

- General data

- gender : ♀

- age : 35 y/o

- Chief complaint

- 2001/12/6

- Sudden onset of seizure attack while sleeping
persisted for 1 min

● Present illness

- DM (+), HTN (+) for years under regular control
- headache and dizziness for 1 year
- no past seizure attack history
- denied trauma history
- on 2001/12/6, she suffered from sudden onset of general convulsion, conscious loss, foam from mouth, while sleeping for 1 month

- she was sent to ER immediately,
on arrival, conscious was recovered,
GCS E4V5M6, no nausea & vomiting,
no other neurological deficit was found.
- emergent brain CT was performed at ER
consult NS doctor
(seizure, R/O brain tumor)
- admitted to NS ward for further evaluation

- Past history

DM (+), HTN (+) for years under regular control

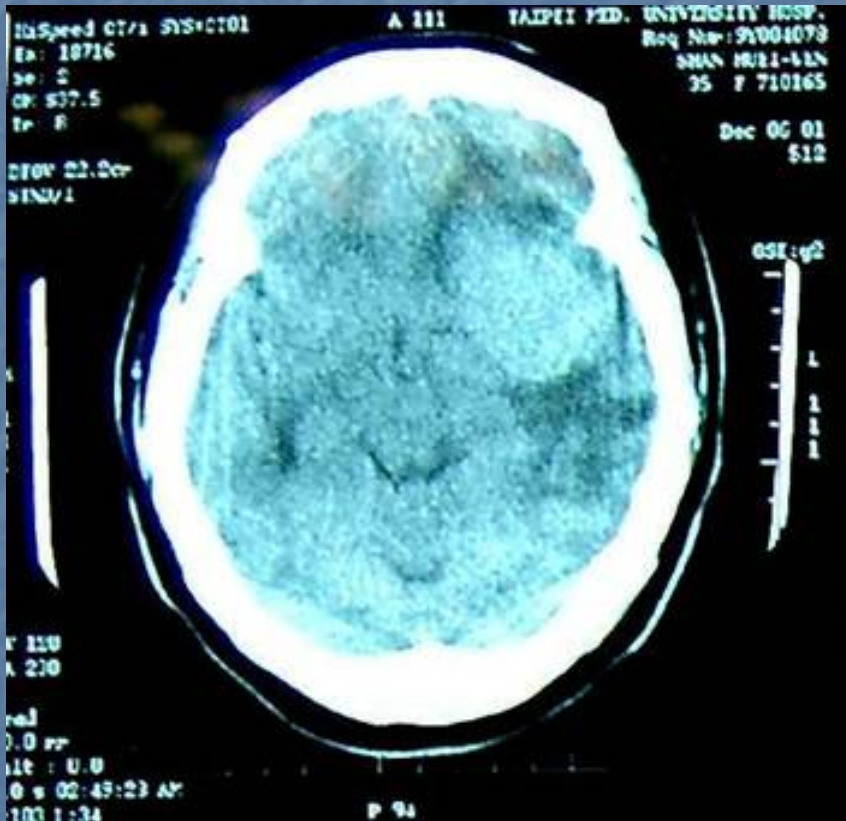
- Lab data

glucose : 164 mg/dl

● Image studies

- 2001/12/6, CXR & KUB : normal
brain CT
- 2001/12/6, brain MRI
- 2001/12/10, pre-op TAE
- 2001/12/12, operation

2001/12/6 Brain CT (1) (without contrast)



- a 5-cm homogenous, isodensity mass with a wide dura base occupy the left middle cranial fossa and left temporal region.
- extensive white matter edema surrounding the mass in the left cerebral hemisphere.

2001/12/6 Brain CT (2) (no C.E.)



- one lobulated mass
- the mass compress the left lateral ventricle, resulting in mild hydrocephalus.

● CT findings

- a 5-cm homogenous, isodensity mass with a wide dura base occupy the left middle cranial fossa and left temporal region.
- extensive white matter edema surrounding the mass in the left cerebral hemisphere.
- the mass compress the left lateral ventricle, resulting in mild hydrocephalus.
- Imp : a extra- or intra-axial brain mass occupy the left middle cranial fossa and temporal region is considered.
suggest enhanced MRI study.

- Intra-axial brain mass :
arise from brain parenchyma
- 1. Glioma
- 2. Medulloblastoma
- 3. Hemangioblastoma
- 4. Metastases
- 5. Infarct/hematoma
- 6. AVM/congenital
- 7. Abscess/inflammation

- extra-axial brain mass
 - from outside the brain (arachnoid, meninges, skull, ventricular systems...)
- 1. Meningioma
- 2. Pituitary adenoma
- 3. Craniopharyngioma
- 4. Schwannoma
- 5. Chordoma or other bone tumors
- 6. Dermoid/epidermoid, cyst, lipoma
- 7. Hematoma, metastasis, infection

2001/12/6 Brain MRI (precontrast T1WI)



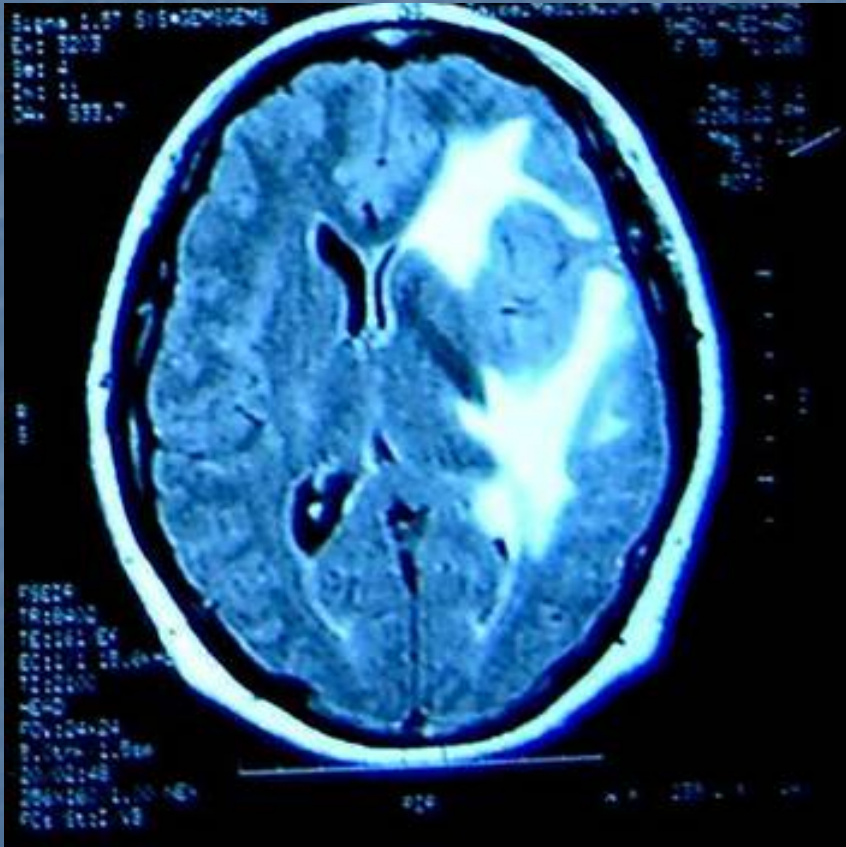
- Inward buckling of white matter
- a large isodensity multi-lobular extra-axial mass (3.2 x 5.0 cm) in the left middle cranial fossa
- Intratumoral hypodensity suggest tumoral vessels

2001/12/6 Brain MRI (precontrast T2WI)



- the mass exhibit homogenous iso-intensity on T2WI
- Intratumoral hyperdensity suggest tumoral vessels

2001/12/6 Brain MRI (precontrast FLAIR)



- a large multi-lobular extra-axial mass (3.2 x 5.0 cm) in the left middle cranial fossa
- the mass compress left temporal lobe and left cerebral peduncle. resulting in extensive white matter edema, brain edema, and midline shift.

2001/12/6 Brain MRI (postcontrast T1WI)



- intense and homogenous enhancement.

2001/12/6 Brain MRI (sagittal postcontrast T1WI)



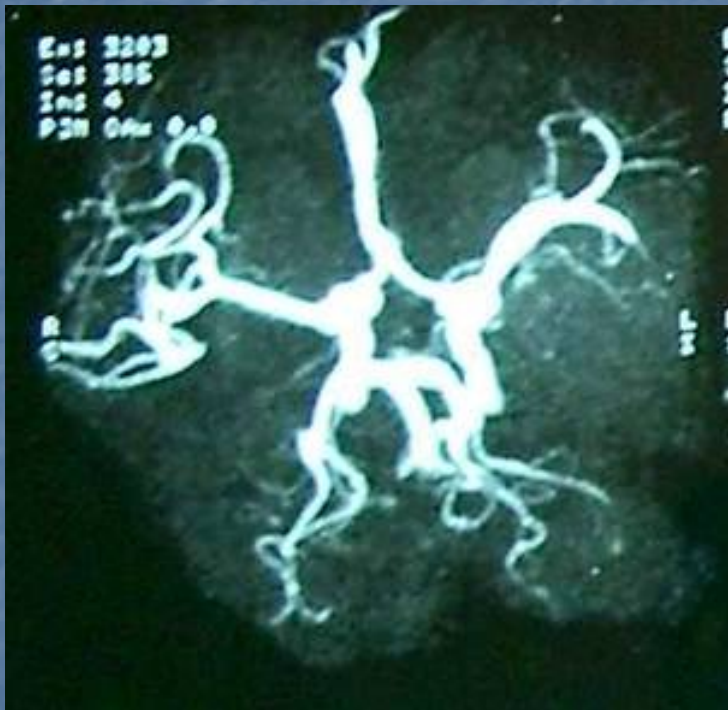
- a mass located in sphenoid ring

2001/12/6 Brain MRI (coronal postcontrast T1WI)

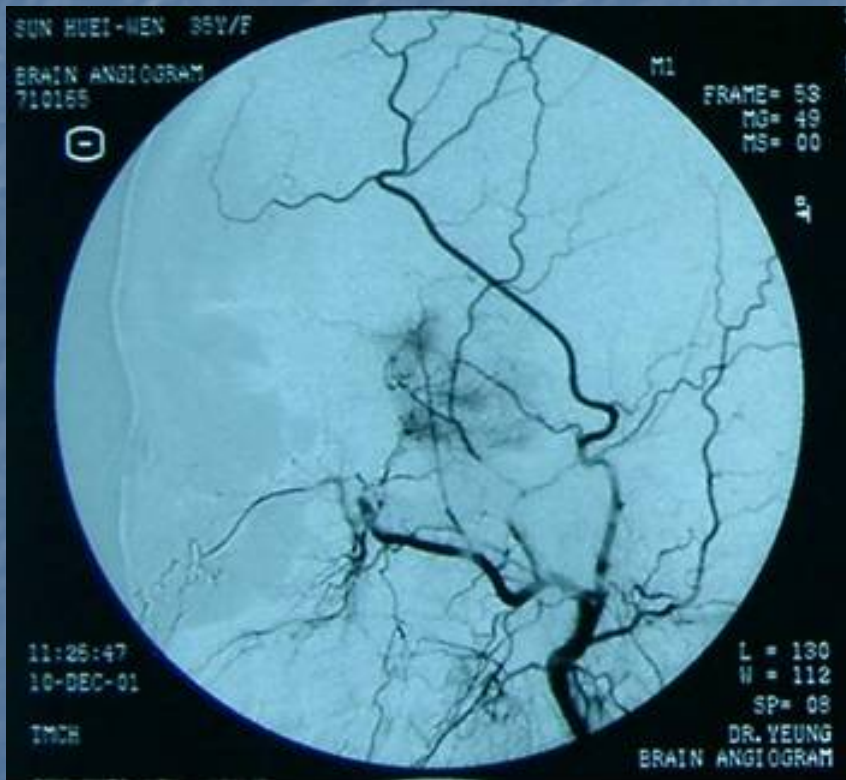


- enhancing dural tail sign (+)
- a brain mass located in sphenoid ridge with adjacent hyperostosis

2001/12/6 Brain MRA



2001/12/10 the left ECA angiogram



- a hypervascular tumor was noted in the left temporal region with blood supply from left superficial temporal artery, terminal branches of the left maxillary artery



- s/p pre-op TAE

● MRI findings

- a large multi-lobular extra-axial mass (3.2 x 5.0 cm) in the left middle cranial fossa
- the mass exhibit homogenous iso-intensity on T1WI and T2WI, with intense and homogenous enhancement.
enhancing dural tail sign (+) (→ meningioma)
- small intralesional area of low-intensity in T1WI and high-intensity in T2WI, suggest intratumoral vessels or hemorrhage

- the mass compress the underlying left temporal lobe and left cerebral peduncle.
resulting in extensive white matter edema,
brain edema, and midline shift.

● Angiogram findings

- a hypervascular tumor was noted in the left temporal region with blood supply from left MCA,
left superficial temporal artery,
terminal branches of the left maxillary artery

● Differential diagnosis

- meningioma- most likely
- metastasis
- lymphoma
- craniopharyngioma
- schwannoma

● metastatic tumor

- Intra-axial, extra-axial, within the subarachnoid spaces or skull
 - extra-axial : breast ca., lymphoma, prostate ca., neuroblastoma
 - mostly multi-focal and located at corticomedullary junction
 - hypodense on CT
- on MRI, hypointense in T1WI
- variable intensity in T2WI with marked edema surrounding each lesion

● craniopharyngioma

- arise from squamous epi. remnants of the anterior lobe of pituitary gland
- 2 age peaks : 5~10 y/o, 50~60 y/o
- on CT, classically a cystic-appearing sellar/suprasellar mass with an enhancing rim
calcification is seen in 80 % of children
40 % of adult
- on MRI, hyperintensity in both T1WI and T2WI
because of liquid cholesterol

● Schwannoma

- arise from Schwann cells
- on CT, iso- to hypo-dense mass
 - homogenously enhanced by contrast
- On MRI, hypointensity to gray matter in T1WI
 - hyperintensity in T2WI
 - intensely enhanced
- the larger it is, the more heterogeneous due to cysts, hemorrhage and necrosis.

- Post-op diagnosis
Sphenoid ridge meningioma
size 4.5 x4.5x 4 cm
- Pathological diagnosis
Meningotheliomatous meningioma

- Discussion~ meningioma

- the most common extra-axial neoplasm of adult
- 15 % of intracranial neoplasm
- female predominance, F : M = 2:1
- peak incidence : 40~60 y/o

- location :

- cerebral convexities (50%)

- lateral convexities, parasagittal region, falx

- basal sub-frontal location (40%)

- olfactory groove, sphenoid wing, suprasellar region

- the remaining 10%

- posterior fossa, tentorial notch, intraventricular

- classification : (by Russell and Rubinstein)
 1. classic meningioma :
syncytial(meningotheliomatous), transitional,
and fibroblastic varieties
 2. angioblastic group :
hemangioblastic and hemangiopericytic
variants
 3. malignant meningioma

- Clinical symptoms :
seizure activity,
headache from IICP,
anosmia, exophthalmos,
diminished visual acuity.....

- Image

1. a broad dura base
2. adjacent calvarial hyperostosis or invasion
3. inward buckling of the gray/white matter junction
4. interposition of CSF, pial vasculature structures or dural margins between the tumor surface and the brain surface
5. enhanced T1WI : dural tail sign (+)
unenanced T1&T2 : similar to normal gray matter

- treatment :
surgical intervention
(pre-op embolization of tumor vessels may facilitate neurosurgical resection)
- malignant variants : rare, only 1%
- It is not possible to reliably distinguish malignant from nonmalignant meningiomas based on imaging characteristic alone.