

NRWS 2014

Kyoto University



京都大学大学院医学研究科 放射線医学講座 (画像診断学・核医学)

Department of Diagnostic Imaging and Nuclear Medicine, Graduate School of Medicine, Kyoto University

15 y.o. male

C.C. Headache

P.M.H. n.p.

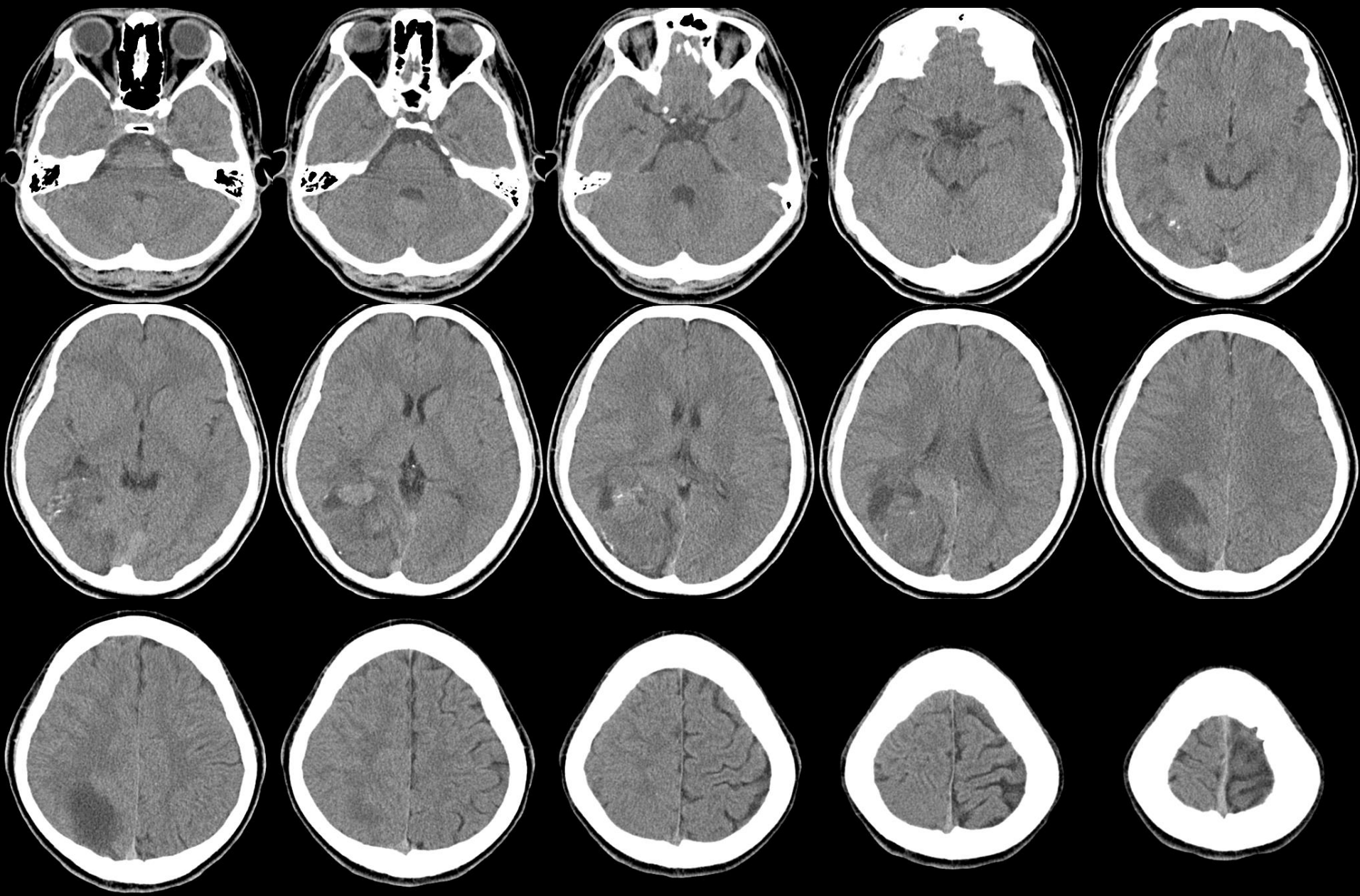
F.H. n.p.

Physical Examination; no neurological deficit

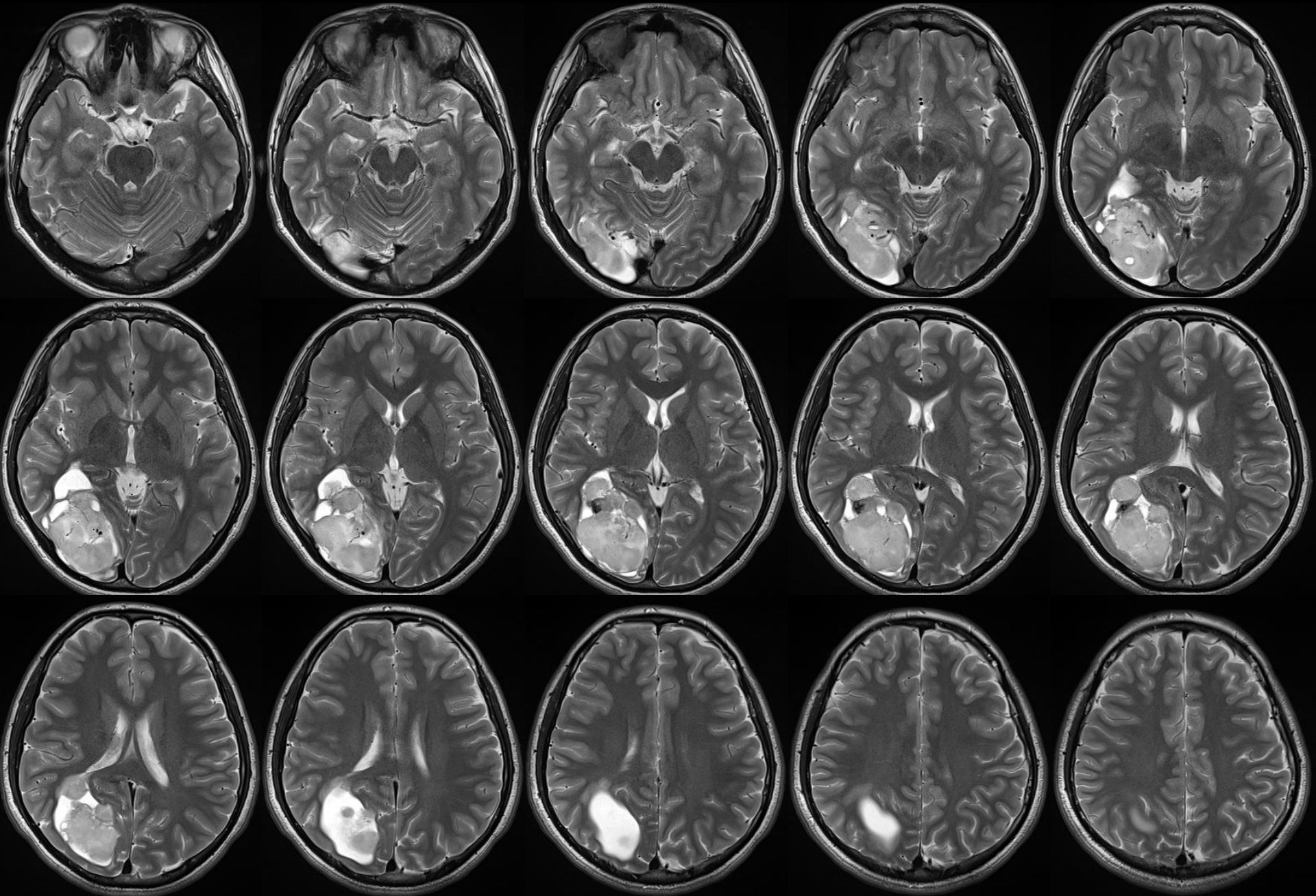
Blood tests; n.p.



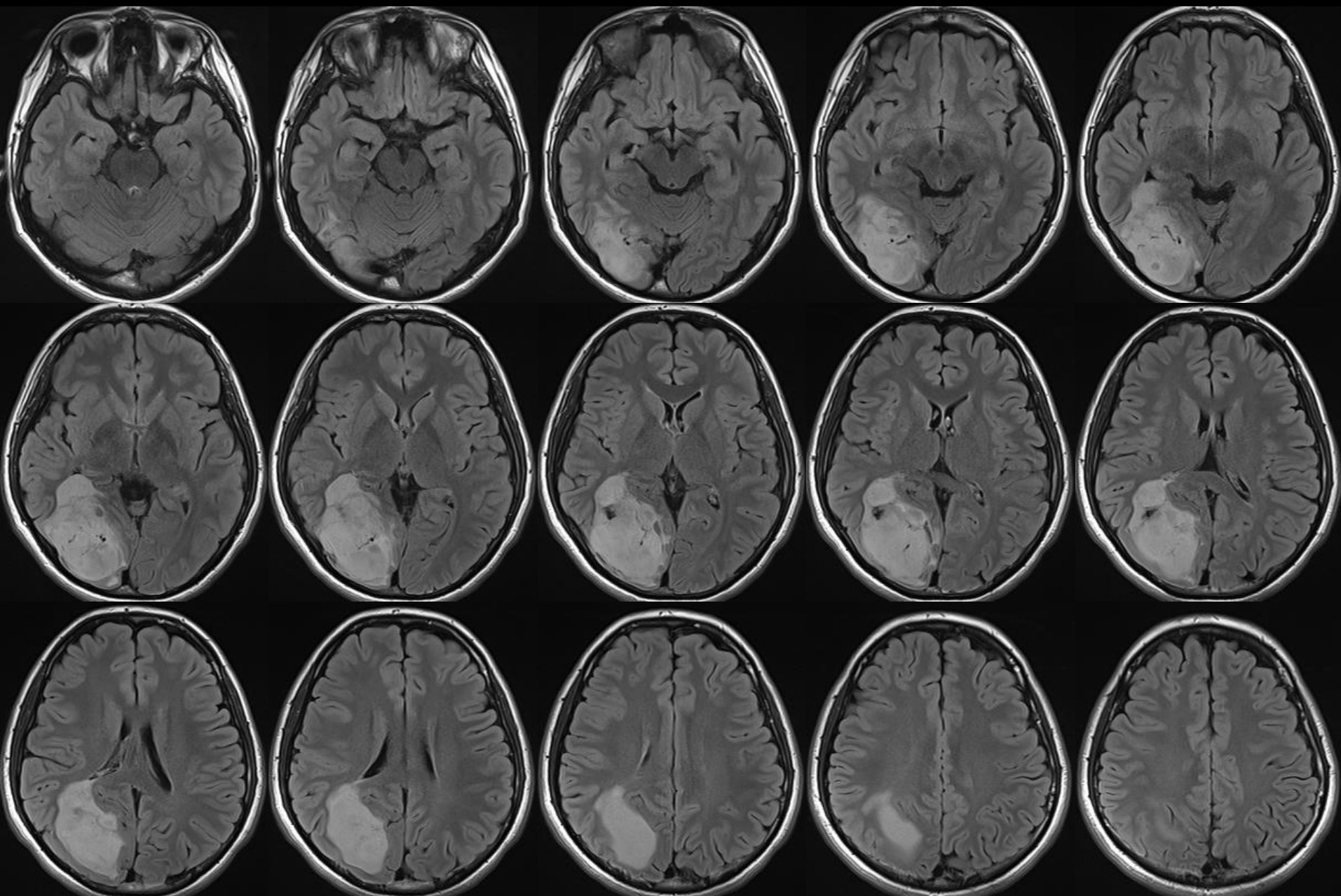
CT



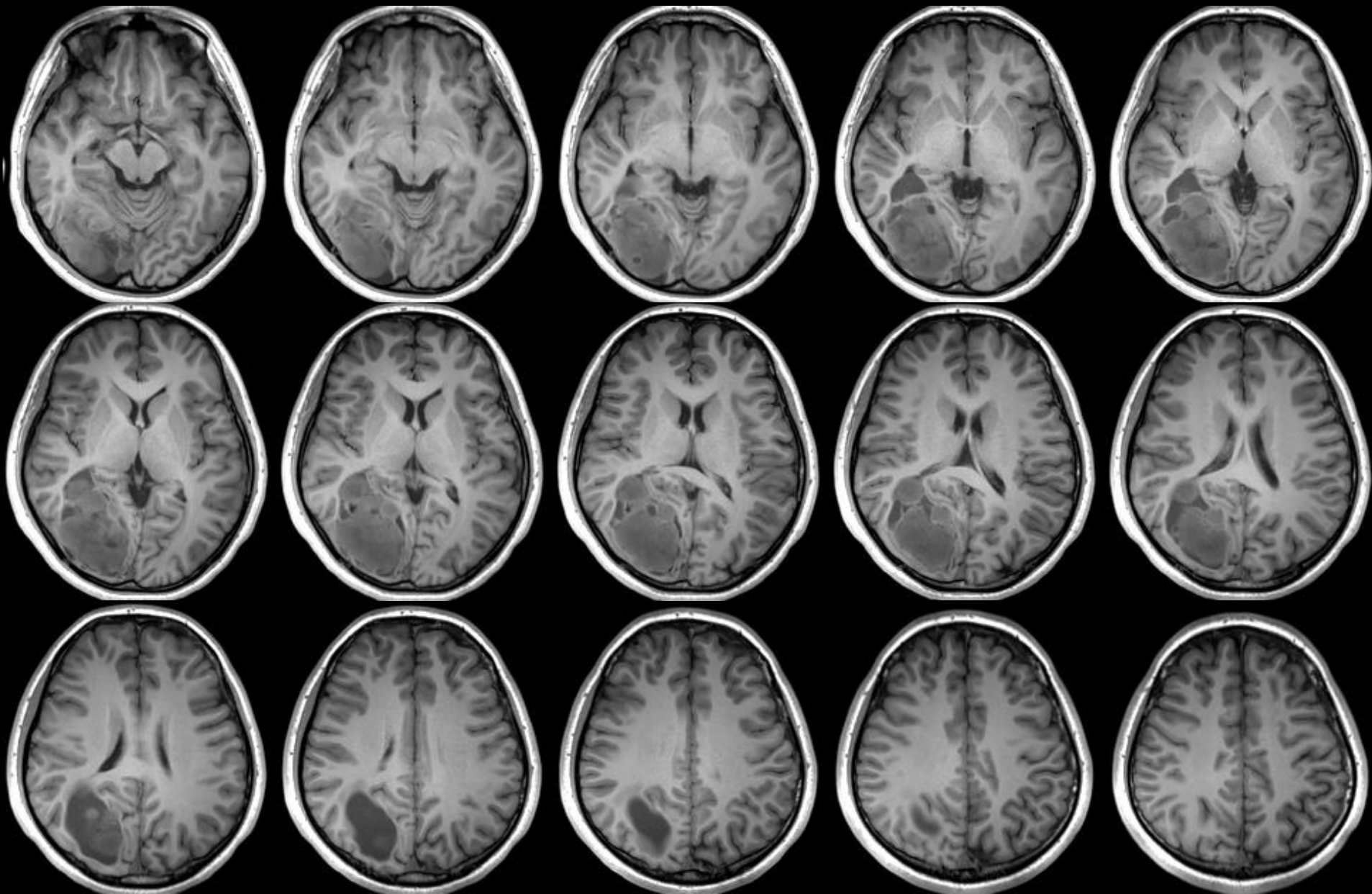
T2WI



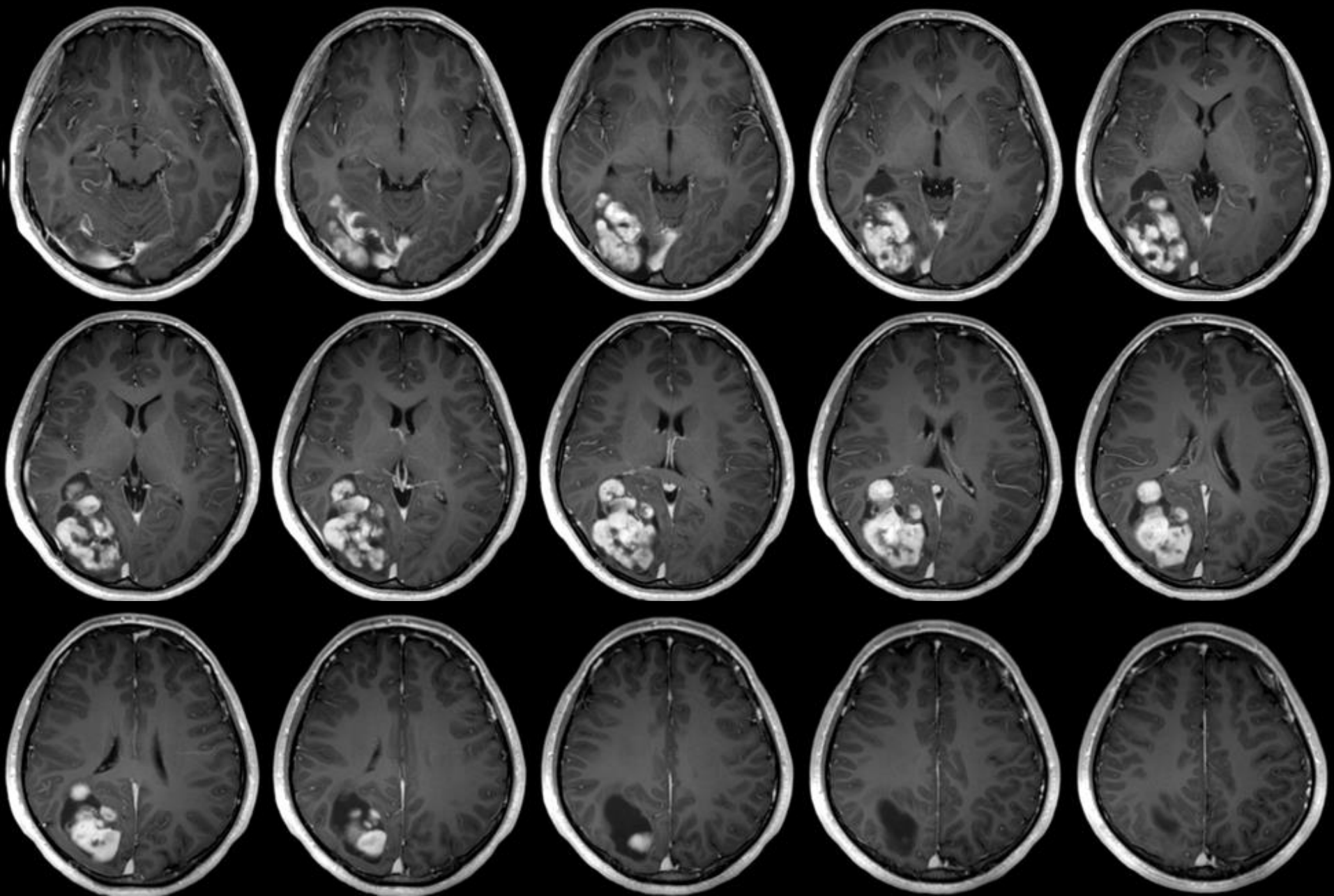
FLAIR

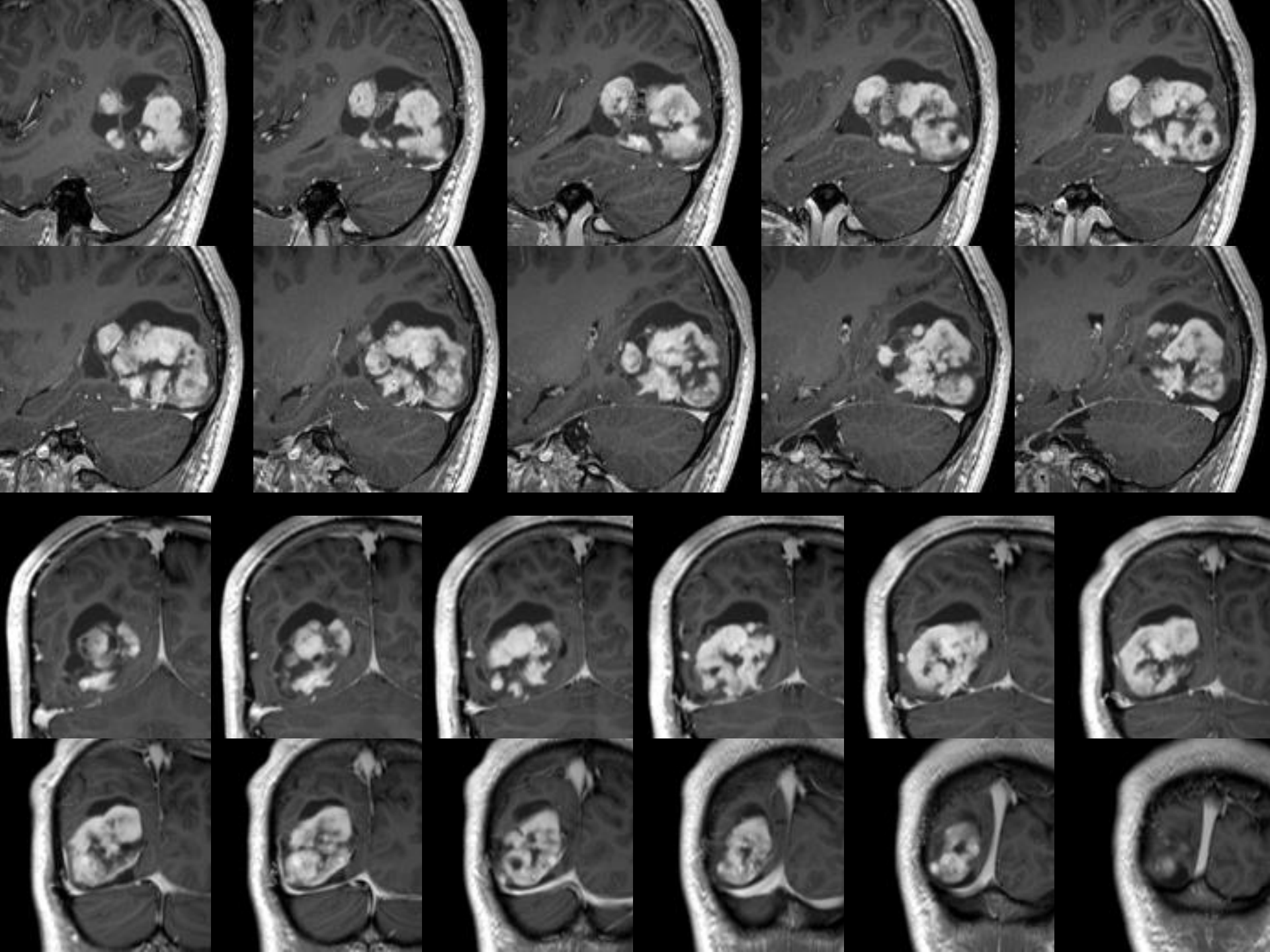


T1WI

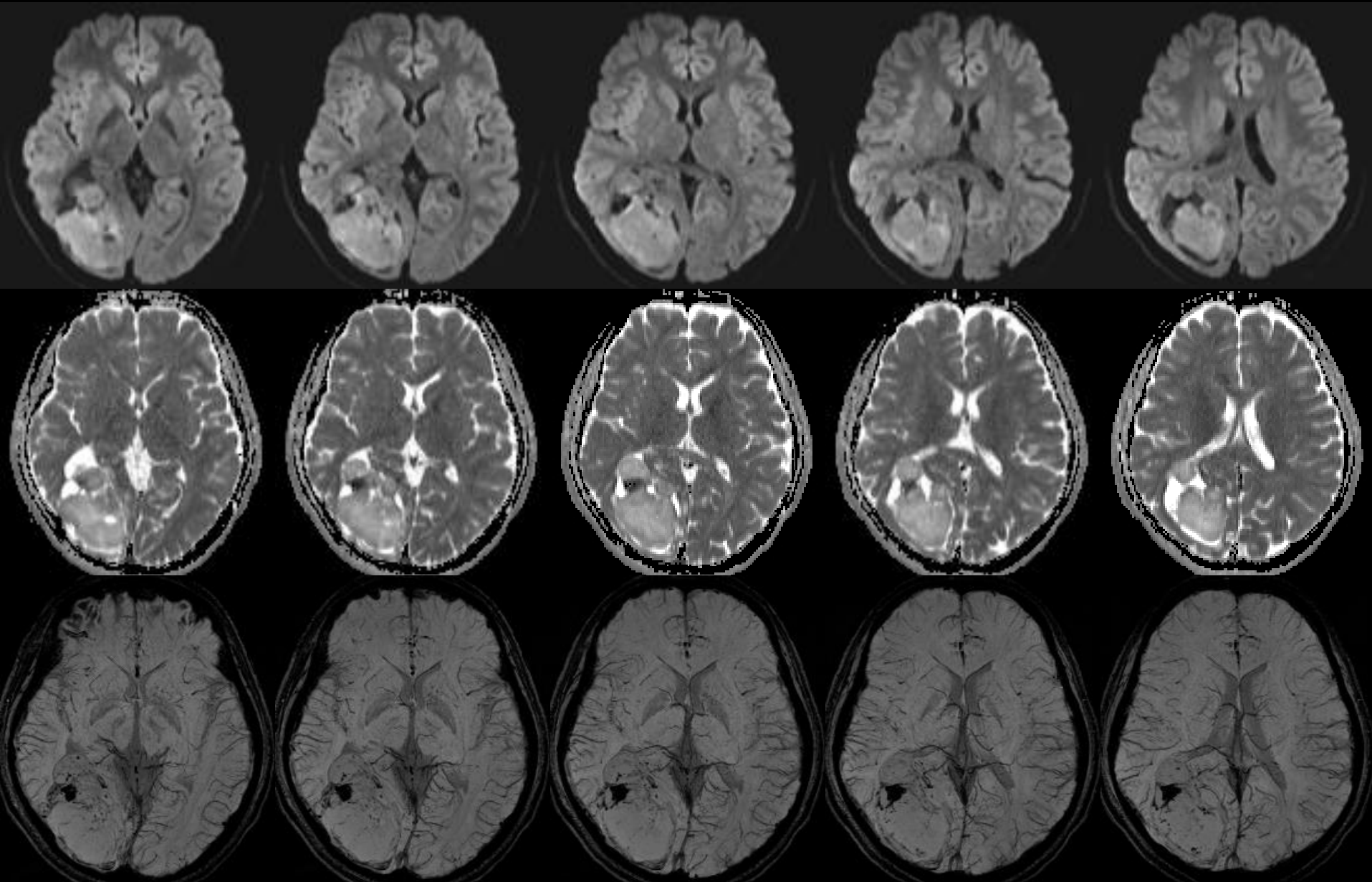


FS-Gd-T1WI

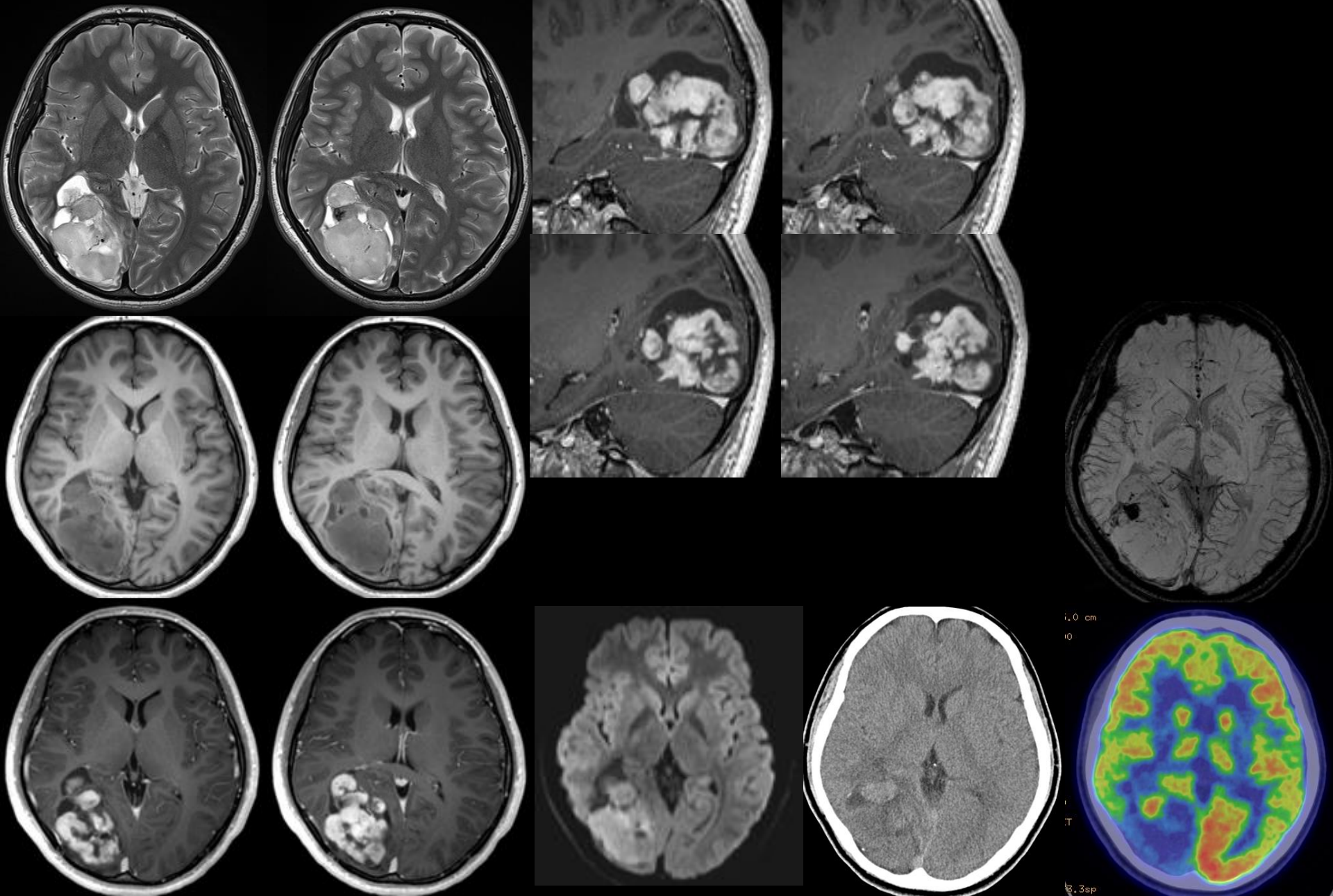




DWI/ADC/SWI



Key images



Diagnosis please!

Summary of Image findings

- Rt occipital tumor, **peripherally located**
 - ✓ Tumor has **bulky solid component with a large cyst.**
 - ✓ Solid component is heterogeneous with **intense Gd enhancement.** Flow-void (+)
 - ✓ **Focal FDG uptake/ high CT density with hypointensity on SWI**
 - ✓ Minimal peritumoral edema
 - No diffusion restriction
 - No dissemination, No bone remodeling



Differential Diagnosis

- High grade tumor
 - PNET
 - AT/RT
 - GBM
 - Ependymoma (Anaplastic)
 - Oligodendroglioma
- Low grade tumor
 - Pilocytic astrocytoma
 - Pleomorphic xanthoastrocytoma
 - Ganglioglioma

Low density on CT and no diffusion restriction on MRI

⇒ PNET, GBM, AT/RT is less likely



病理所見(当院と他院コンサルト);

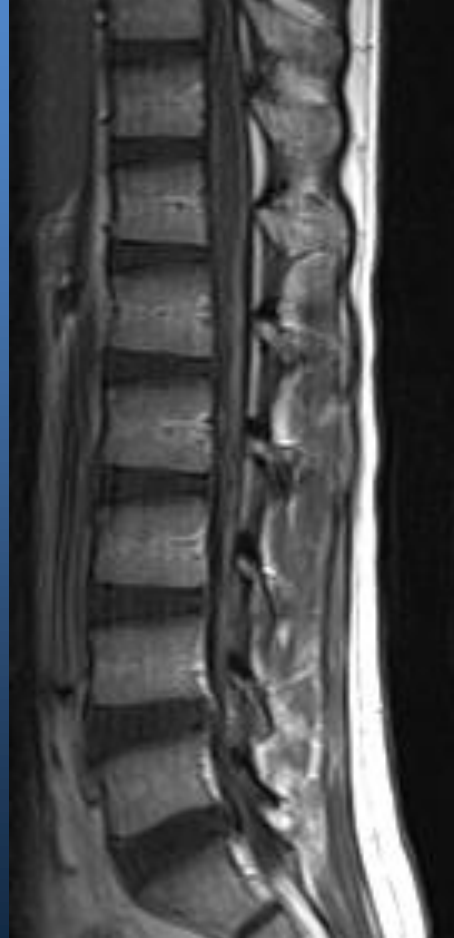
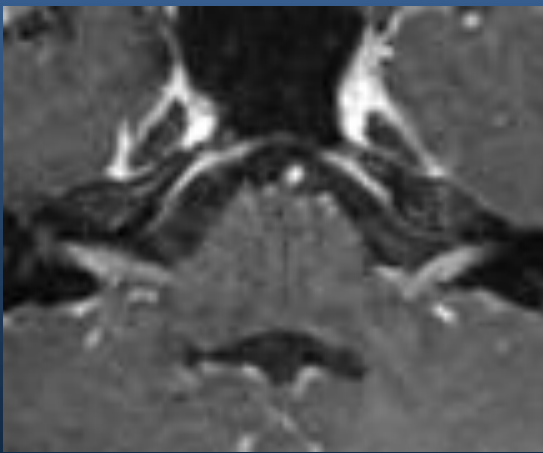
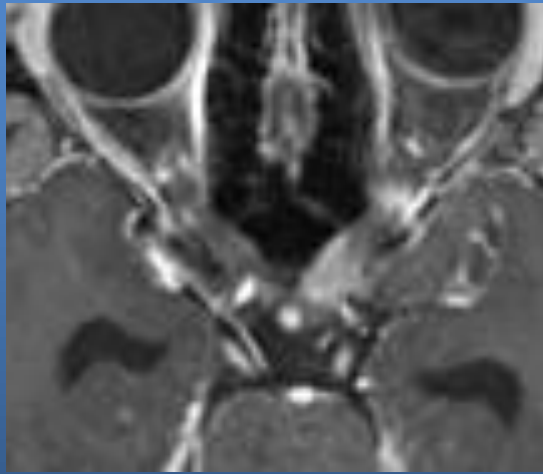
好酸性の細胞質を有する紡錘形・多稜形の細胞を認め、核クロマチンは粗造化し、核の大小不同や多形性、核小体の明瞭化を認める。好酸性顆粒小体が散見され、細胞質内に脂肪滴を含む細胞が散見される。腫瘍細胞はシート状に配列し、硝子化した小血管を認めるが microvascular proliferation はない。腫瘍部と非腫瘍部の境界が比較的明瞭で、周辺部ではローゼンタル繊維が確認できる。以上より、多形性黄色星細胞腫(PXA)と考える。

腫瘍細胞はGFAP, S100蛋白, シナプトフィジン陽性、CD34陽性の星芒状細胞が混在しており、PXAの診断を支持する。

#3の一部などで類円形細胞の単調な増殖領域を認め、同領域は多形性は目立たず、好酸性顆粒小体も乏しい。しばしば核分裂像を認め、壊死も混在してる。Ki67標識率20%程度で、退形成変化を伴うPXAと判断される。



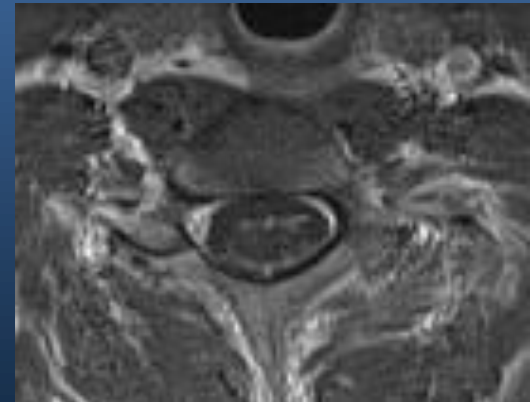
Diagnosis ; Pleomorphic xanthoastrocytoma with Anaplastic features



Postoperative course

about 10 days after operation, this Pt was aware of his visual disturbance.

Follow-up MRI showed intracranial disseminations.



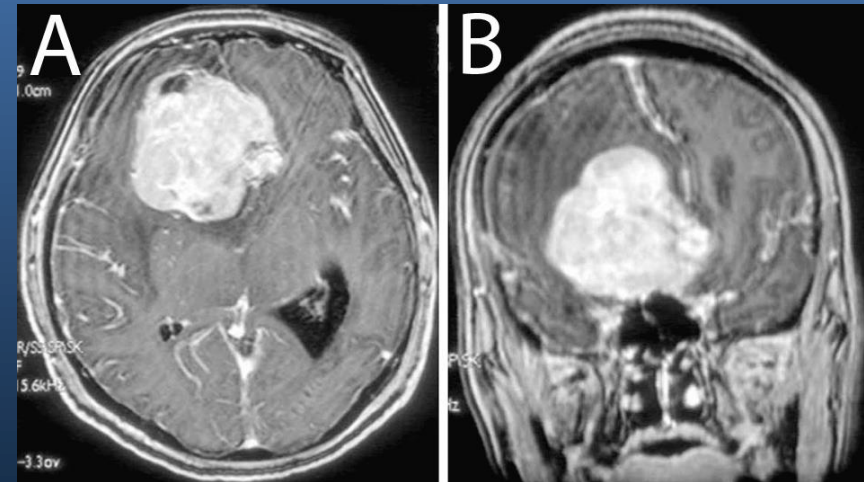
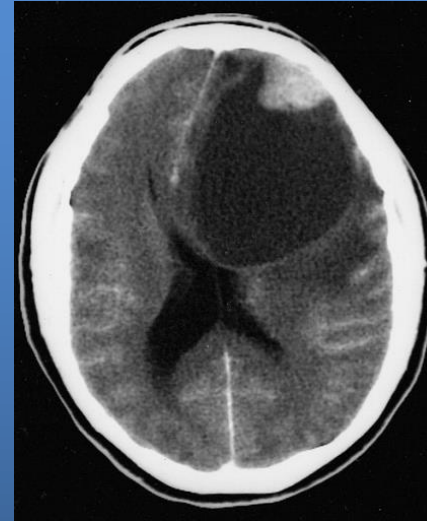
Pleomorphic Xanthoastrocytoma

- WHO grade II, Astrocytic neoplasm
- Generally favorable prognosis in children and young adults.
- May originate from cortical (subpial) astrocytes, or multipotential neuroectodermal precursor cells common to both neurons and astrocytes or from preexisting hamartomatous lesions
- Clinical Issues
 - Majority of Pts have long standing epilepsy.
- Gross Pathologic & Surgical features
 - Cystic mass with mural nodule abutting meninges
 - **May be completely solid**
 - Leptomeningeal adhesion/attachment is common
 - Dural invasion is rare
 - Deep margin may show infiltration of parenchyma



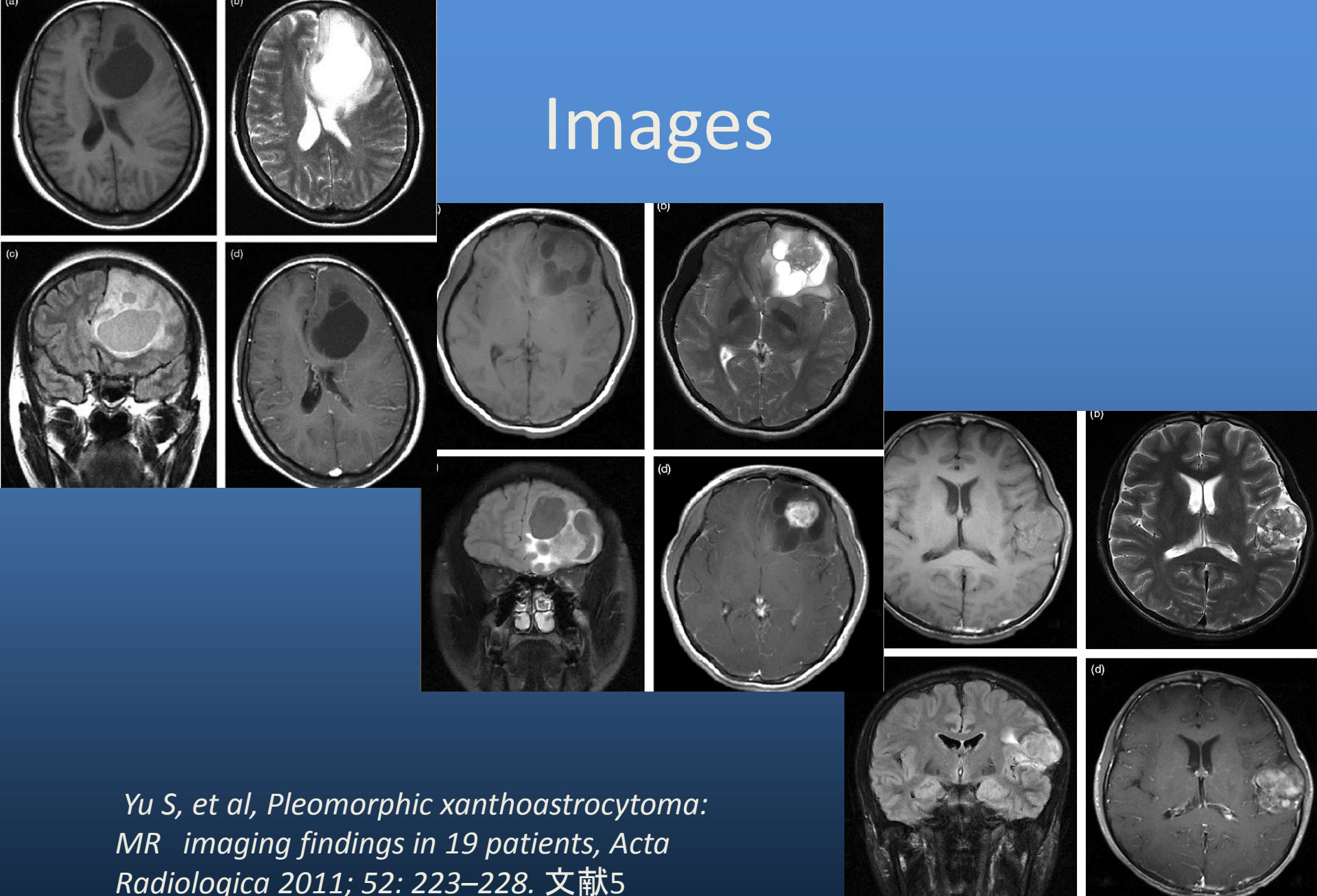
Pleomorphic Xanthoastrocytoma

- Imaging
 - Peripherally located mass, often involves meninges
 - Supratentorial cortical mass with adjacent enhancing “dural tail”
 - Cyst and enhancing mural nodule typical
 - Enhancing nodule often abuts pial surface
 - **May be completely solid**



文献7より

Images

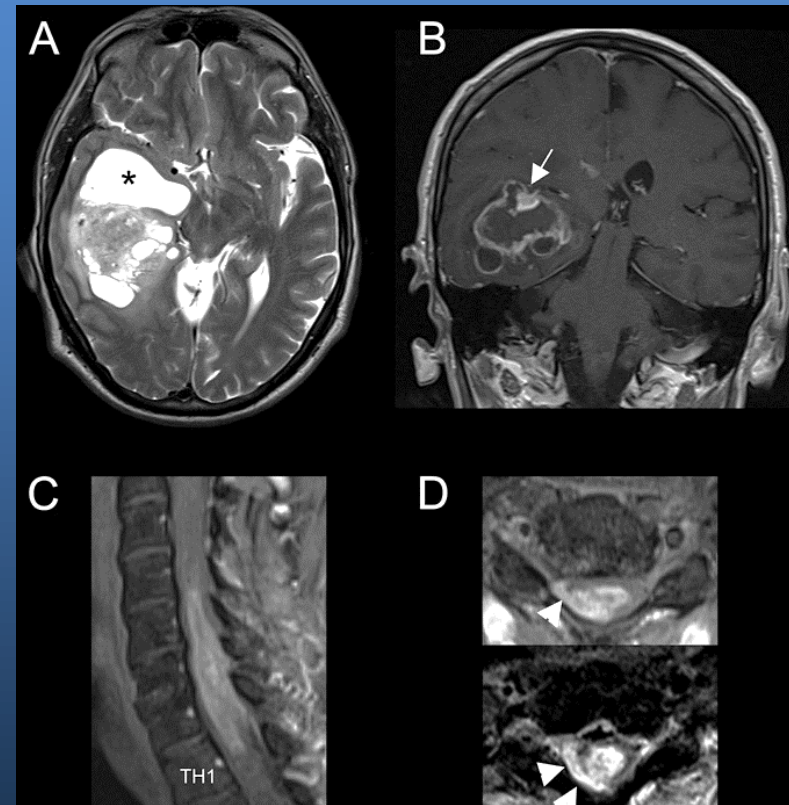


Yu S, et al, Pleomorphic xanthoastrocytoma: MR imaging findings in 19 patients, *Acta Radiologica* 2011; 52: 223–228. 文献5



Pleomorphic xanthoastrocytoma with Anaplastic features

- 9-20% of PXAs have been reported to undergo **malignant transformation**.
 - Some of them exhibit **anaplastic features** at the first presentation.
 - Pathologically, an anaplastic foci is characterized by **necrosis** and **mitosis**.
- ⇒ **Focal hypo-intensity on SWI or FDG-uptake may suggest an anaplastic foci.**



文献8より

Take Home Point

- PXA sometimes has a large solid component.
(may be completely solid)
- 9-20% of PXAs have been reported to undergo malignant transformation.



Reference

1. Osborn's Brain: Imaging, Pathology, and Anatomy
2. Diagnostic Imaging: Brain
3. よくわかる脳MRI 第3版
4. 決定版 頭部画像診断パーフェクト
5. Yu S, et al, *Pleomorphic xanthoastrocytoma: MR imaging findings in 19 patients, Acta Radiologica* 2011; 52: 223–228.
6. Vu TM et al, *Malignant potential of pleomorphic xanthoastrocytoma, J Clin Neurosci.* 2012 Jan;19(1):12-20.
7. Koga T, et al, *Long-term control of disseminated pleomorphic xanthoastrocytoma with anaplastic features by means of stereotactic irradiation, Neuro Oncol.* 2009 Aug;11(4):446-51.
8. Nern C, et al, *Spinal imaging in intracranial primary pleomorphic xanthoastrocytoma with anaplastic features, J Clin Neurosci.* 2012 Sep;19(9):1299-301.

