Penn Medicine

CLINICAL BRIEFING™

Penn Medicine Virtua Neurosciences Program

Complex Neurological Case Study Series

The Penn Medicine Virtua Neurosciences Program offers sophisticated interventions for critically ill patients with complex neurological disorders to diminish the risk of neurological deterioration, adverse events and mortality that may attend interhospital transfer of these patients. The need for advanced neurological services in regional hospitals has increased dramatically in the last decade, particularly for the complex conditions endemic to an aging population.

In addition to treating the full spectrum of neurological disorders, the Penn Medicine Virtua Neurosciences Program is involved in advanced clinical trials in a variety of areas including neuro-oncology, stroke, peripheral nerve, spinal cord injury and cranial base surgery.

CASE STUDIES

Case studies are an invaluable resource for physician education and information. The following cases were reported from Virtua Memorial Hospital in December 2016 by neurosurgeon Patrick J. Connolly, MD.

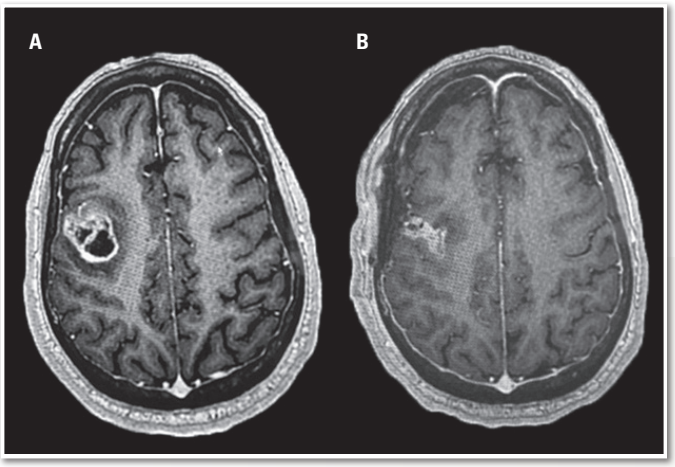

Figure 1: MRI images of gliobastoma in a 69-year-old patient before (A) and after (B) complete resection.

CASE 1

Mr. J, a 69-year-old, presented at the ER having experienced left-sided facial twitching, confusion and slurred speech twice within the previous twelve-hour period, with relatively rapid resolution of these symptoms on both occasions. At presentation, Mr. J reported that he had recently had a colon polypectomy for a benign lesion. His medical history was otherwise unremarkable. CT scans of his brain, chest, abdomen and pelvis were administered within 15 minutes of his arrival. The chest, abdomen and pelvis scans were negative, but that of the brain demonstrated a right frontal mass. A subsequent MRI (Figure 1) confirmed a large lesion in the right frontal lobe. Mr. J was scheduled for surgical resection. Biopsy of the lesion at surgery was positive for glioblastoma. To gauge the potential effects of resection, the motor strip was mapped one gyrus behind the lesion. Subcortical evoked stimulation showed consistent hand response at the posterior edge of the tumor. Continual cortical motor evoked potentials remained unchanged. A post-operative MRI showed a complete resection with no residual enhancement. Following his three-hour surgery, Mr. J experienced left upper extremity weakness that resolved within three days, after which he was discharged to home. He is currently seeing a neuro-oncologist at Penn Medicine.

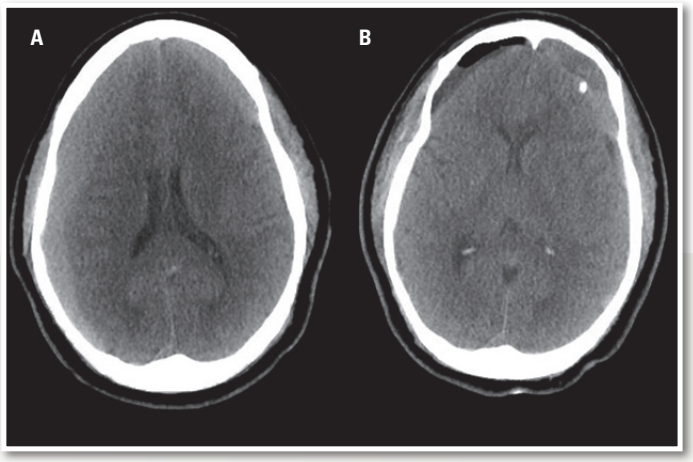

Figure 2: MRI images of a 57-year-old woman with subdural hematoma 6 weeks after a car accident with airbag deployment (A) and following burr hole drainage with shunt placement (B).

CASE 2

Mrs. M, aged 57, presented at the emergency department after the onset of acute headache. On examination, her blood pressure was 200/110. However, there were no neurological or other remarkable findings. Mrs. M was administered a diuretic for what was assumed to be de novo, uncontrolled hypertension and scheduled for follow-up with her primary care provider.

Three days later, however, she returned to the emergency department to report that her headache had worsened. At this visit, her blood pressure was again elevated. During history-taking, however, she disclosed that she had been in a car accident 6 weeks before during which the airbags deployed. A neurological examination at this time noted a subtle left pronator drift. A cranial CT scan was ordered, disclosing pronounced subdural hematoma (Figure 2). Mrs. M was scheduled for a burr hole drainage of the collection with placement of a subdural drain. Her headache and drift resolved within hours, her drains were removed on postoperative day 2, at which time a follow-up CT showed pronounced improvement of the hematoma. Mrs. M was discharged home on POD3. At her follow-up three days later, her symptoms had completely resolved.

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CASE STUDY *(Continued from cover)*

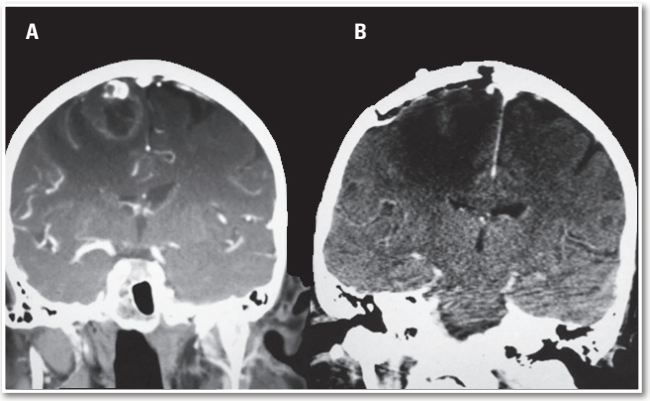

Figure 3: A large (4x3x3cm) right parasagittal mass and edema in an 80-year-old patient (A), and after craniotomy and resection of the mass (B).

CASE 3

The Penn Medicine Virtua Neurosciences Program was consulted to attend Mrs. W, an 80-year-old woman who'd awakened from anesthesia with left-side hemiparesis following an uneventful total knee replacement surgery. Mrs. W's medical history included a known, asymptomatic meningioma and ventricular fibrillation, for which she had an implantable cardioverter defibrillator.

A bedside CT showed a 4x3x3cm right parasagittal mass and new edema by comparison to a previous study (Figure A). Because Mrs. W could not have MRI, a contrast CT was performed; this showed homogeneous enhancement. Having trialed high-dose dexamethasone, which failed to demonstrate significant improvement in the hemiparesis, Mrs. W had a right frontal craniotomy to resect the mass (Figure B). Mrs. W was discharged to rehab on POD3 with improving left sided strength.

FACULTY TEAM

Virtua has partnered with Penn Medicine to provide brain and spine procedures and bring the region's foremost leader in neurosurgical treatment and research to Virtua Memorial Hospital. Together, Penn Medicine and Virtua have built a comprehensive program with advanced imaging systems, a cutting-edge neuro-navigational system and access to the latest research and techniques.

Performing Neurosurgery for Complex Cases at Penn Medicine Virtua Neurosciences Program

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