenticulostriate artery carries a significantly high risk for hemiplegia unless there is displacement by the tumor medially, which indicates no tumor extension beyond the lenticulostriate arteries. Cerebral angiography revealed that there was no displacement of lenticulostriate arteries (Fig. 2).

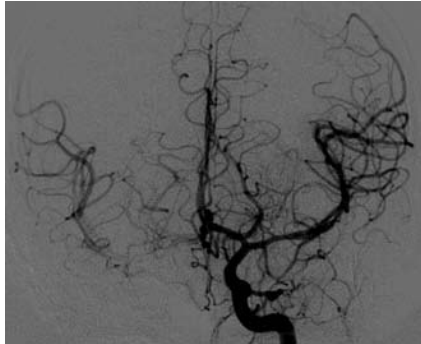


Figure 02: Cerebral angiography did not reveal any arterial displacement by the tumor.

The patient was taken to the operating room and a left frontotemporal stealth guided craniotomy performed. The sylvian fissure was opened widely and the first distal lenticulostriate artery was located. By paying attention to the anatomical landmarks and using stealth navigation, gross total tumor resection was possible. Subsequent, pathology was consistent with an anaplastic astrocytoma.

Outcome

Postoperatively, the patient was awake, alert and oriented to person, place and time. He was able to move all extremities without weakness and there were no signs of aphasia. No physical therapy was required. The patient began chemotherapy and radiation treatment. Postoperative MR imaging confirmed gross total (more than 95%) resection of the tumor and resolution of pressure on the left lateral ventricle (Fig. 3).

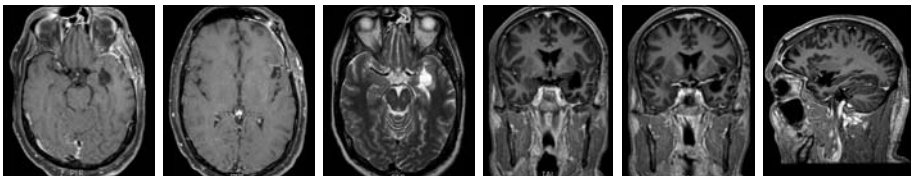


Figure 03: Postoperative MR imaging reveals gross total (more than 95%) resection of the tumor and resolution of pressure on the left lateral ventricle.

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