General History

- 26 y/o female
- Chief complaint:

  Headache, right side weakness and numbness, and protruded left eyeball for months

General History

- Present illness:
- Born in Mainland China, due to severe headache for weeks, she was diagnosed as brain tumor by craniotomy and biopsy at 廣東中山醫院 in 1998.
- Tumor recurrence one year later with headache, she received surgery twice in 1999 and 2000 at 新光醫院.

General History

- Headache, protruded left eyeball, and right side numbness were noted for few weeks four months ago, so she was suggested to received surgical treatment after the labor (her third child).
- After successful labor by C/S two weeks ago, she was admitted for evaluation and surgical treatment.
- Family history: denied
- Personal history: denied smoking and drinking

General History

- Physical examination:

  left exophthalmos, left temporal area bulging from skull defect region

  otherwise no specific findings

- Neurological findings:

  EOM: limited in left eye ; right deviated tongue

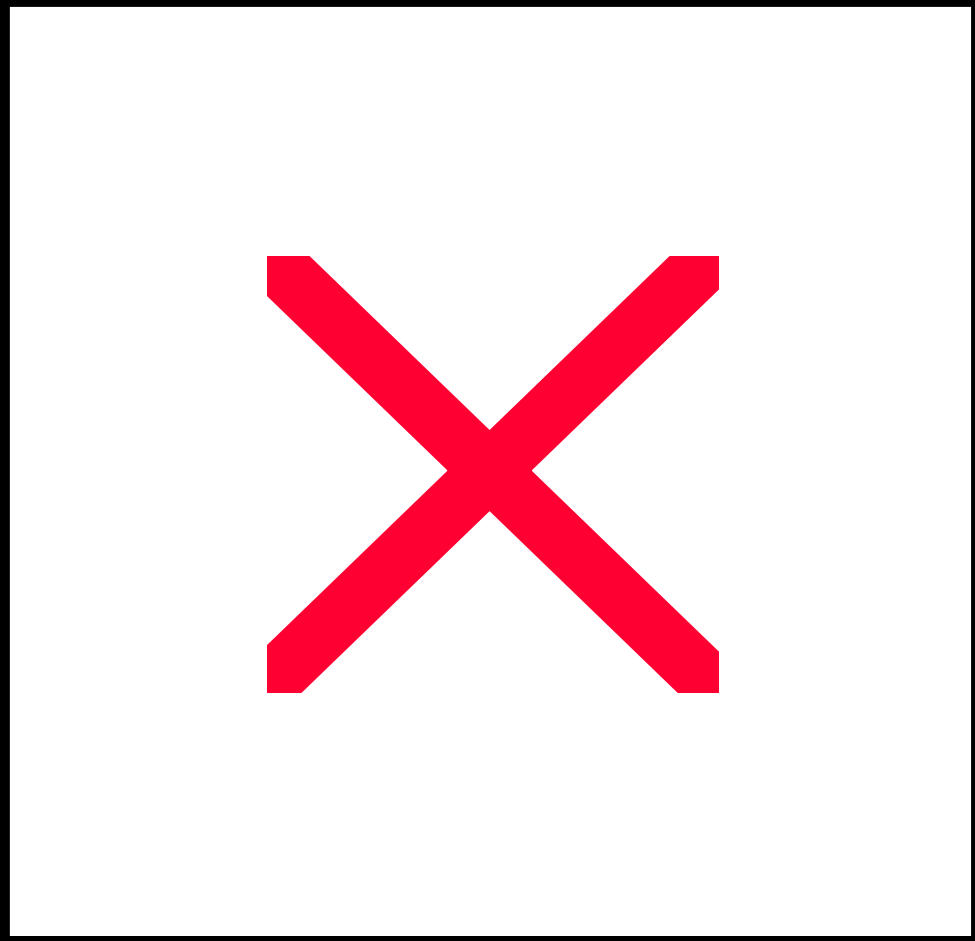
  Right facial palsy, central type

  Sensory: right hemianesthesia

  Right limbs weakness

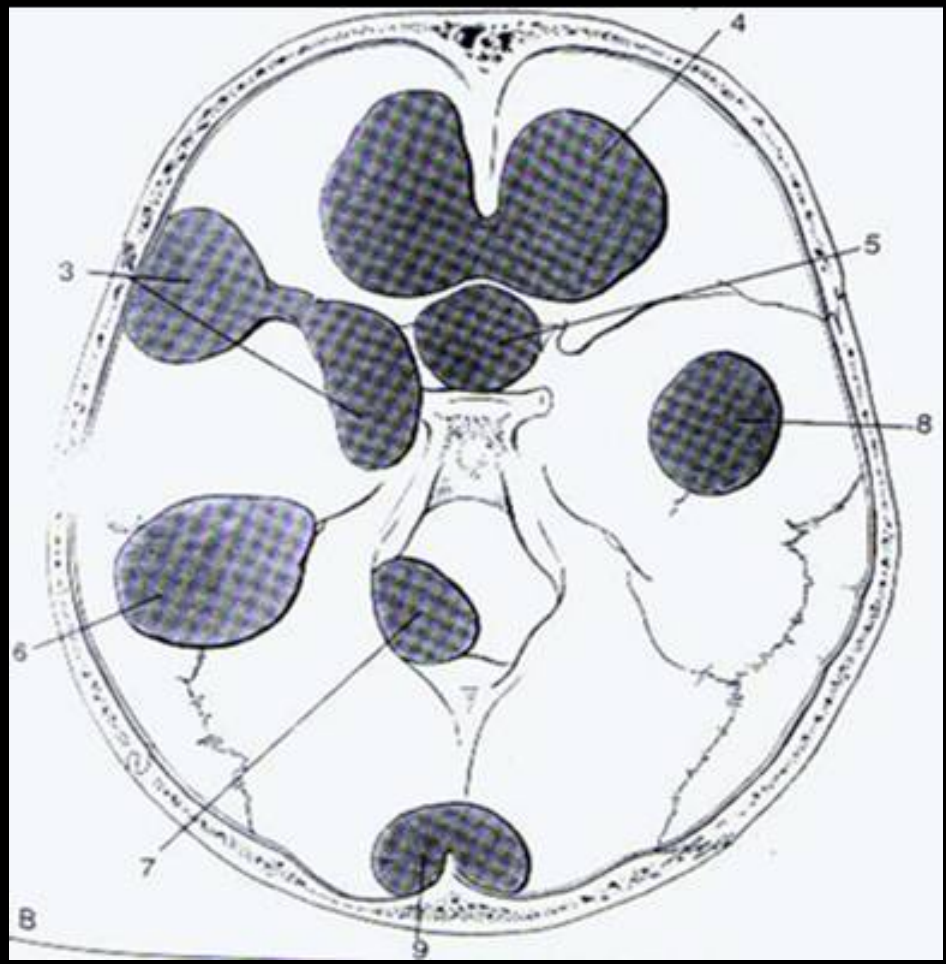
  Otherwise WNL

Brain MRI (2002.9.13)
T1WI

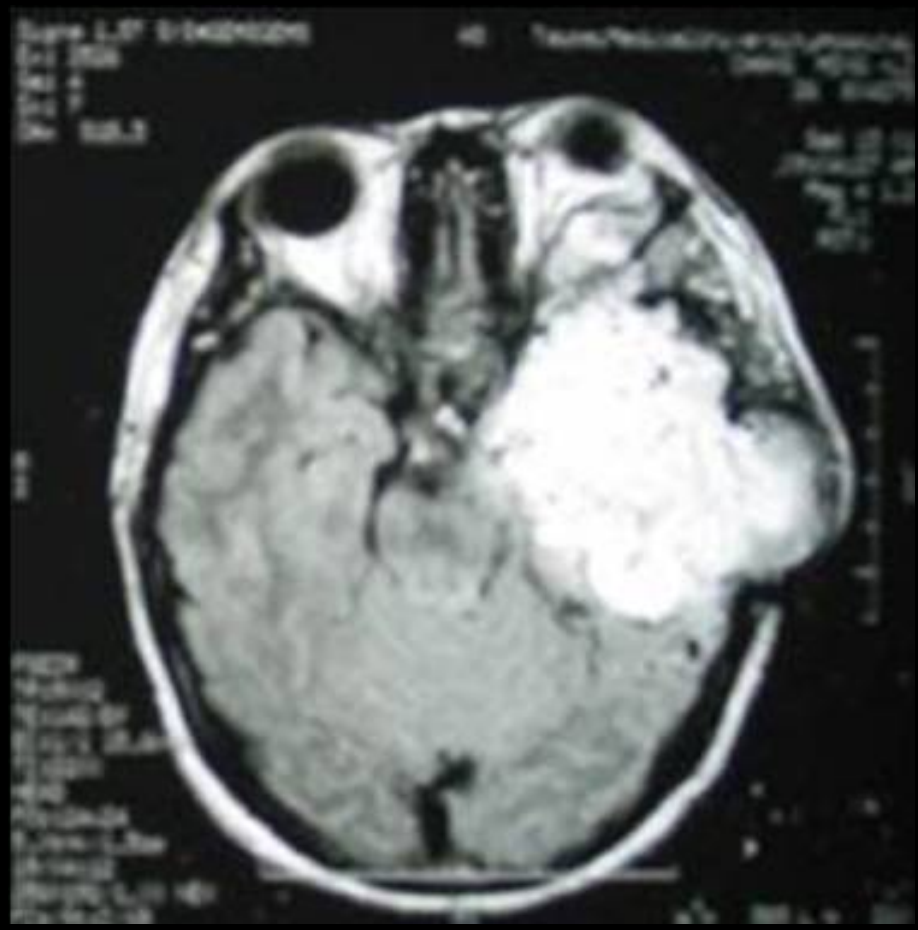


Brain MRI (2002.9.13)
T1WI

Brain MRI (2002.9.13)
T1WI



Brain MRI (2002.9.13)
Flair



Brain MRI (2002.9.13)
T2WI

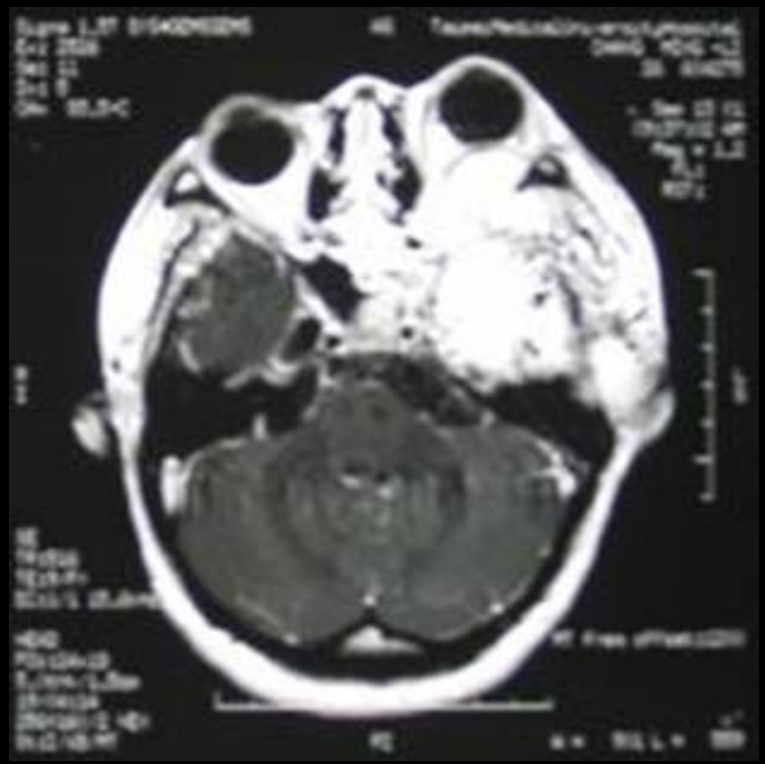
Extra-axial tumors in adults

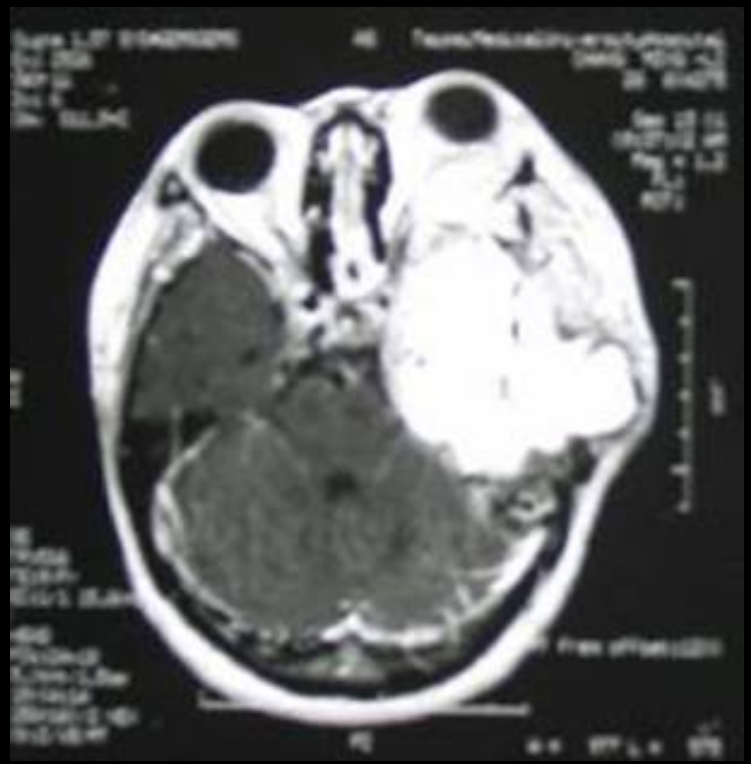
- Meningiomas
- Metastases (some), lymphomas, sarcoidosis
- Schwannomas
- Chordomas or other bone tumor
- pituitary adenoma
- craniopharyngiomas
- Exophytic brain tumors in the CP angle cistern

Hypo-/Isointense T1, Hyperintense T2

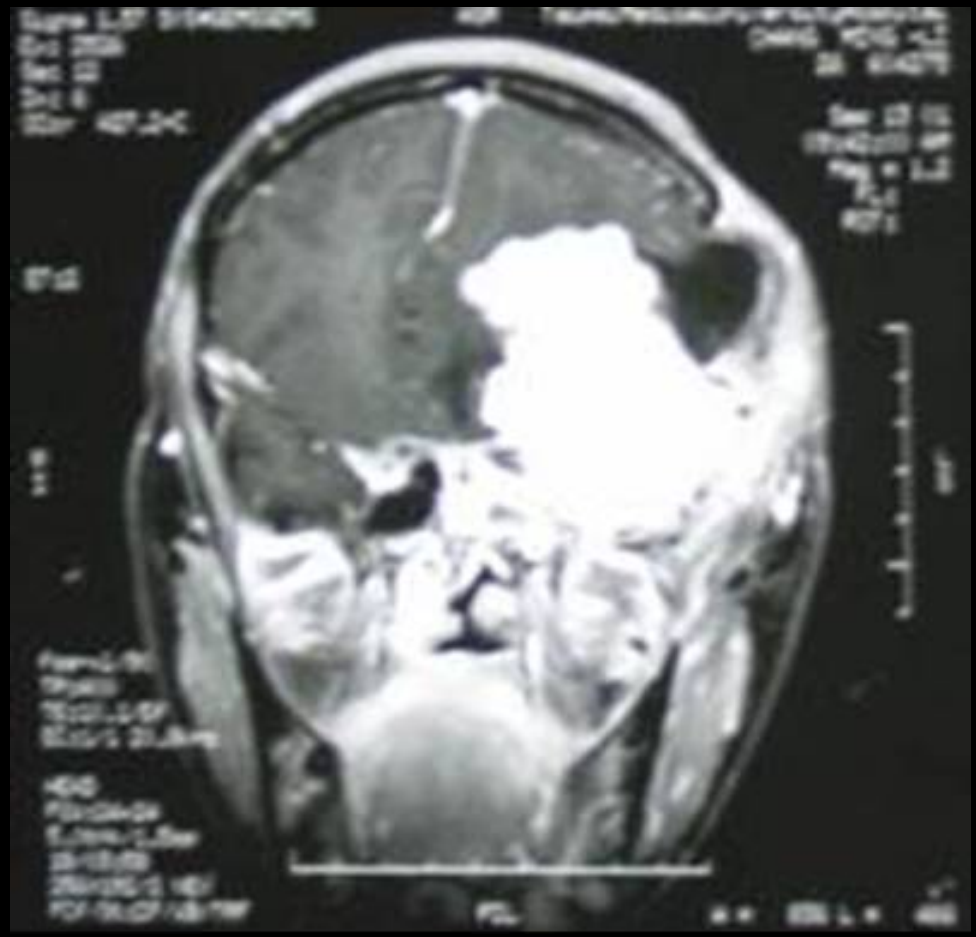
- Glial neoplasms
- Metastasis (some)
- Edema (infarction, peritumoral, cerebritis)
- Lymphoma (some)
- Gliosis
- Meningioma
- Schwannoma
- Pituitary adenoma
- Craniopharyngioma (some)

Brain MRI (2002.9.13)
T1WI with contrast

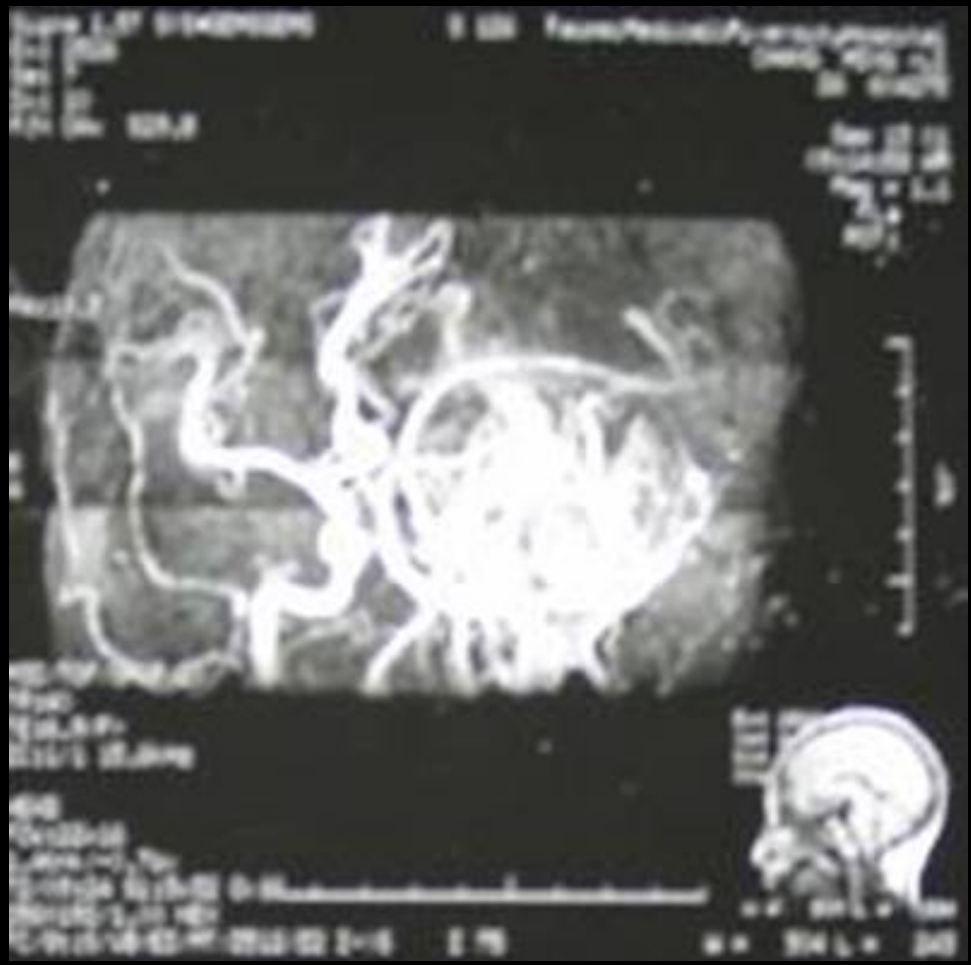




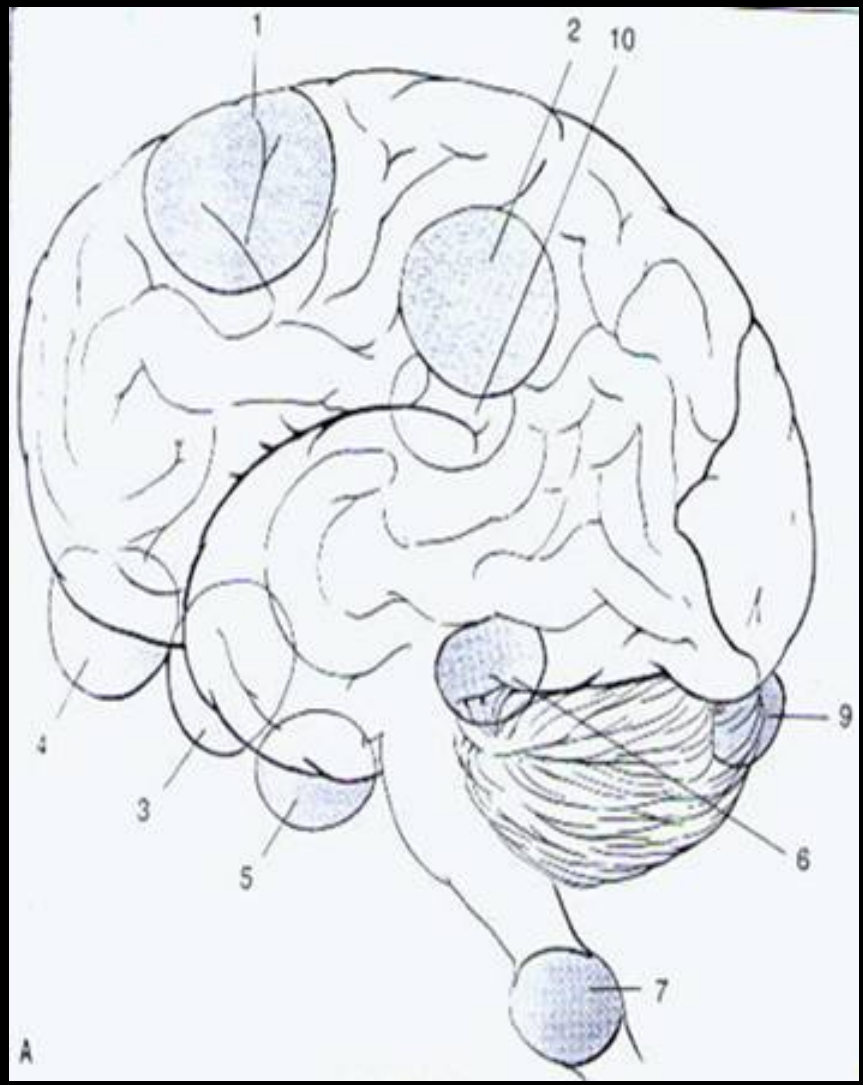
Brain MRI (2002.9.13)
Coronal (T1W1 with contrast)



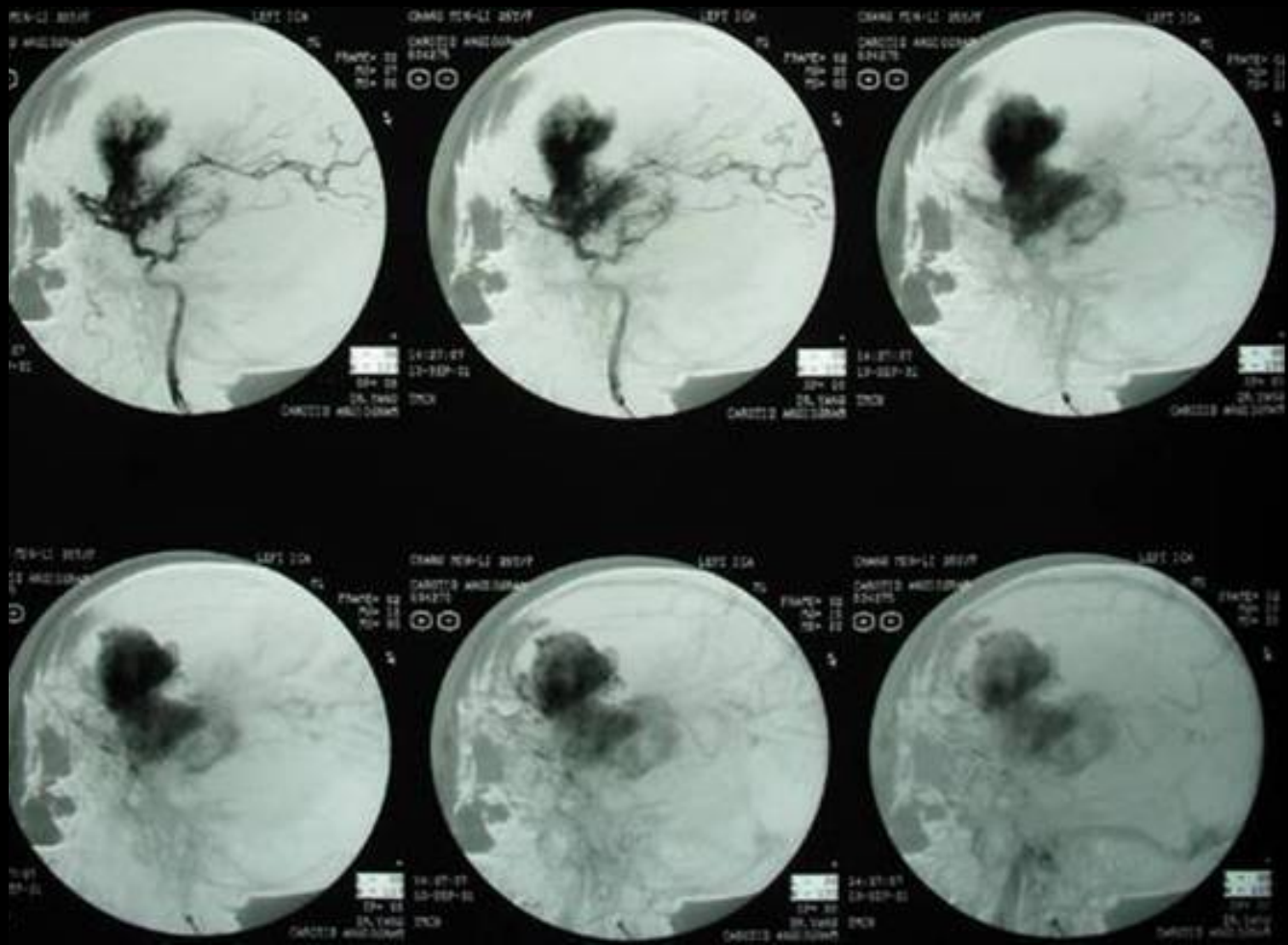
Brain MRA (2002.9.13)



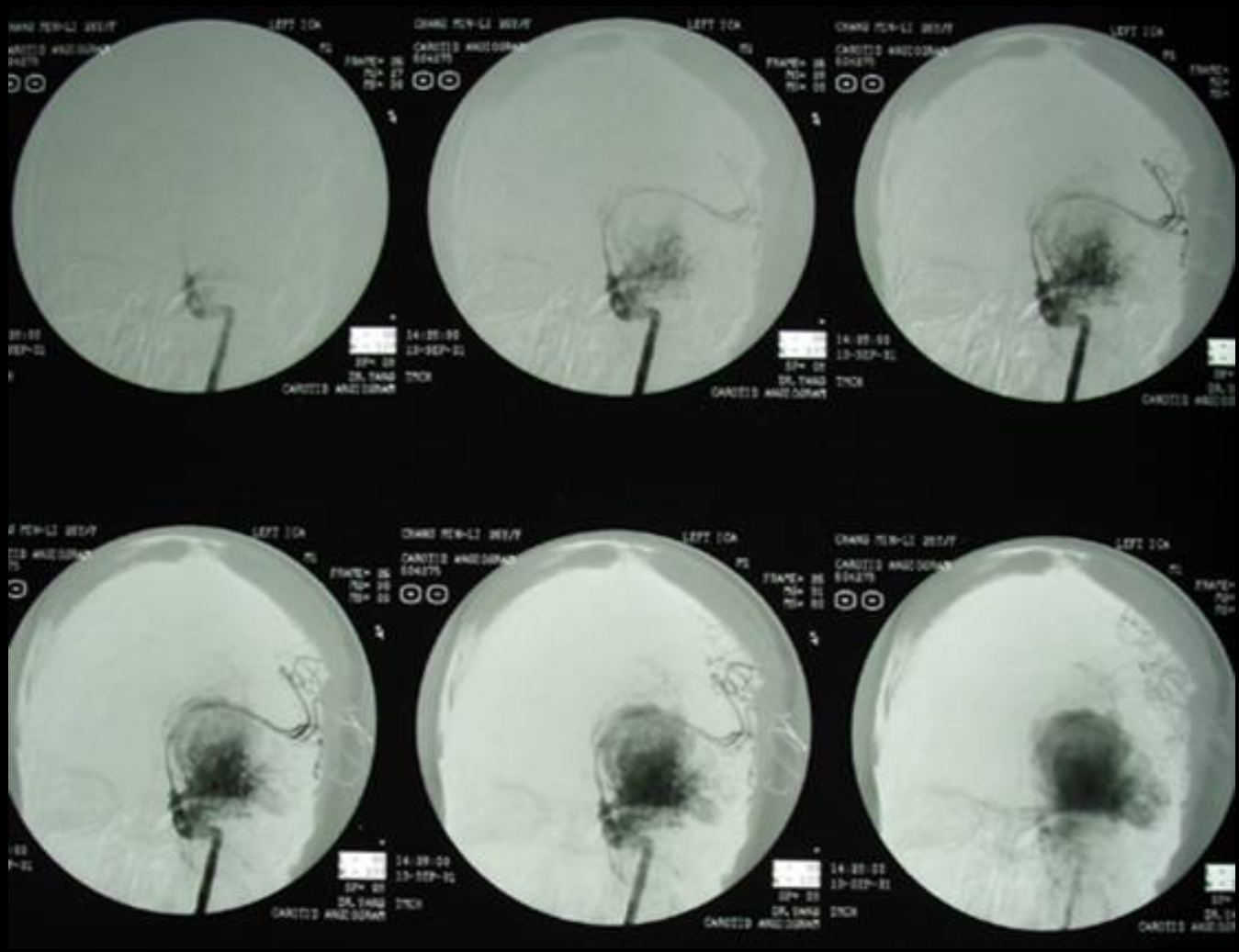
Angiography (Right CCA)



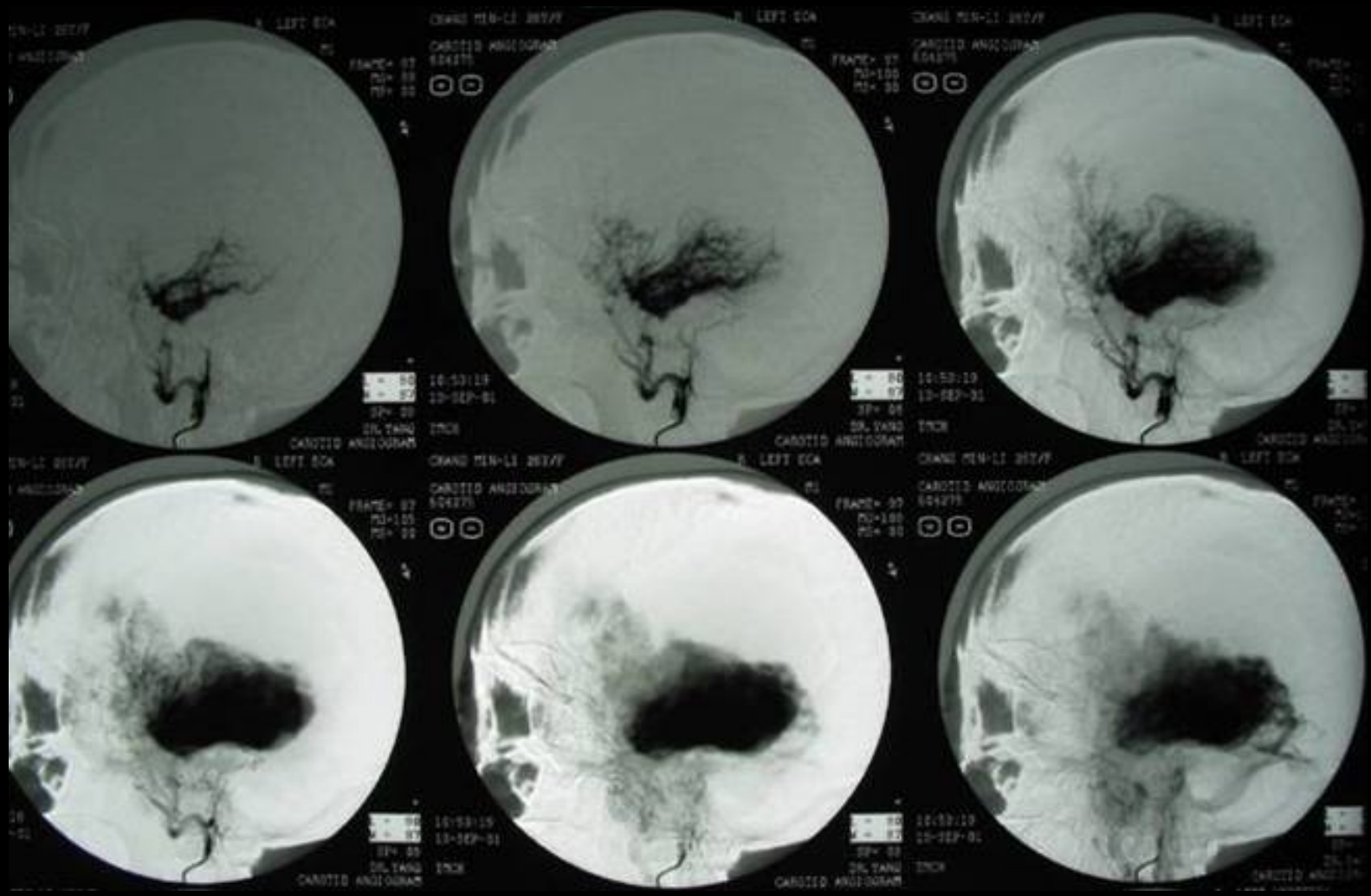
Angiography (Left ICA)



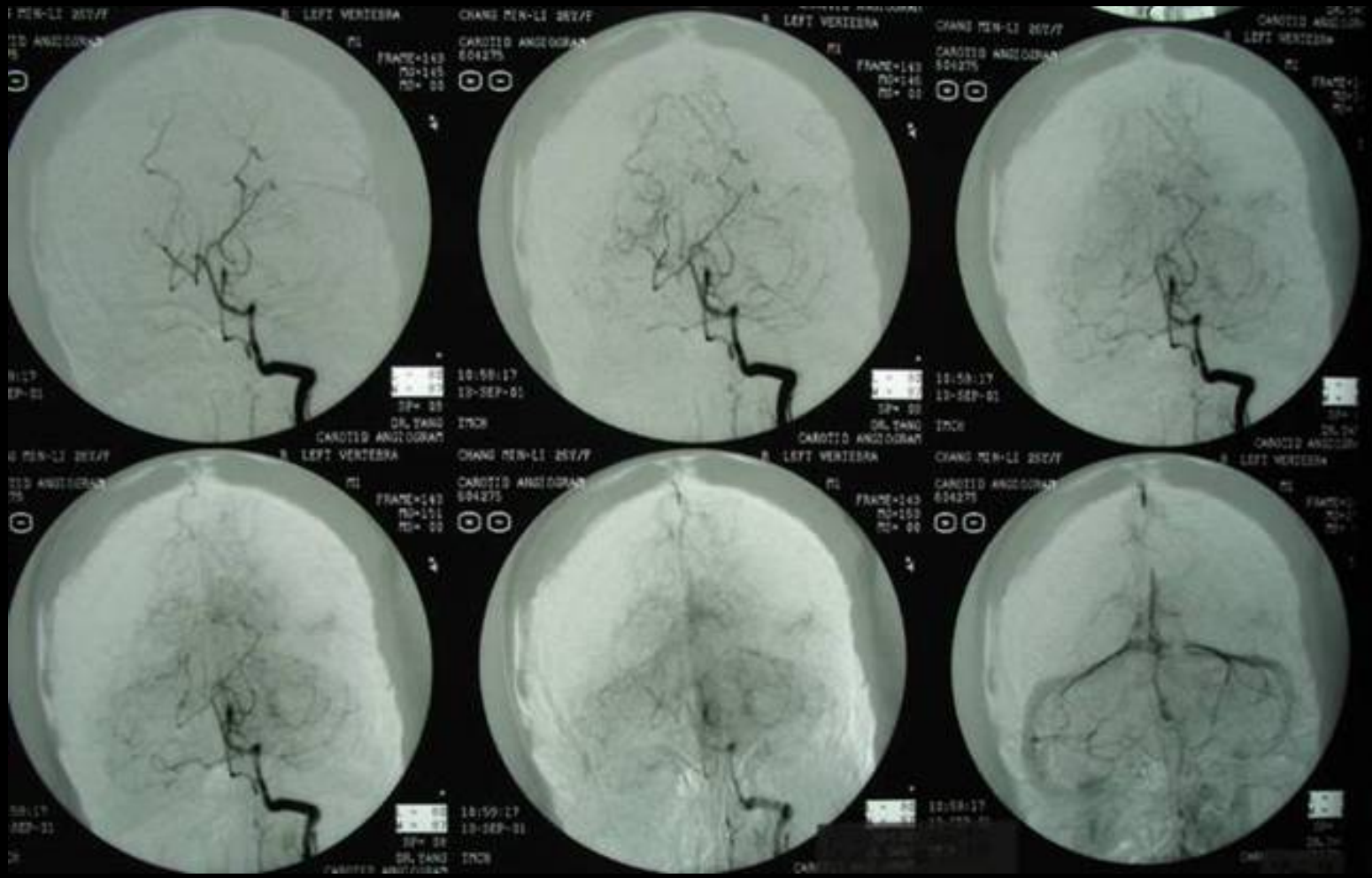
Angiography (Left ICA)



Angiography (Left ECA)



Angiography (Left vertebral a.)



Summary of image findings

- An extra-axial heterogeneous, brain tumor, arising from left sphenoid ridge or floor of left middle fossa, hyper-intense in T2WI and iso- to hypo-intense in T1WI, with strong and homogeneous enhancement after contrast, hypervascular with tumor stain, supplied by ECA and ICA, with mass effect causing midline shift, left lateral ventricle compression and left MCA&ICA medial&upward displacement, having invasion to orbital cavity. No obvious peritumorous edema or bony hyperostosis noted.

Differential Diagnosis

- Most likely:

  Meningioma, recurrent, left sphenoid ridge or floor of left middle fossa

- Less likely:

  Metastasis

  Schwannoma

  Lymphoma

  Chordoma

Meningioma

- Neoplasm arising from the meninges in the cranial cavity or in the spine.
- Most frequent extra-axial tumor (remains outside the neural structures) that usually cause displacement and compression.
- But some meningiomas are malignant (meningeal sarcoma) and invade brain tissue.
- 15% of intra-cranial tumor
- Women:men (2:1)

Meningioma

- Histology:

  Russell and Rubinstein

  Group 1: classic type (= meningothelial = syncytial = transition = fibroblastic)

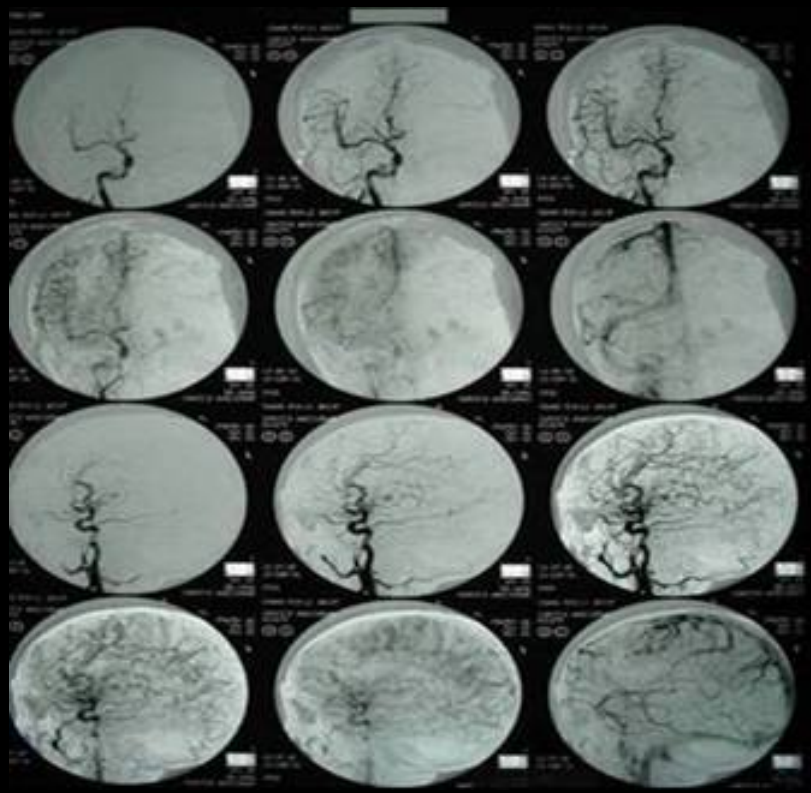
  Group 2: angioblastic type (= hemangiopericytomas)

  Group 3: malignant meningioma (= meningeal sarcoma = spindle cell sarcoma)

Meningioma

- Common locations:
  1. Parasagittal
  2. Cerebral convexity
  3. Sphenoid ridge
  4. Olfactory groove
  5. Suprasellar
  6. Cerebropontine angle
  7. Spinal
  8. Floor of the middle fossa
  9. Torcular
  10. intraventricular

Common locations of meningioma



Meningioma

- Shape: globoid or en plaque (ex: in the sphenoid ridge).
- Calcifications: Psammomatous (homogeneous distribution of fine calcifications), or nonuniform distribution of slightly larger calcifications.
- Bone reaction: Frequently some reactive sclerosis and hyperostosis can be seen in adjacent bone.
- Edema: having peritumorous edema or not is not related to tumor size or histology.

Meningioma

- MRI appearance: usually relatively isotense with gray matter on T1WI; may have variable signal intensity.
- MRI appearance with contrast: typically densely enhance and can be seen to have a “dura tail” , probably due to dural reaction.

Meningioma

- MRA or angiography findings:

1. hypervascular with tumor stain
2. Blood supply from the middle meningeal artery (ECA) or its branches (esp. convexity).Additional branches from the intracavernous portion of ICA. (esp.parasellar or tentorium), or vertebro-basilar system, implies the violation of leptomeningeal brain cover.

Surgical intervention

- 2001.9.15 removal of brain tumor under microscope

  because of large tumor and massive bleeding, second approach and removal of the tumor again on 2001.9.22

Pathology

- Meningioma
- Meningothelial type