Diagnosis and Treatment of Intracranial Neoplasms

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Common Symptoms of Intracranial Mass

- Headache
- Visual Disturbances
- Hearing Change or Loss
- Speech Disturbances
- Personality Changes
- Seizures
- Weakness
- Balance Difficulties, Dizziness
- Etc…
Imaging Studies

- CT
  - Plain – blood, calcifications
  - With and without contrast
- MRI
  - T1 with/without contrast
  - T2 – edema
  - GRE – blood
CT
MRI
Benign Tumors

- Meningiomas
- Schwannomas
- Pituitary Adenomas
- Craniopharyngiomas
- Pineocytomas
- Others
Meningiomas

- Most common benign brain tumor
- Arise from arachnoid cap cells
- Usually cause symptoms due to mass effect
- Can be calcified
- Dural tail
Schwannomas

- Most commonly acoustic neuromas
- Arise from Schwann cells on the nerve sheath
Pituitary Adenomas

- Functioning or non-functioning
- Symptoms due to hormones or mass effect
- Classic symptom?
Craniopharyngiomas

- Suprasellar tumors (similar location to pituitary adenomas)
- Symptoms due to mass effect
- Tend to recur
- Can be calcified or cystic
Pineocytoma

- Less common than pineal glad cyst
- Hydrocephalus
- Upward gaze paralysis (superior colliculi)
Malignant Tumors

- Metastatic
- Gliomas
- Ependymomas
- Oligodendrogliomas
Brain Metastases

- Most common malignant brain tumor
- Many times multiple lesions
- Large amount of surrounding edema
- Can be hemorrhagic, cystic, etc.
Gliomas

• Grade I – Pilocytic astrocytoma
• Grade II – Low grade glioma
• Grade III – Anaplastic astrocytoma
• Grade IV – Glioblastoma Multiforme
• Adults usually supratentorial, Children usually infratentorial
Pilocytic Astrocytoma

- Usually children
- Often cystic
- Infratentorial
- Enhancing
Low Grade Glioma

- Usually does not enhance
- Difficult to distinguish intraoperatively from normal brain
Anaplastic Astrocytoma

- Malignant nature
- Enhancing
Glioblastoma Multiforme

- Can be crossing hemispheres or multifocal (gliomatosis)
- Thrombosed vessels, necrosis due to rapid growth
- High recurrence rate
- Enhances with contrast
Ependymomas

- Arise from ependymal cells that line the fluid cavities
- Intracranially usually found in pediatric population (adults mainly found in spine)
Oligodendrogliomas

- Arise from oligodendrocytes that create myelin in the central nervous system
- Usually designated a grade II tumor
Treatment Options

- Observation
- Radiation – External Beam, Cyberknife
- Surgery – biopsy, resection (partial, total), endoscopic
- Chemotherapy
- Visualase
- Symptom Control
Radiation

- External Beam
- Cyberknife
Surgery

- Craniotomy
- Stereotactic Biopsy
- Endoscopy
Visualase
THANK YOU!

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