

NR

WORKSHOP

2014



OKAYAMA UNIV. HOSPITAL

RYOTA INAI KENTARO IDA

Case: A 40-Year-Old Man with headache

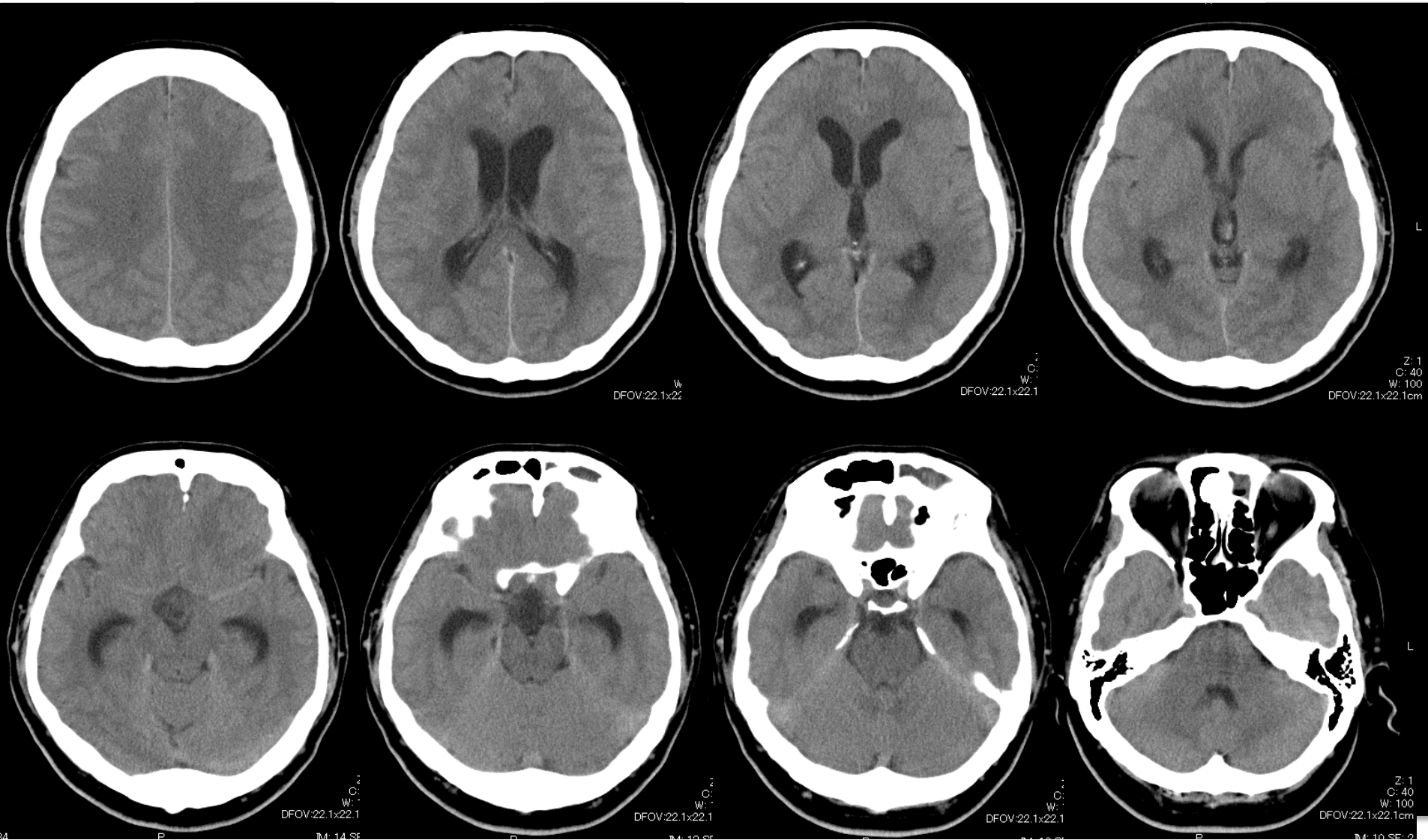
- ✓ The patient had been well until approximately 2 weeks before admission, when headache occurred.
- ✓ He was seen at another hospital, where CT of the head reportedly revealed a brain mass.
- ✓ He was referred to this hospital for evaluation.

Past Medical History: None

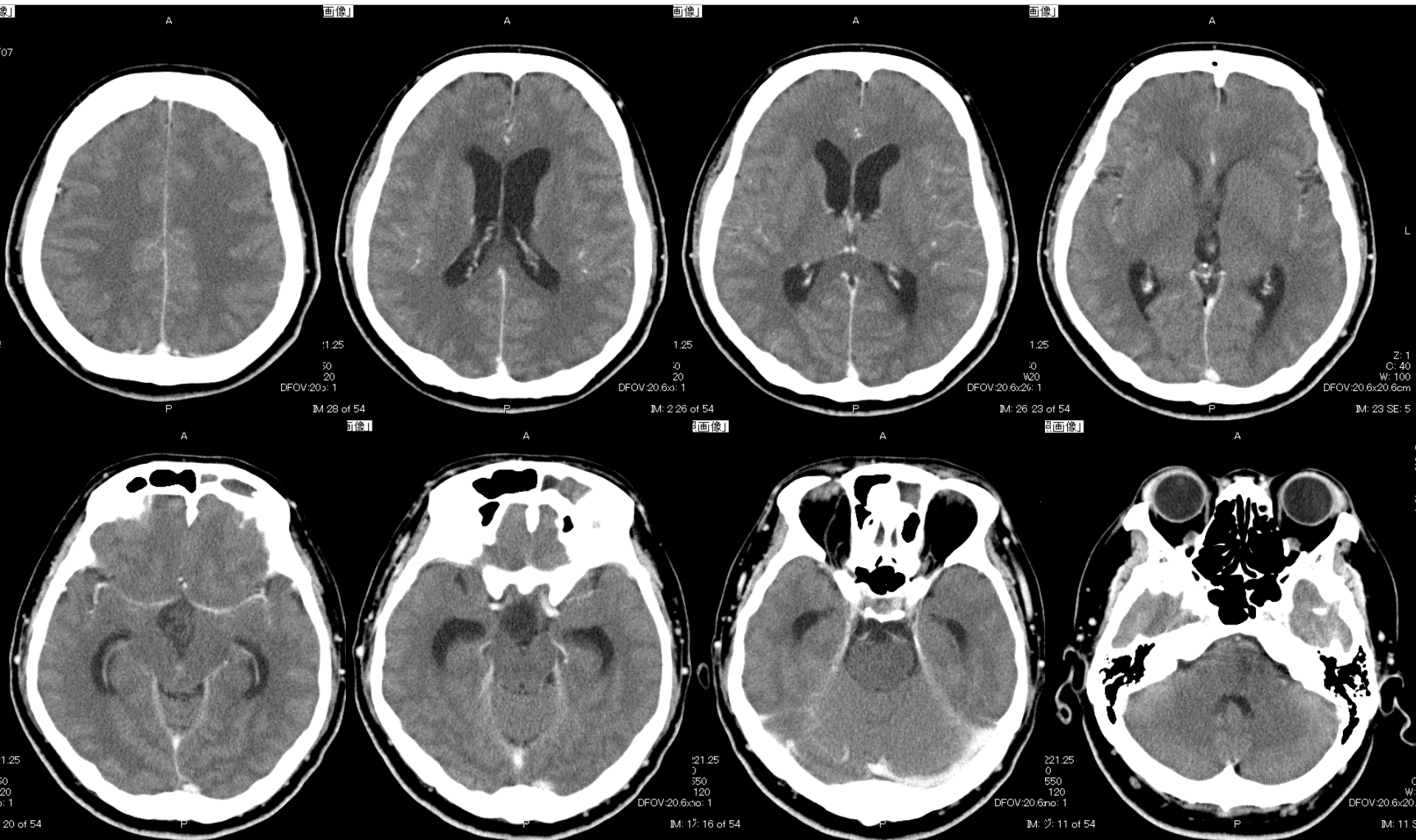
Medications: None

Labs: Within normal limits

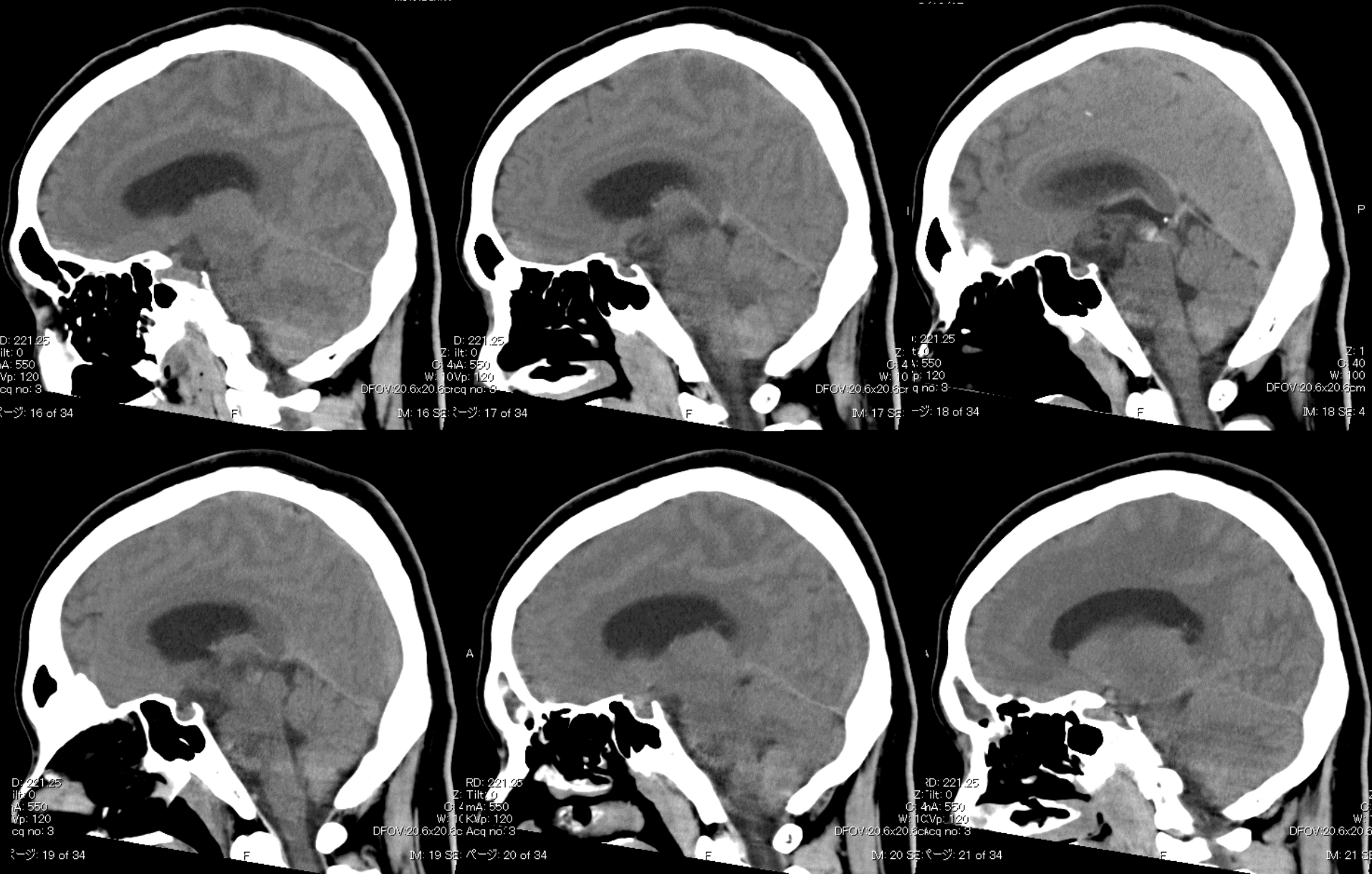
Non-contrast CT



Contrast CT



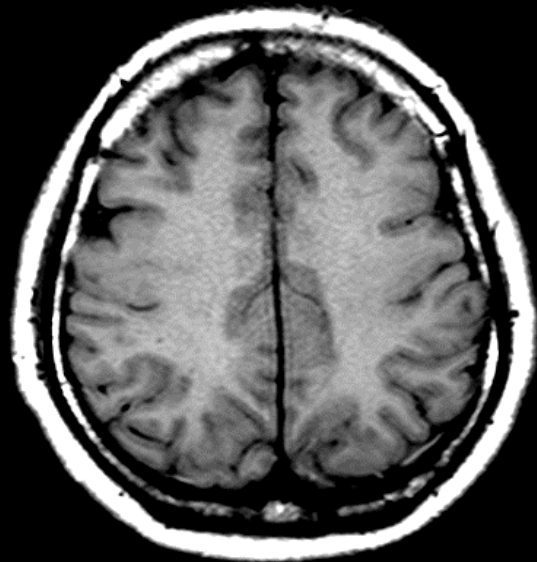
Non-contrast CT (Sagittal)



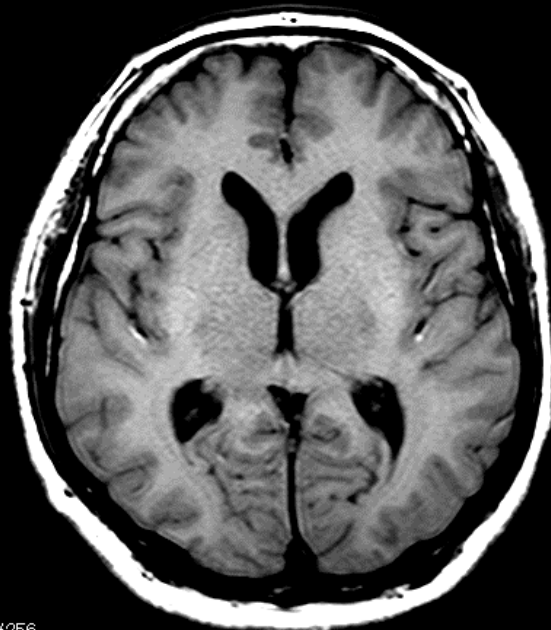
Contrast CT (Sagittal)



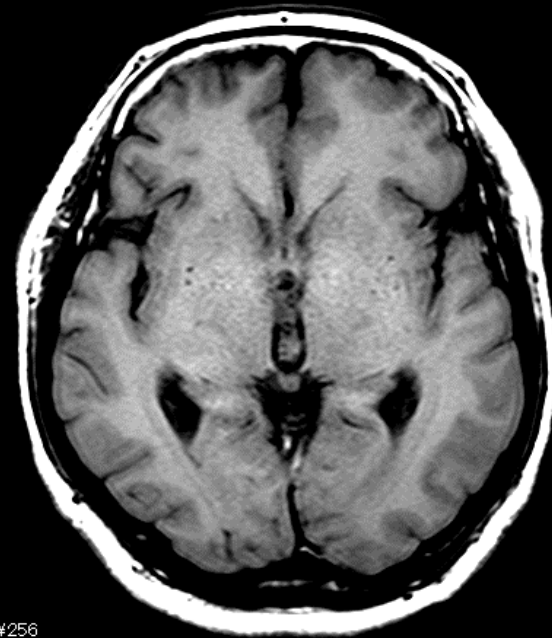
T1WI



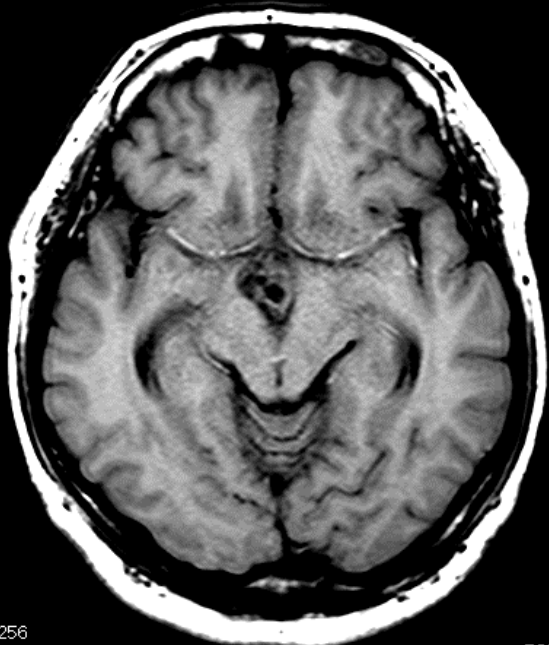
32#256



192#256
FOV:22

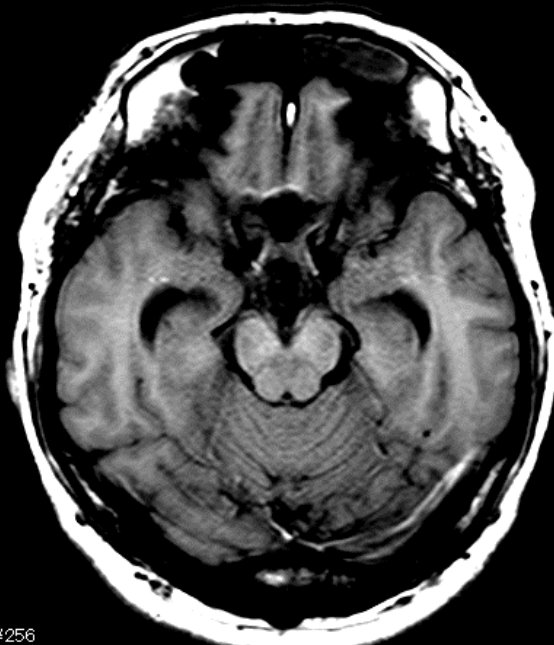


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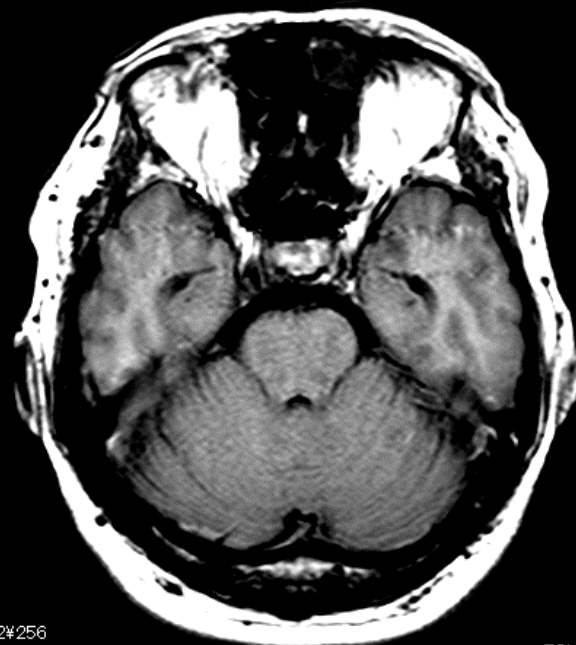


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FOV:22
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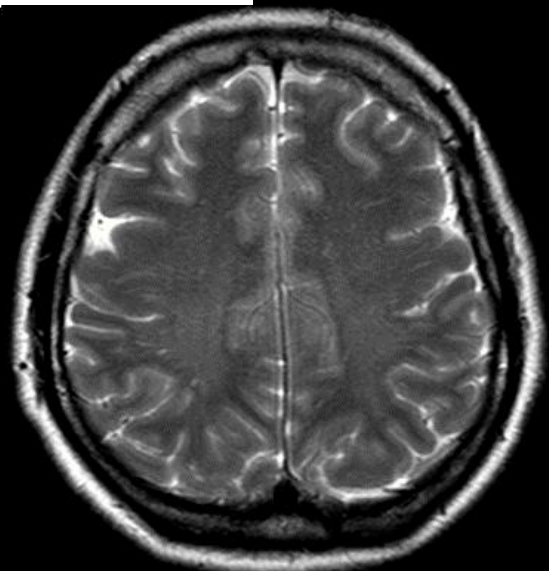


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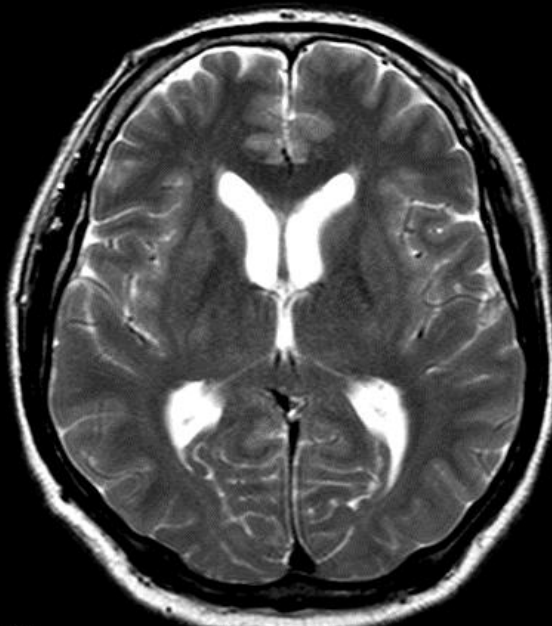


FOV:22

T2WI

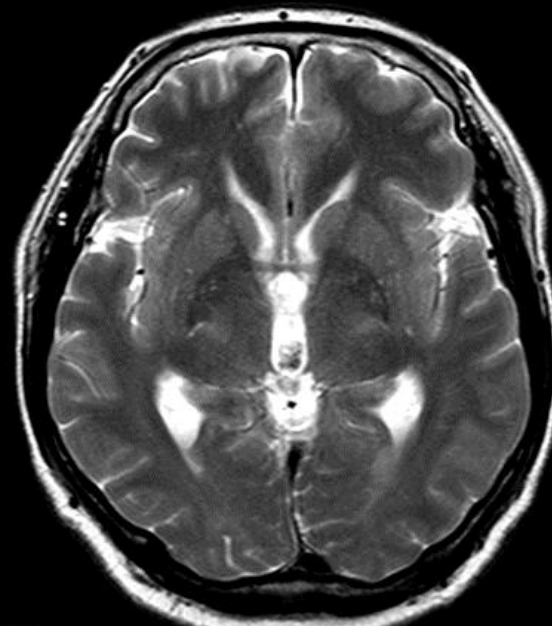


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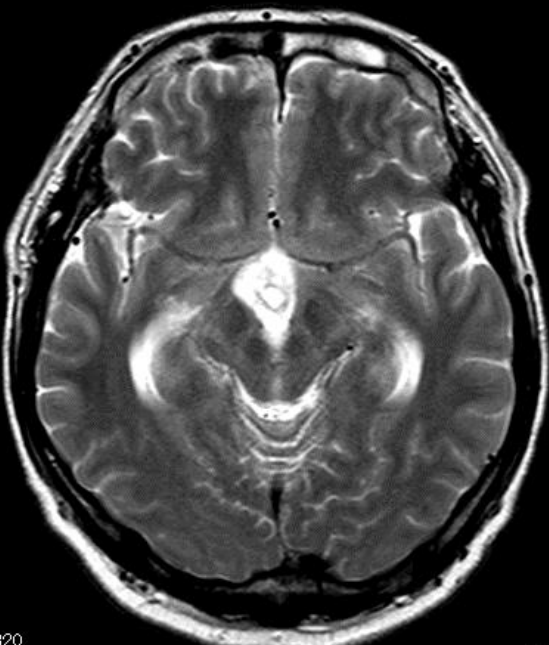


FOV:0

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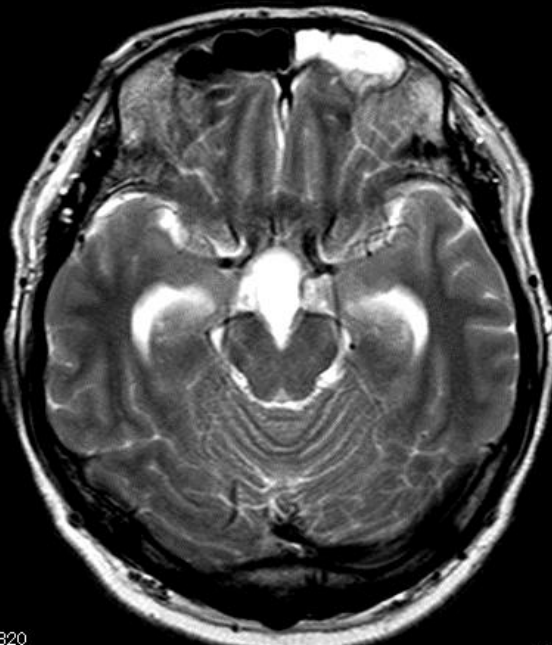
FOV:00



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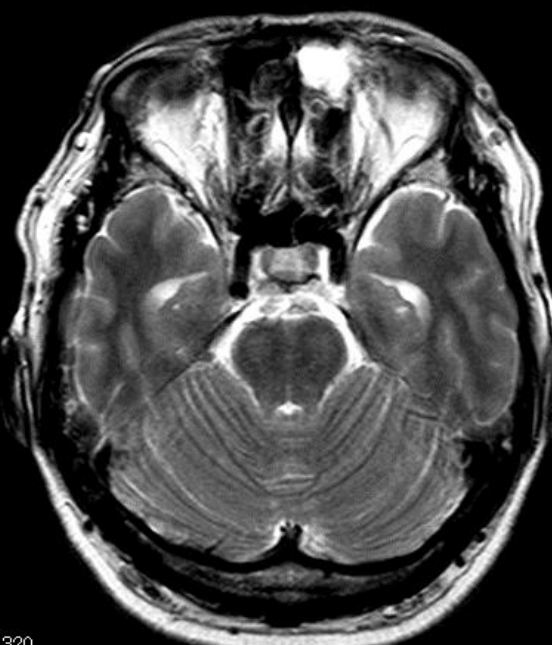
FOV:00

8#320



FOV:00

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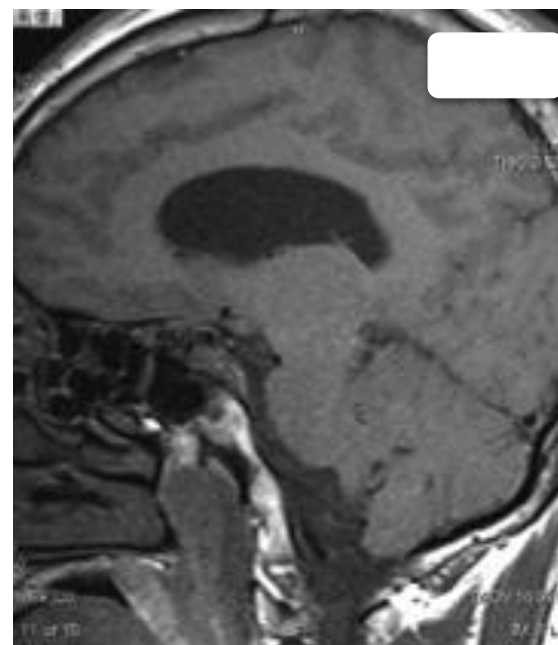
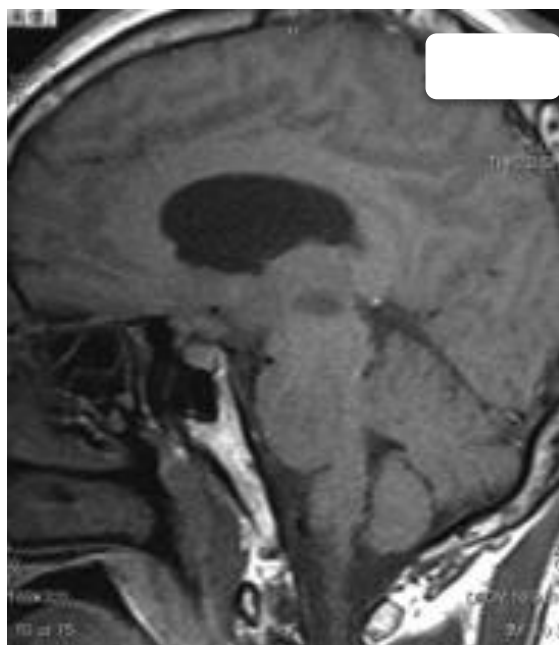
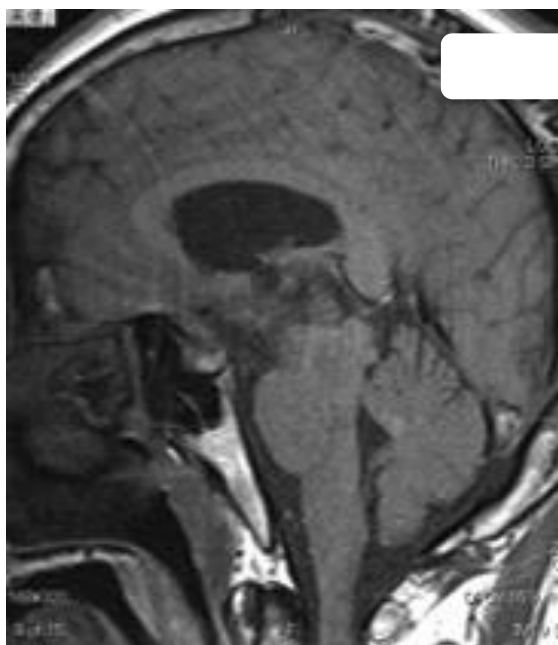
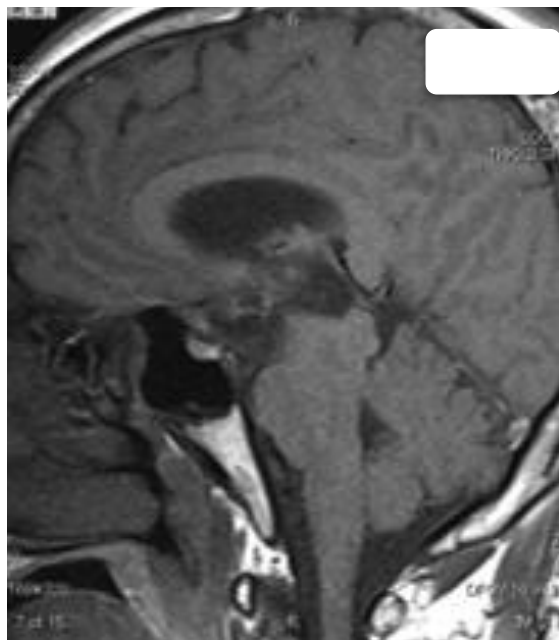
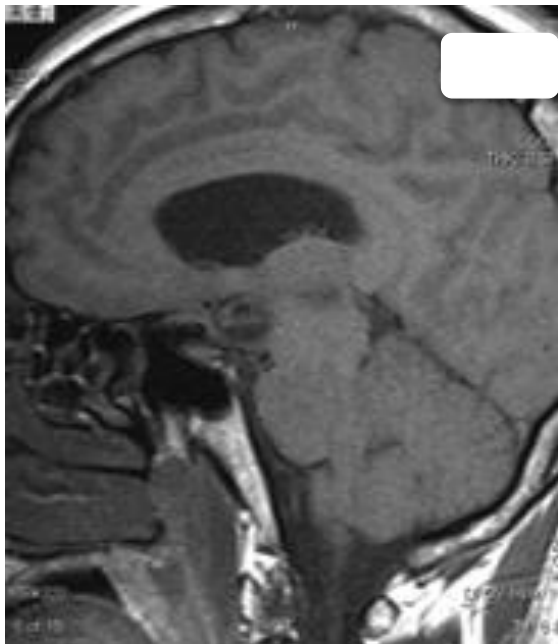


FOV:00

T2WI (Sagittal)

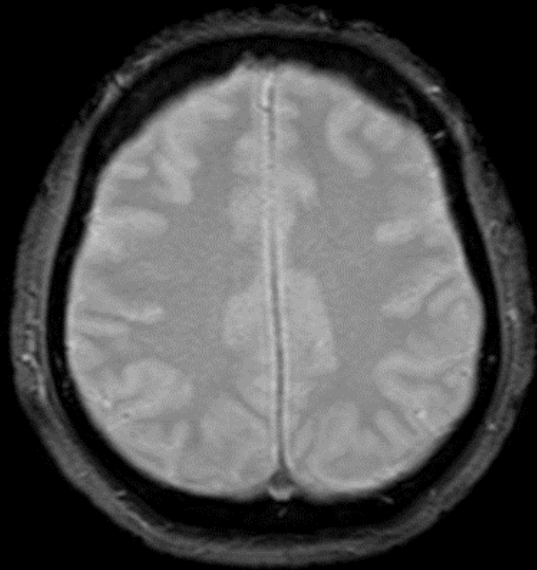


T1WI (Sagittal)

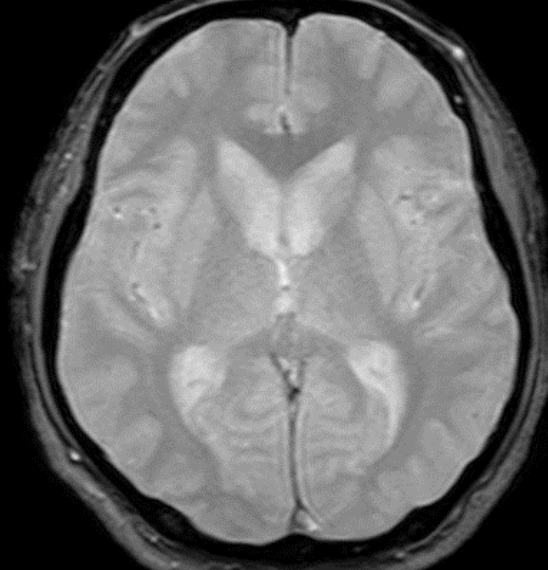


T2*WI

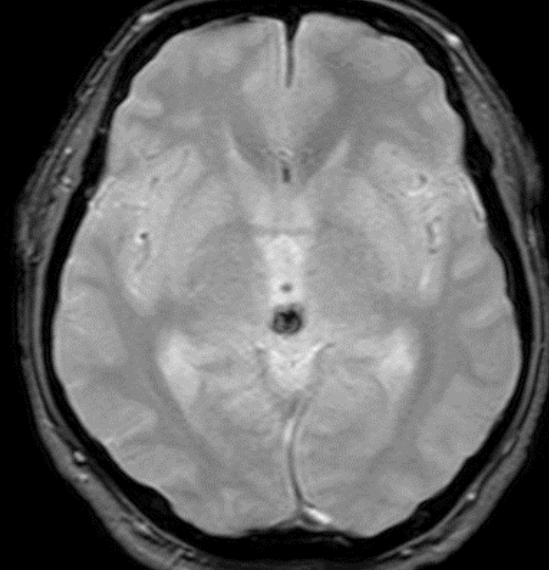
T2 F



3#240

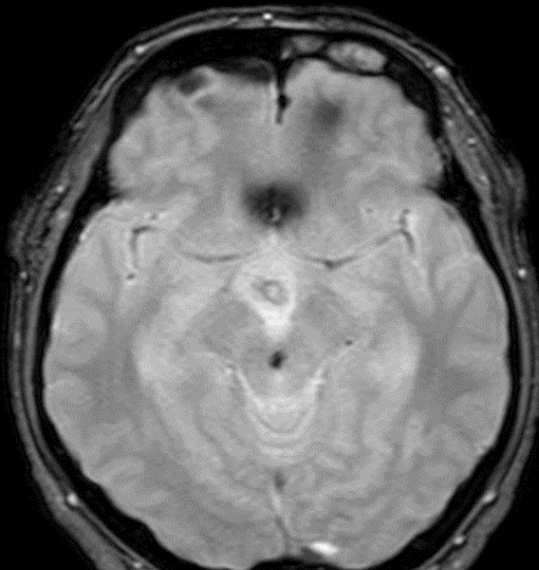


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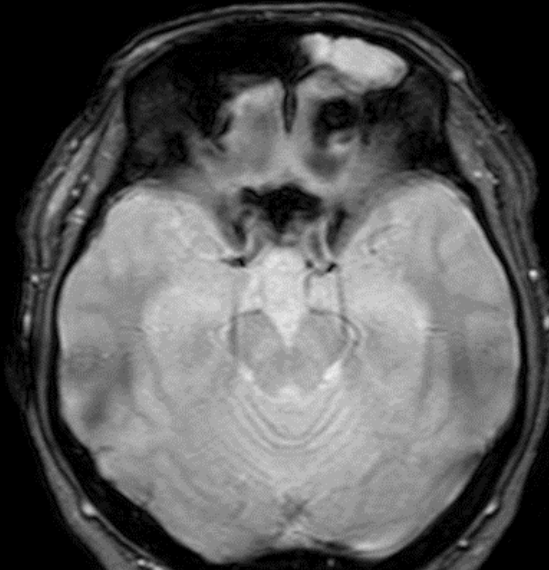


8#240

T2



168#240



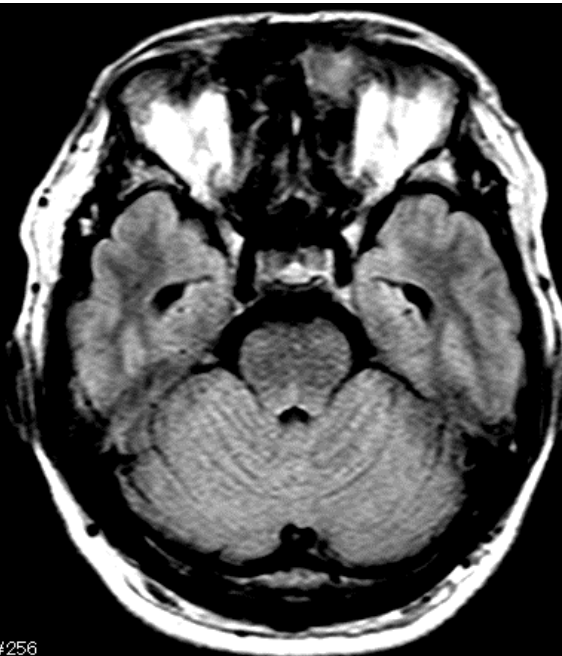
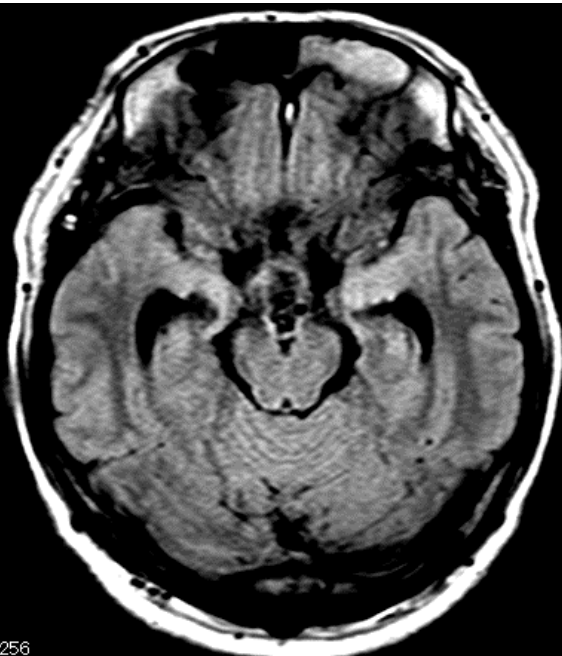
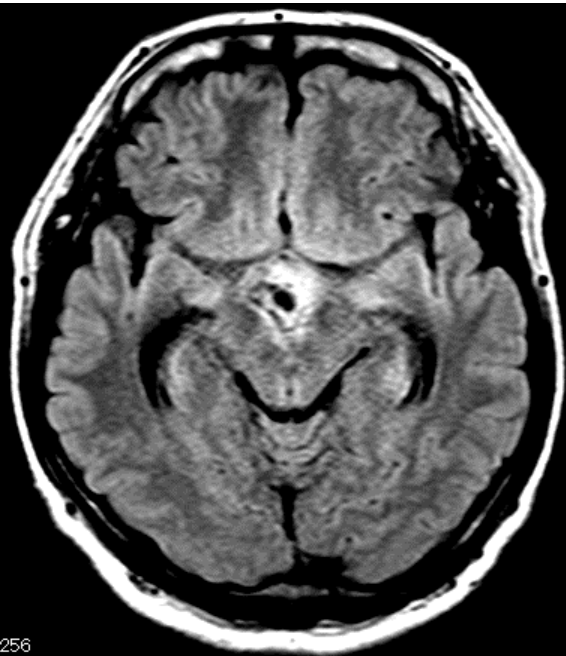
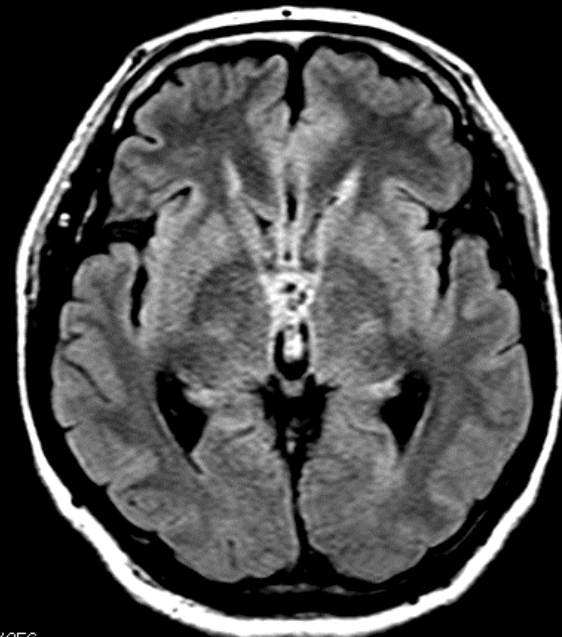
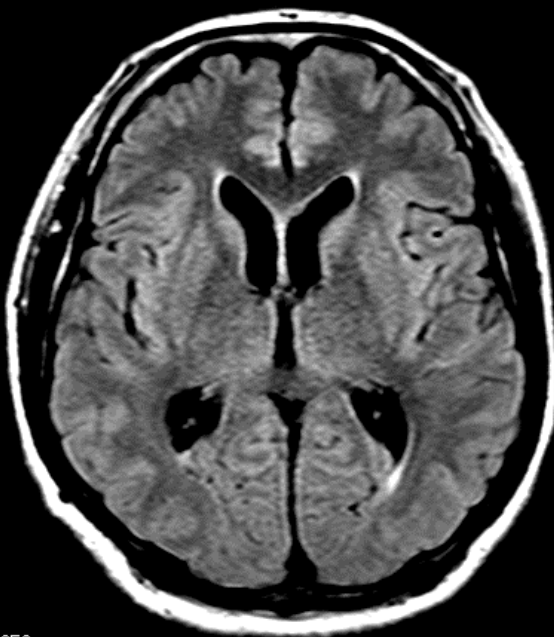
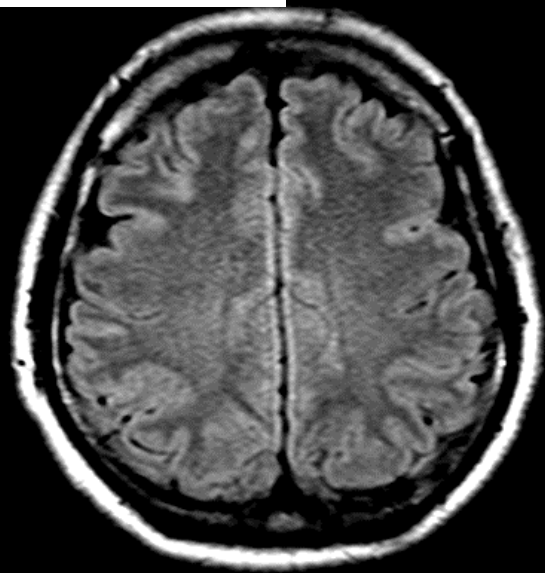
68#240



68#240

EQV-2

FLAIR



5#256

FOV:22x #256

FOV:2 55#256

FOV:22

DWI (b=1000)

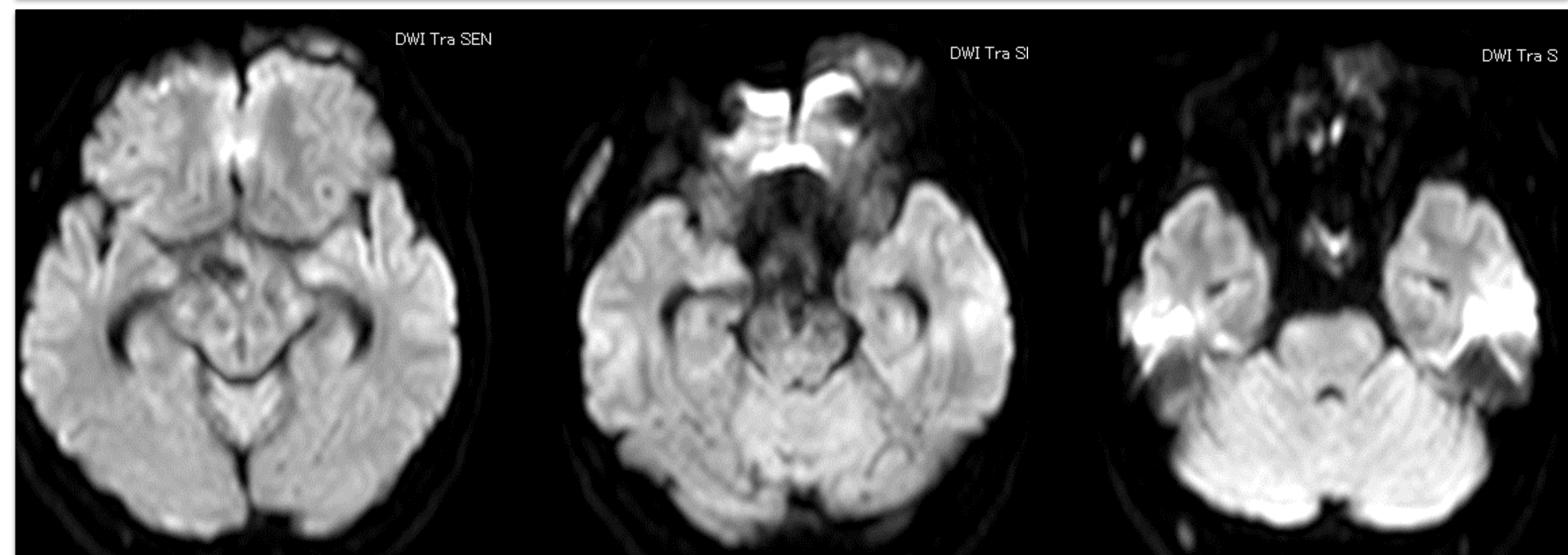
DWI Tra SE

DWI Tra SENS

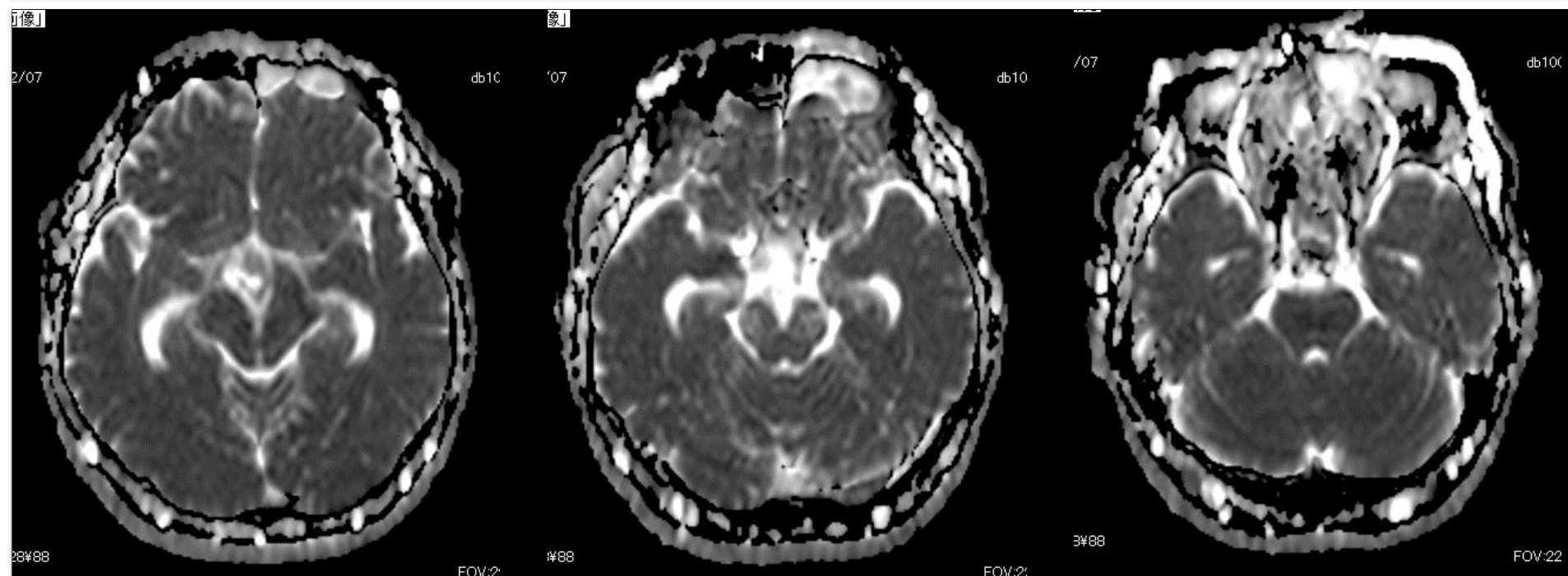
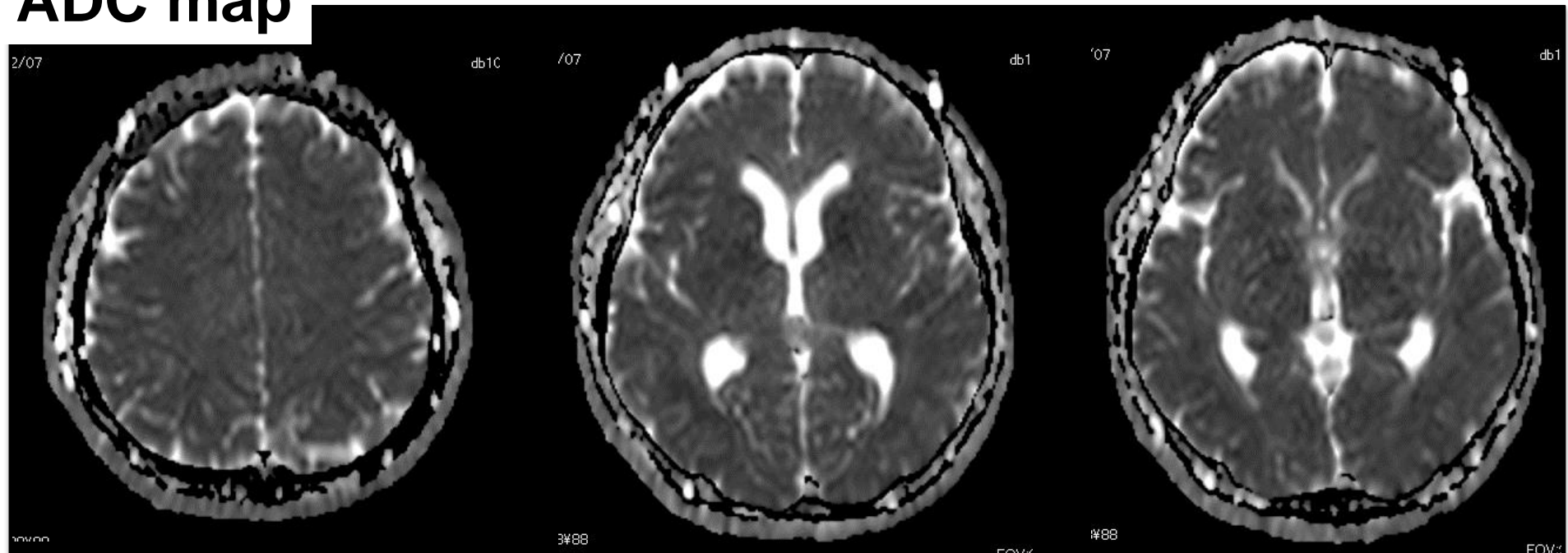
DWI Tra SEN

DWI Tra SI

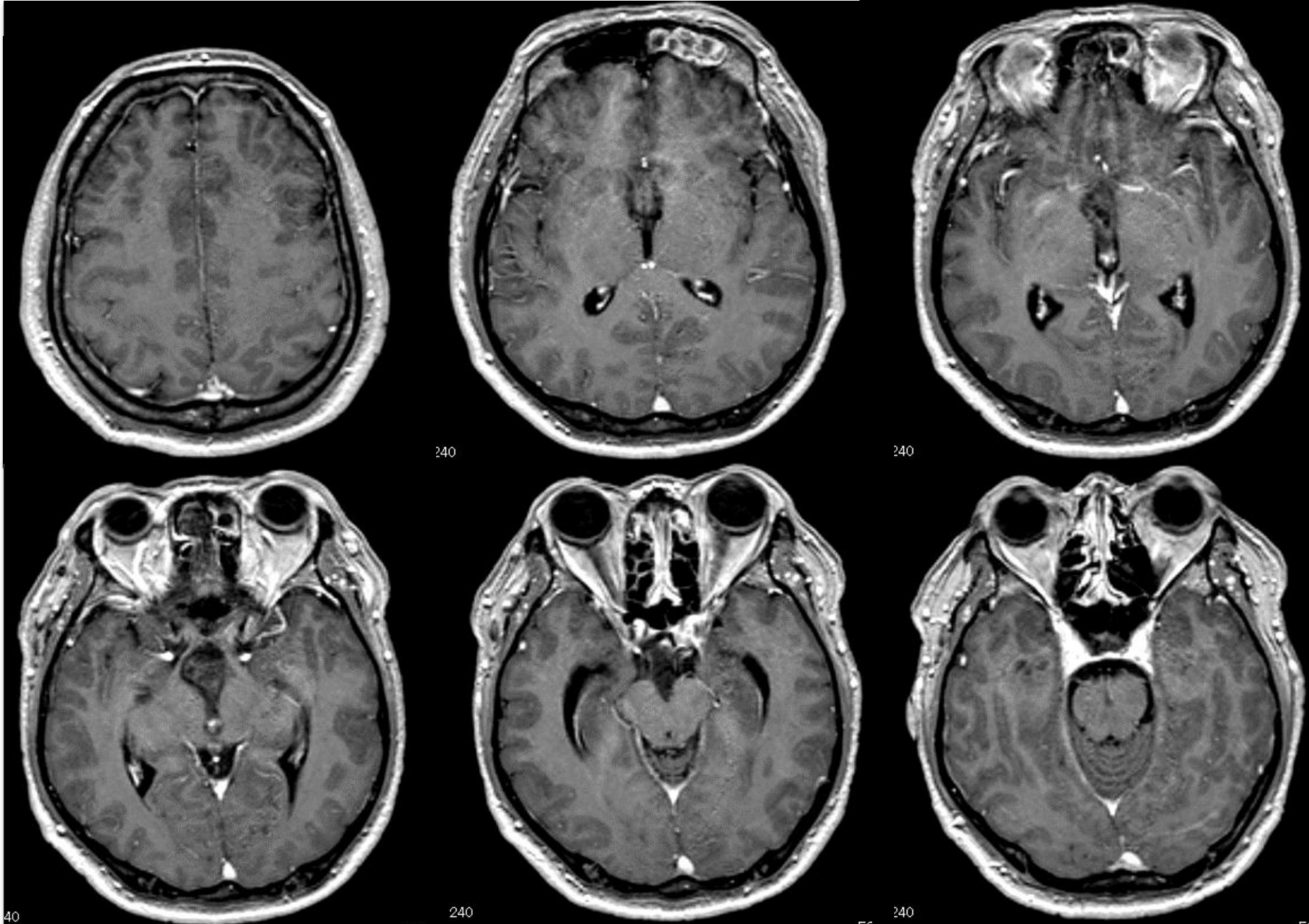
DWI Tra S



ADC map



Contrast-enhanced axial T1WI



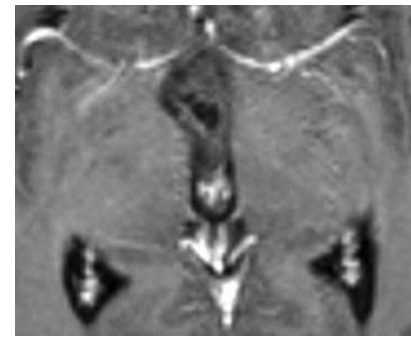
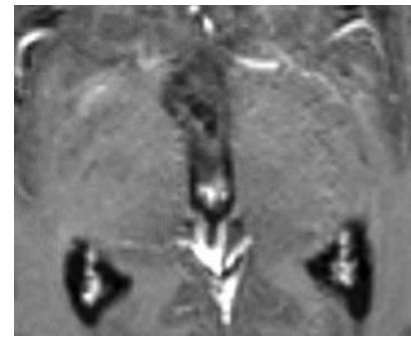
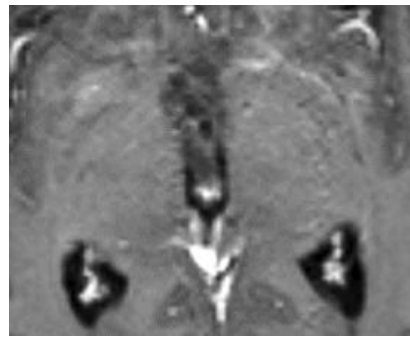
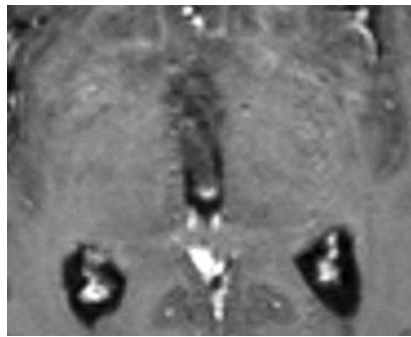
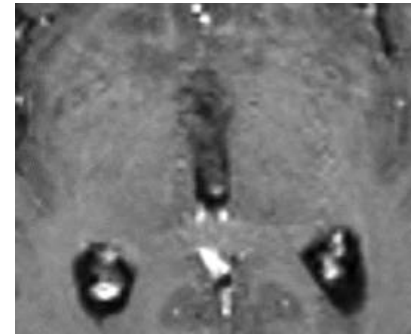
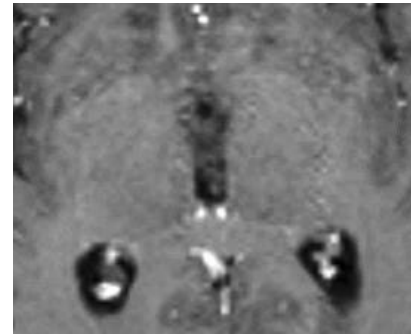
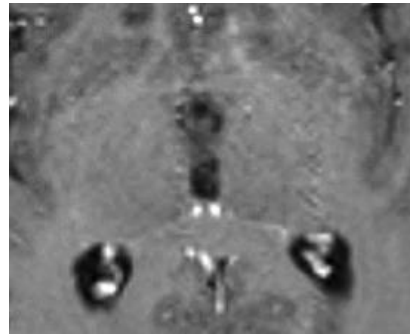
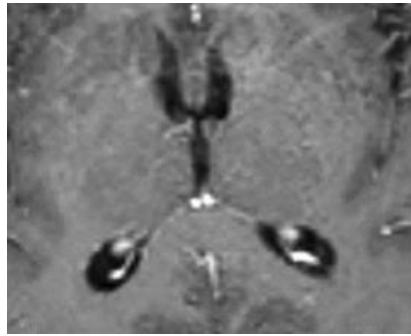
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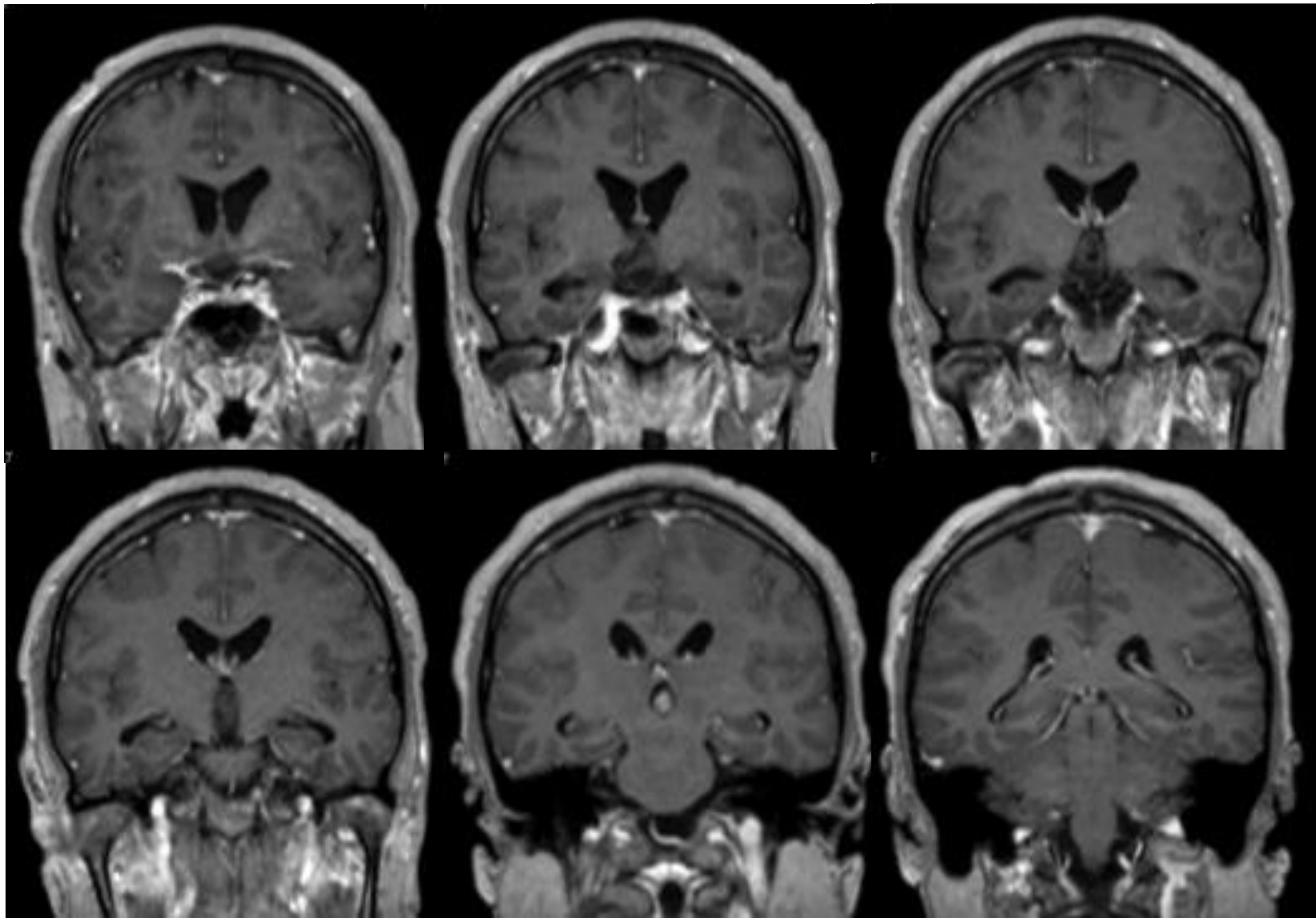
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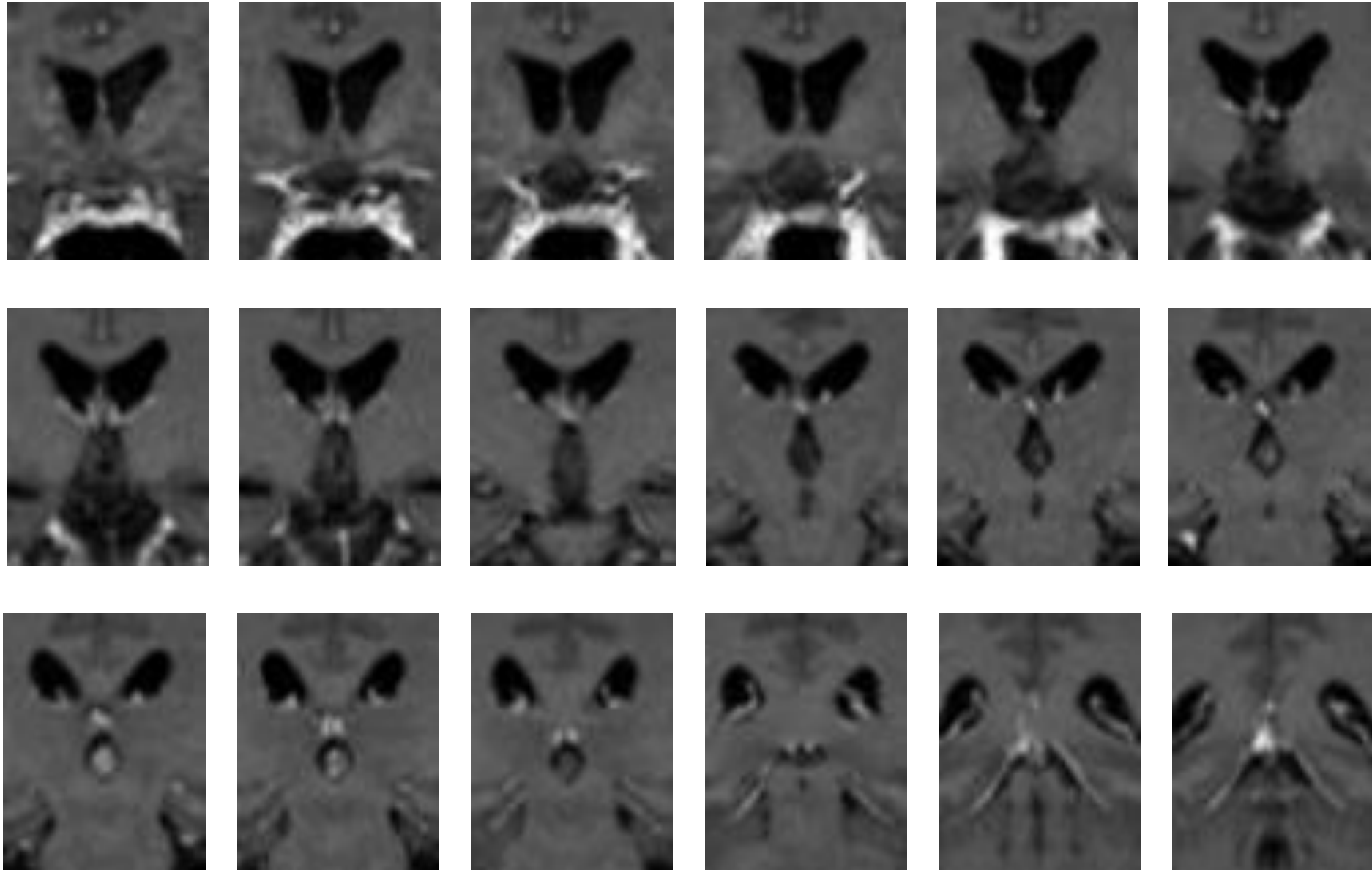
Contrast-enhanced axial T1WI (in detail)



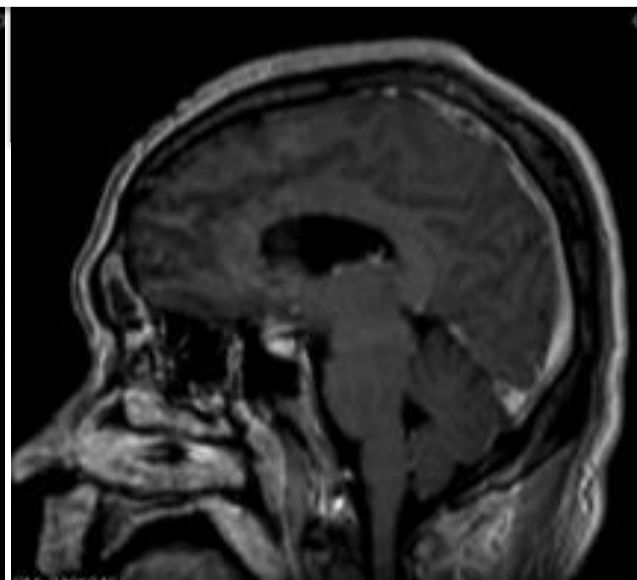
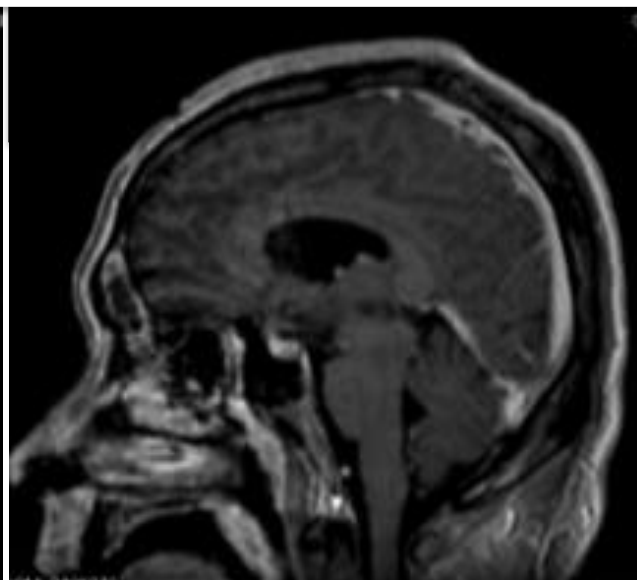
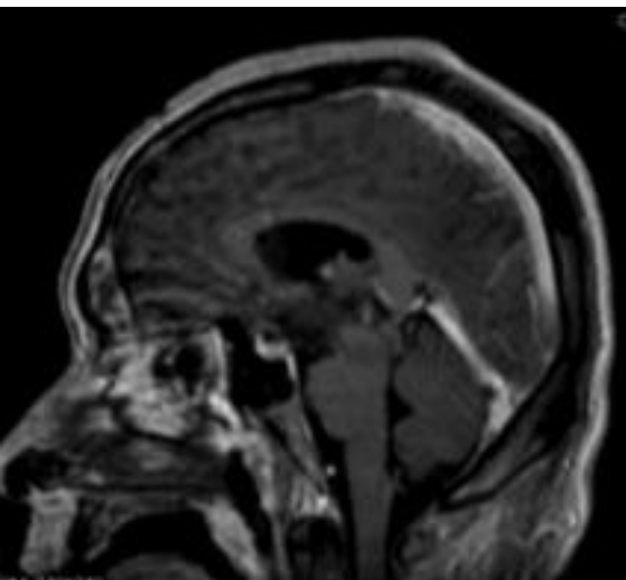
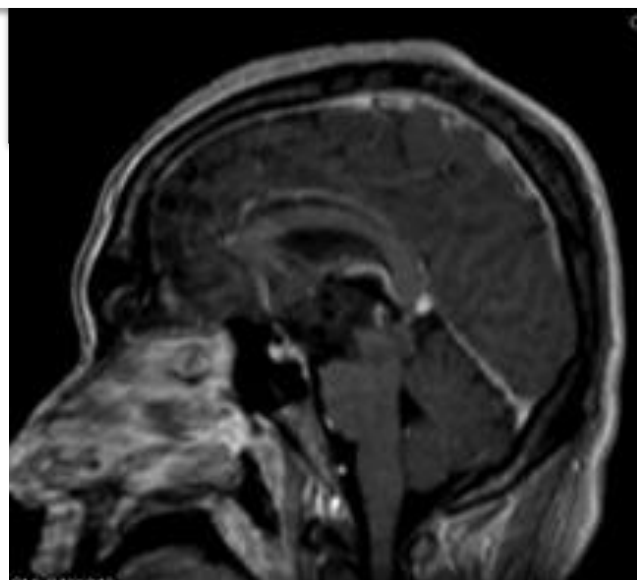
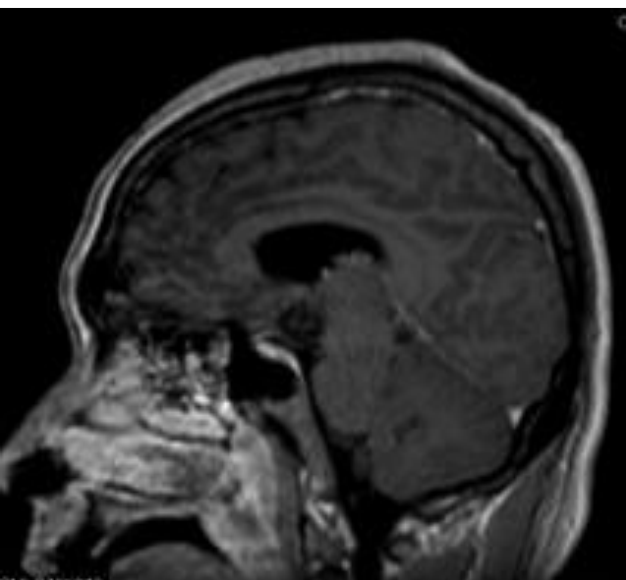
Contrast-enhanced coronal T1WI



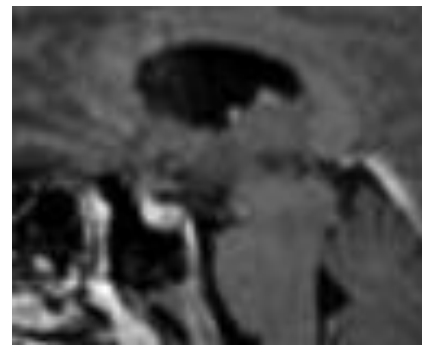
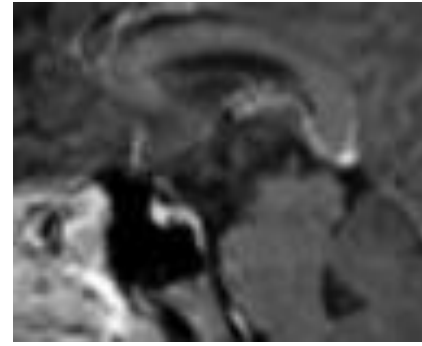
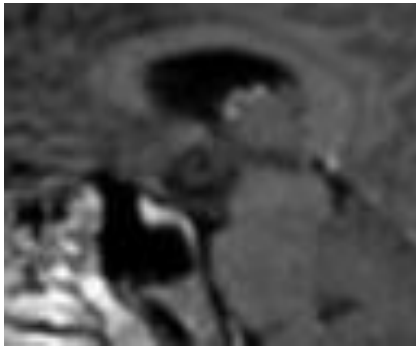
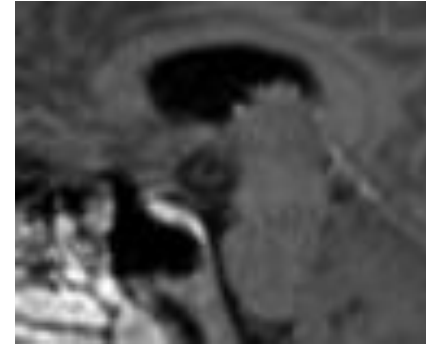
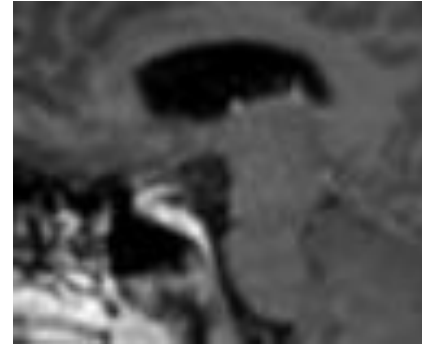
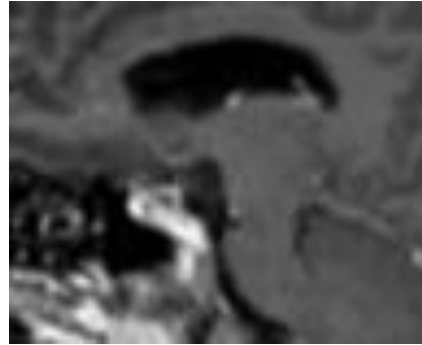
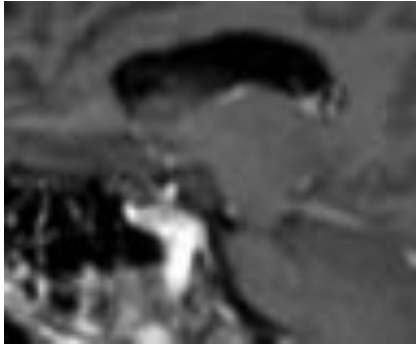
Contrast-enhanced coronal T1WI (in detail)



Contrast-enhanced sagittal T1WI

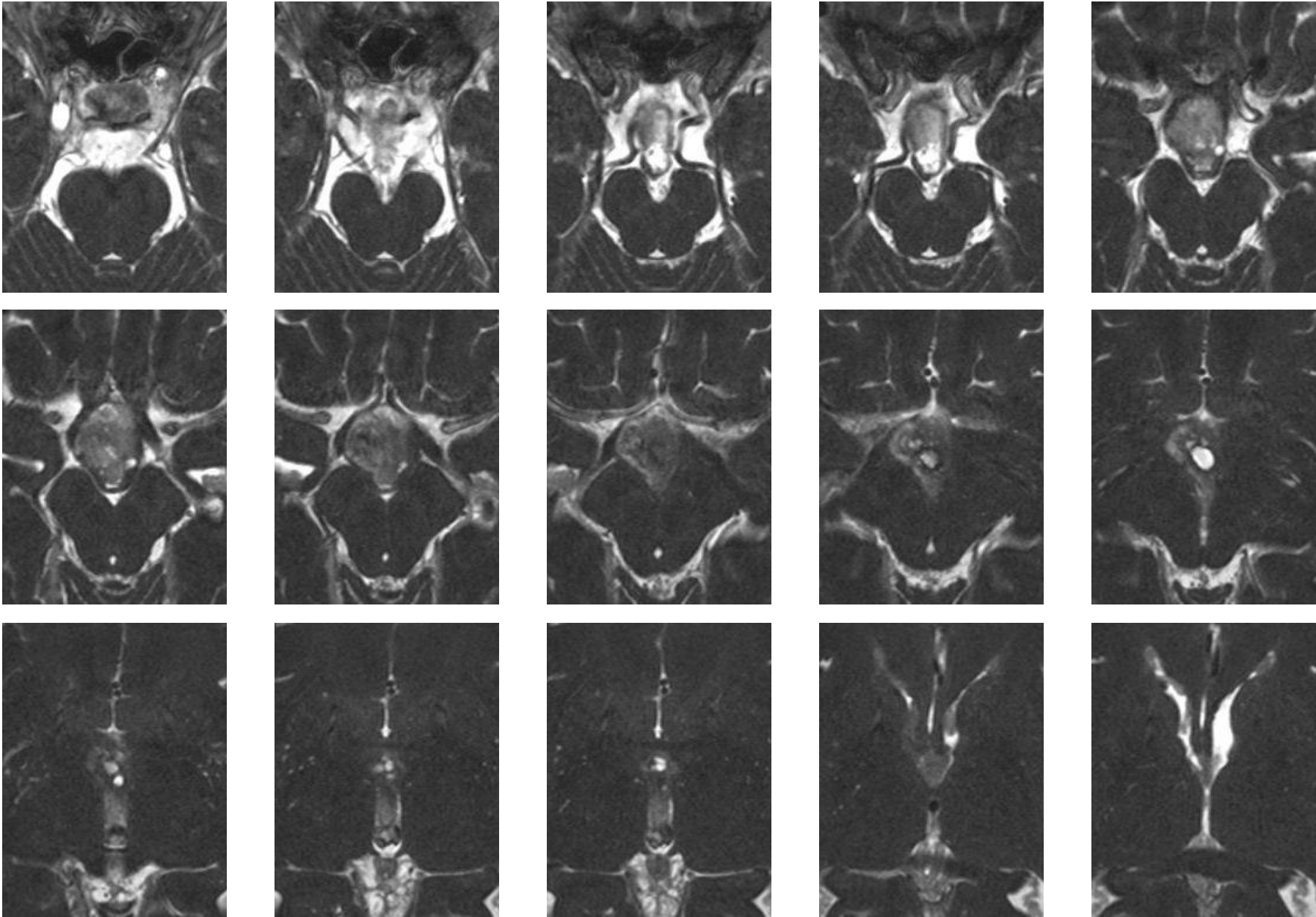


Contrast-enhanced sagittal T1WI (in detail)



Axial heavy T2WI (Contrast-enhanced)

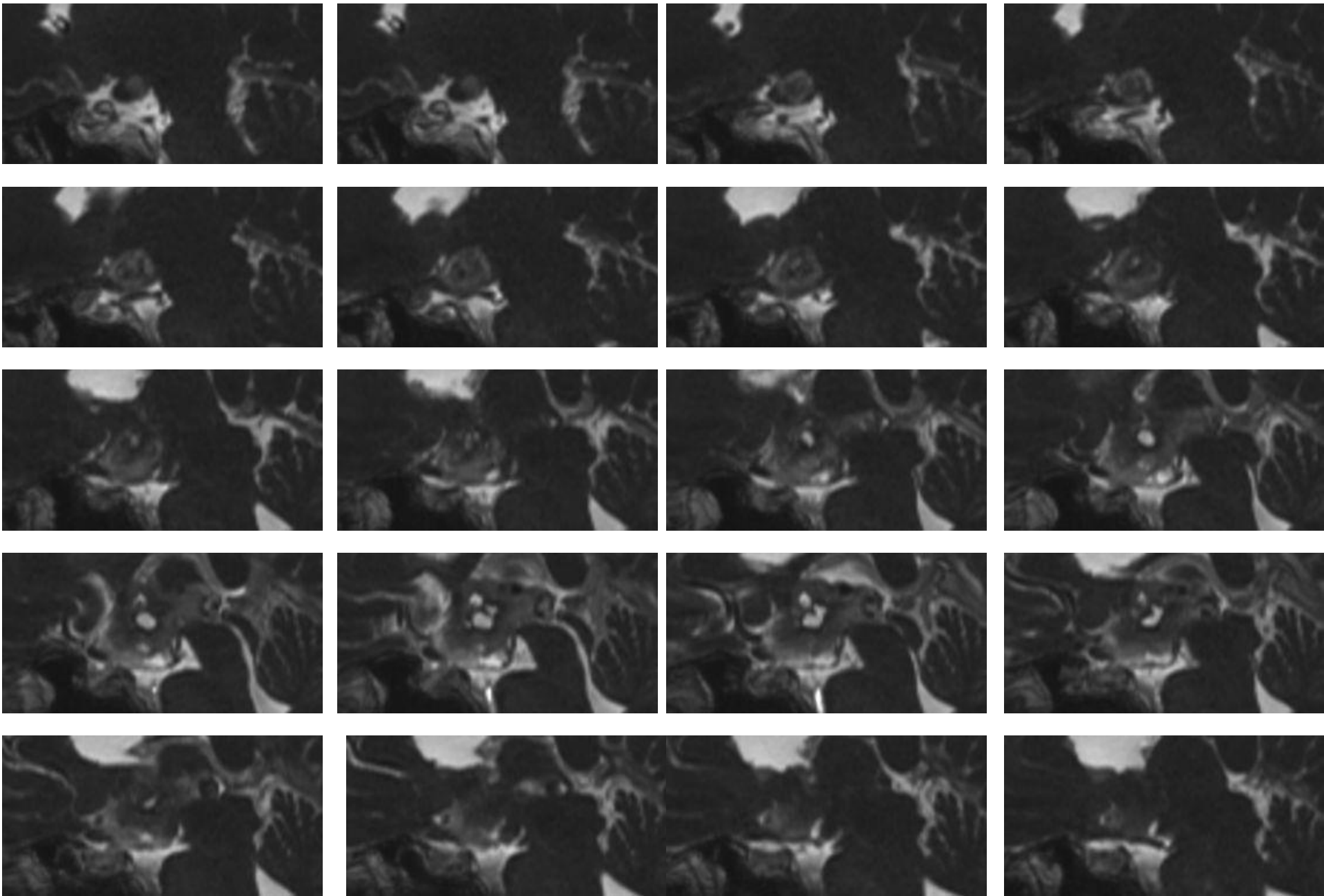
(after Ventricular drainage and an endoscopic biopsy)



Coronal heavy T2WI (Contrast-enhanced)



Sagittal heavy T2WI (Contrast-enhanced)



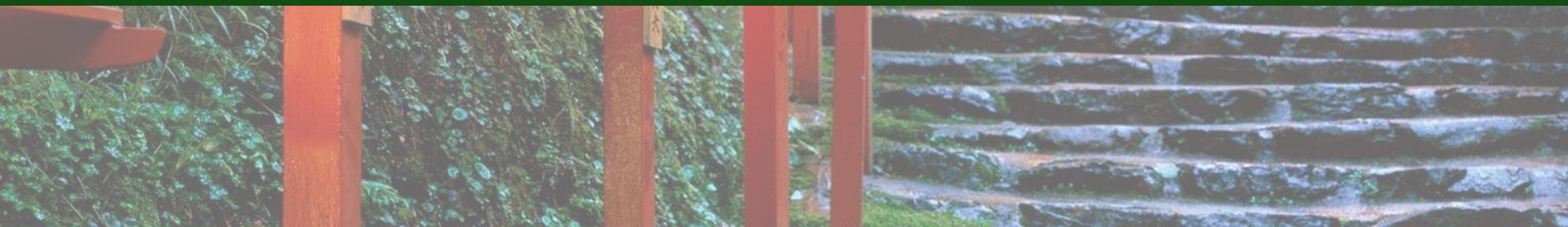


What is the diagnosis?



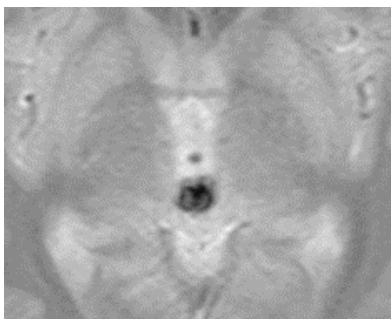
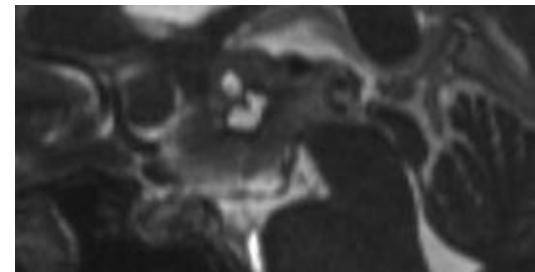
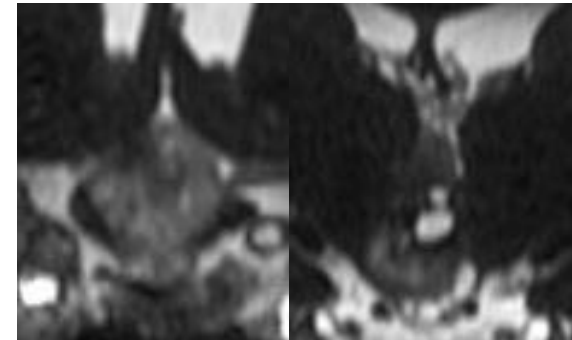


Thank you for presentation



Findings (In my opinion)

- ✓ Hydrocephalus (mild)
- ✓ Mass in third ventricle
 - **NORMAL** : Tectum, Pineal region, Pituitary, (Hypo)thalamus
 - **NOT DILATED** : Foramen of Monro
 - **PUSHED** : Optic tract(↓), Pituitary stalk(←)
- ✓ Mixed solid-cystic appearance
- ✓ Focal change : Ca⁺⁺ or hemorrhage
peripheral enhancement



Differential Diagnosis (3rd ventricle masses)

Anterior masses	Foramen of Monro
Sellar-suprasellar masses	Colloid cyst
Hypothalamic-chiasmatic masses	SGCT with associated TSC
Posterior masses	Subependymoma
Pineal mass	Intraventricular masses
Tectal mass	Primary neoplasm of the choroid plexus*
Inferior thalamic mass	Metastasis or lymphoma to the choroid plexus or the ventricle proper
Inferior masses	Vascular malformation of the choroid plexus
Hypothalamic hamartoma	Congenital intraventricular cyst [†]
Basilar artery ectasia or aneurysm	Solid neoplasm not of the choroid plexus [‡]
Arachnoid cyst	

1. Glastonbury CM, Osborn AG, Salzman KL. Masses and malformations of the third ventricle: normal anatomic relationships and differential diagnoses.

Radiographics : a review publication of the Radiological Society of North America, Inc. 2011; **31**: 1889-905.

Differential Diagnosis

- ✓ Subependymoma
- ✓ Central neurocytoma
- ✓ Ependymoma
- ✓ craniopharyngioma
- ✓ Lesion seeding the
plexus(lymphoma,tuberculosis)
- ✓ choroid plexus papilloma (adult 3rd 5%)
- ✓ Chordoid glioma

After admission 1

Ventricular drainage and an endoscopic biopsy were performed, when the pathological diagnosis was “central neurocytoma”.



【Approach】 Rt. anterior horn of the lateral ventricle

【Biopsy site】 beside Rt. Foramen of Monro

After admission 2

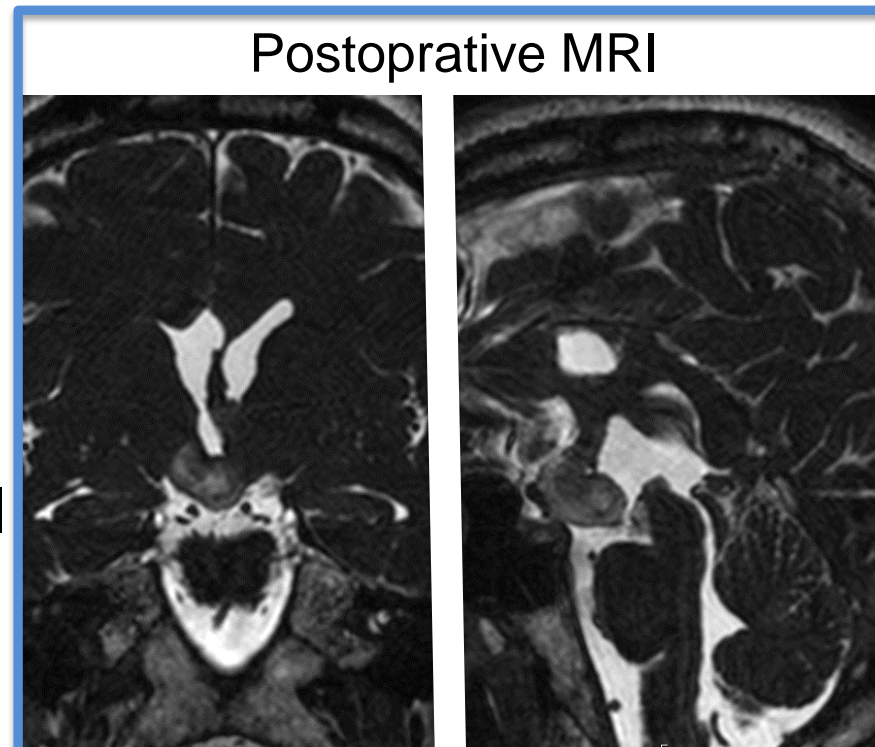
✓ After a week, craniotomy for the brain tumor was performed. (At that time we consulted Dr. Hirato)

【Approach】 transcallosal → Rt. foramen of Monro → 3rd ventricle

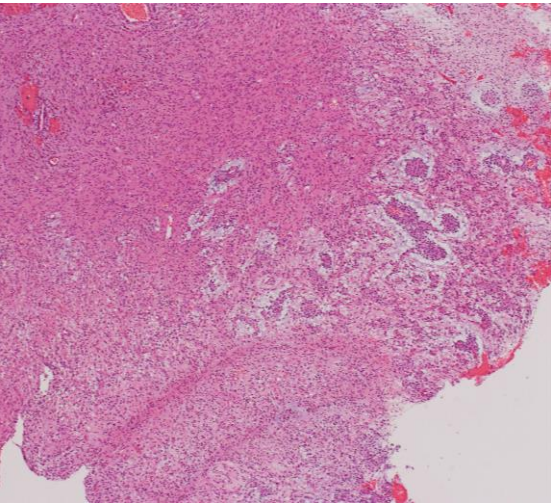
【finding】

Posterior: bleeding/solid part sunk into cerebral aqueduct

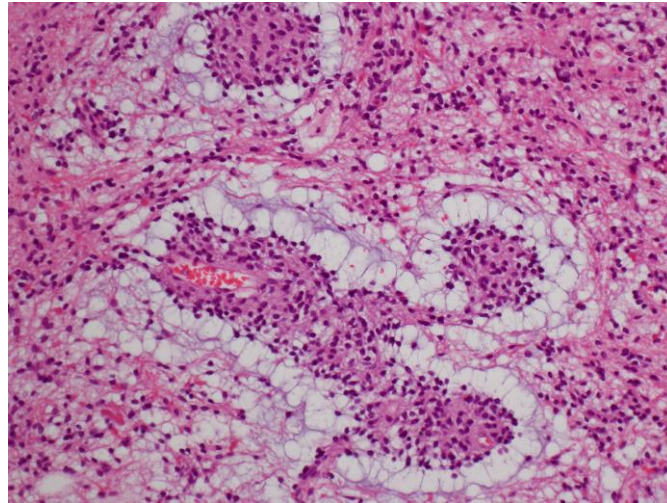
Anterior: strong adhesion to the wall (poor-margined)



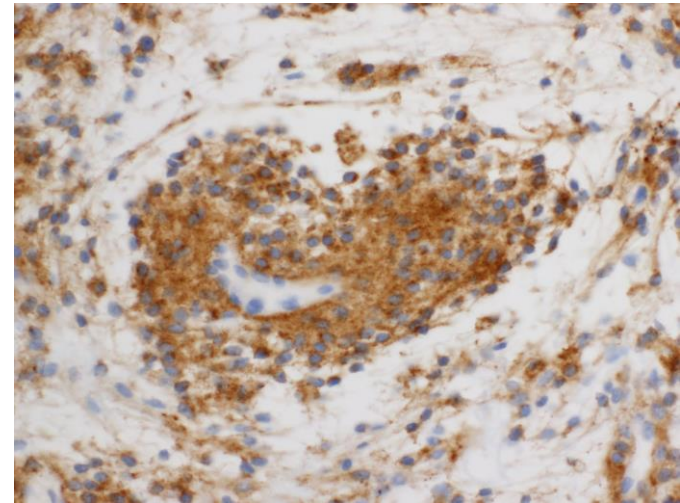
平戸純子先生、解説を宜しく御願いたします。



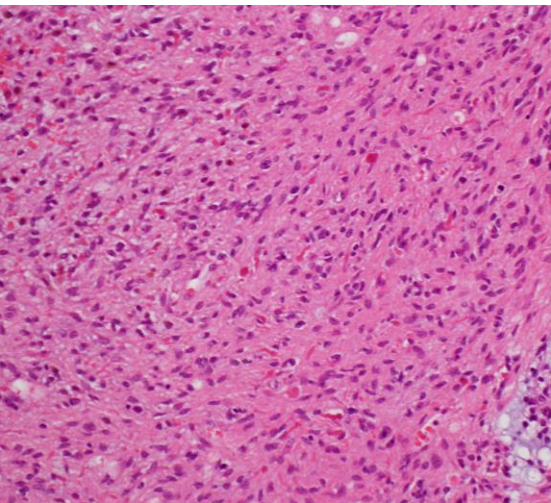
H&E, low power



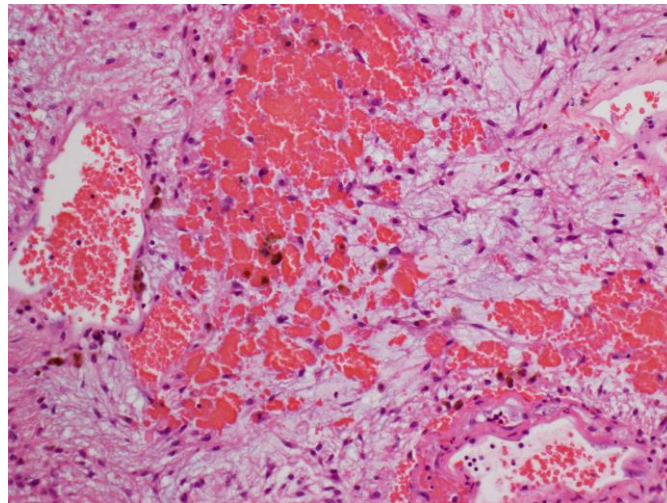
H&E, high power



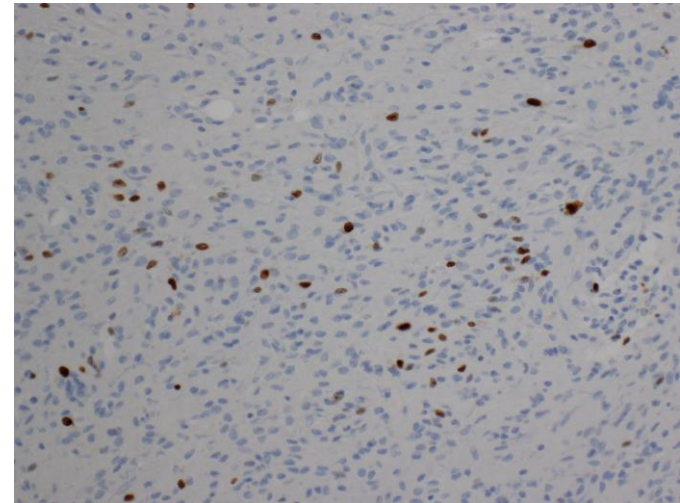
Synaptophysin



H&E, high power



H&E, high power



Ki-67

Diagnosis

**Rosette-forming glioneuronal tumor
in third ventricle**

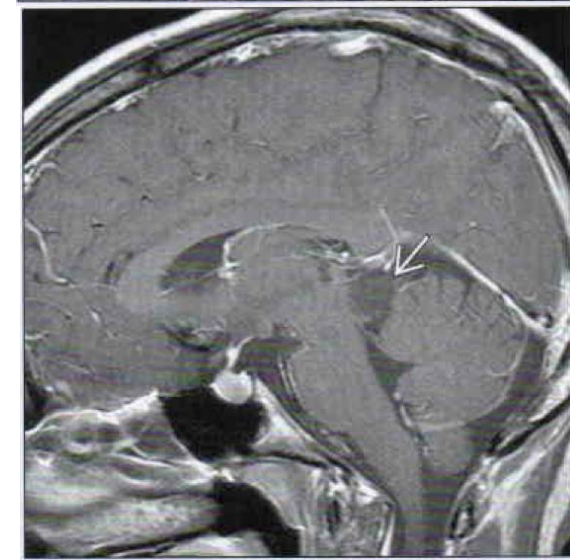
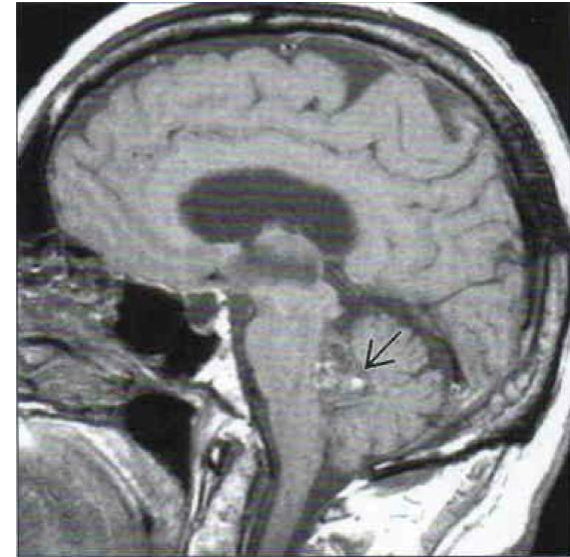
Rosette-forming glioneuronal tumor (RGNT)

- ✓ WHO grade I (first recognized in 2007)
- ✓ TWO components
 1. “Neurocytic” : Neurocytes forming neurocytic/
perivascular pseudorosette
 2. “Astrocytic”: Resembles pilocytic astrocytoma
- ✓ 12 - 59 years(mean age 33 years)
- ✓ M:F = 1:2

Rosette-forming glioneuronal tumor (RGNT)

IMAGING

- ✓ Cerebellar midline around 4th ventricle
rarely in pineal region
cerebellopontine angle
brain hemispheres
- ✓ Mixed solid-cystic appearance (deflated)
- ✓ Variable Ca⁺⁺, hemorrhage
- ✓ Enhancement usually absent
(peripheral, nodular, inhomogeneous)



RGNT outside the 4th ventricle

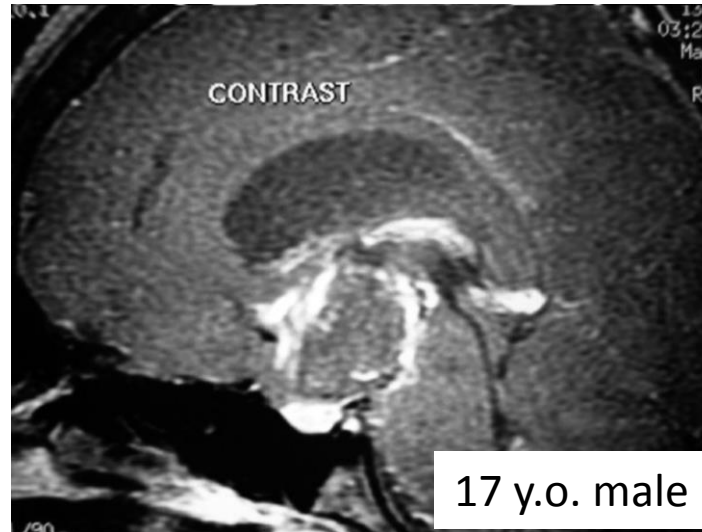
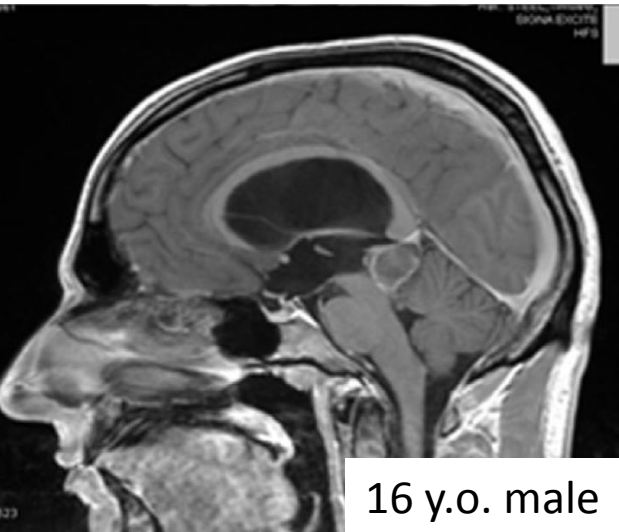
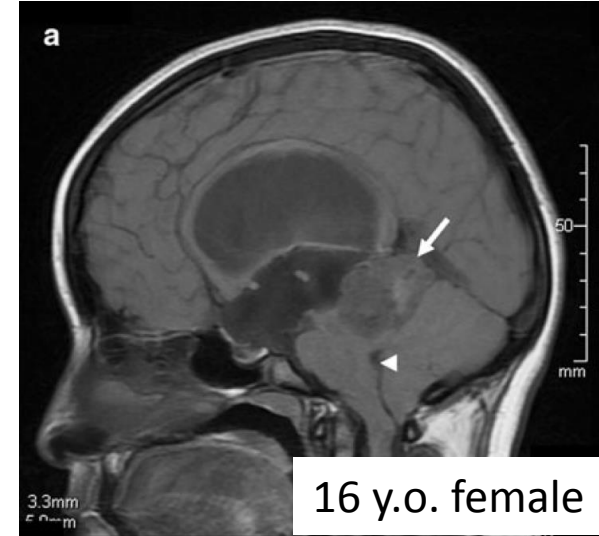
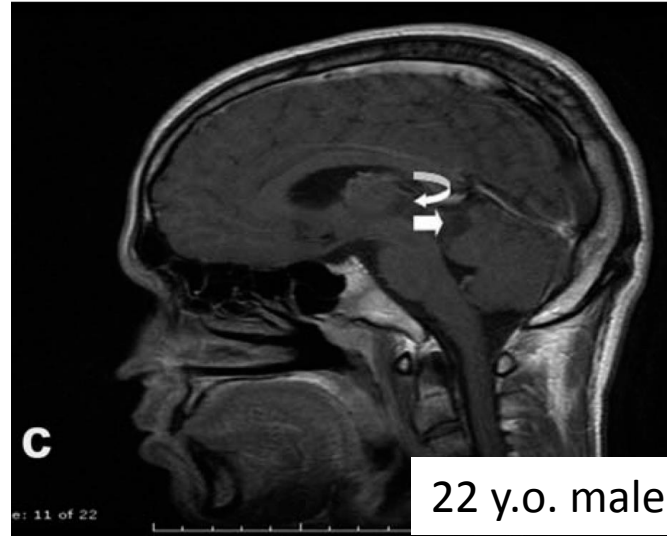
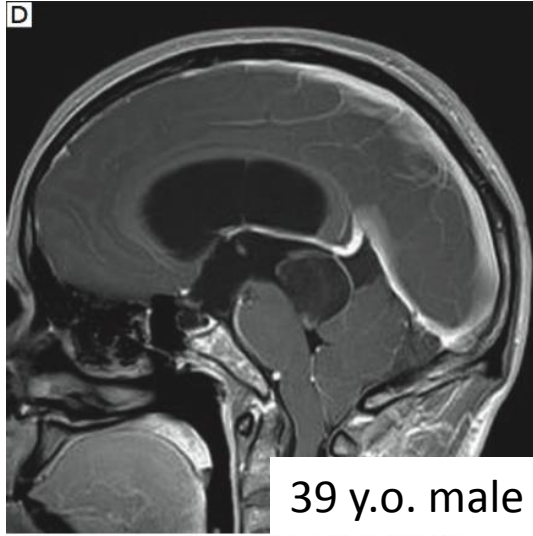
Table 1 Summary of eight cases with rosette-forming glioneuronal tumors outside the fourth ventricle

Author	Age/sex	Location	Radiological features	Treatment	Outcome (months)
Komori <i>et al.</i> ³	12/F	Pineal region, aqueduct, tectum	Solid, no enhancement	STR	Stable (2)
Frydenberg <i>et al.</i> ⁴	29/M	Pineal region, aqueduct	Solid, minimal enhancement	GTR	Unknown
Jacques <i>et al.</i> ⁵	33/F	Pineal region, fourth ventricle, left cerebellar peduncles	Cystic/solid, calcification, patchy enhancement	GTR	Recurrence (120)
Solis <i>et al.</i> ⁶	16/F	Pineal gland, third ventricle	Solid, calcification, no enhancement	STR	Stable (2)
Scheithauer <i>et al.</i> ⁷	23/M	Optic chiasm	Solid, heterogeneous enhancement	STR	Unknown
Anan <i>et al.</i> ⁸	44/F	Cervical-upper thoracic spinal cords	Solid, ring enhancement	GTR	Stable (14)
Wang <i>et al.</i> ⁹	16/F	Third, fourth and bilateral ventricles	Solid, nodular enhancement	Biopsy and RT	Stable (7)
Present case	38/M	Septum pellucidum, bilateral ventricles, 3rd ventricle	Cystic/solid, heterogeneous enhancement	STR	Stable (6)

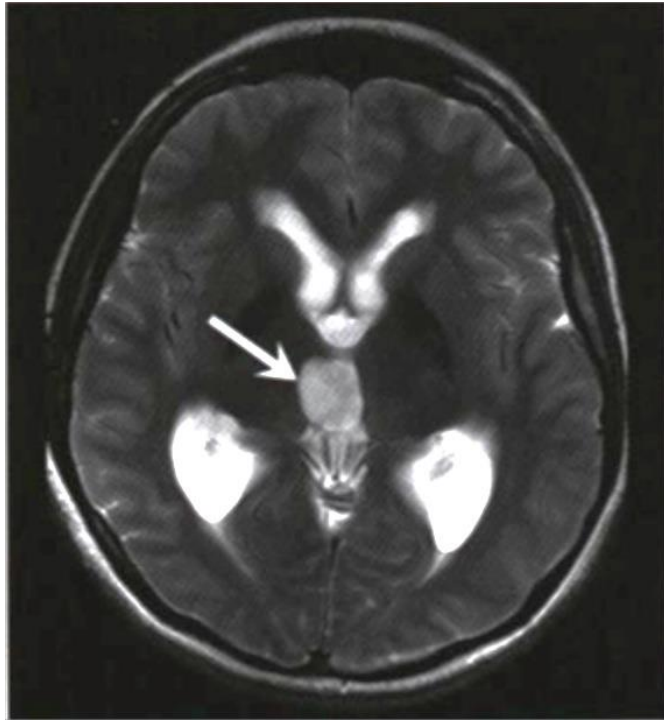
GTR, gross total resection; STR, subtotal resection; RT, radiotherapy.

Xing J, et al. Rosette-forming glioneuronal tumor of the septum pellucidum with extension to the supratentorial ventricles: rare case with genetic analysis. *Neuropathology* : official journal of the Japanese Society of Neuropathology. 2012; 32: 301-5.

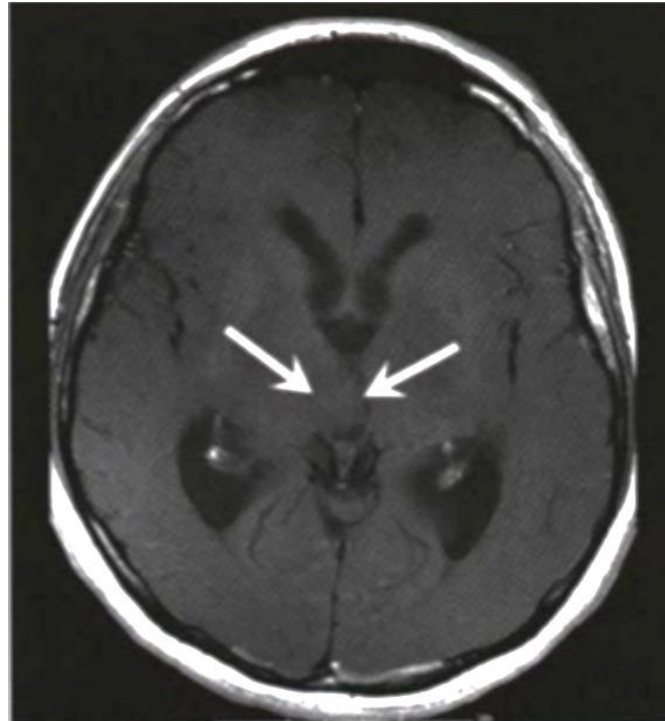
3rd ventricular region (Pineal region)



RGNT outside the 4th ventricle



T2WI



Gd(+)



Summary of my presentation

- ✓ rare type of brain tumor
- ✓ rare region in RGNT

... but may have the characteristic findings
in the appearance and enhancement.

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