

與大師對談

黃國茂教授

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報告人：R2 陳永介

- 依照臨床時序，請大師模擬一線放射科醫師；於未知診斷，或者有限度臨床線索之情形下，進行閱片及解讀。
- 鑑別診斷為主要，確定診斷為次要。
- 目的在於學習大師之影像判讀邏輯思考。
- 請大師給予本院影像品質建議：
Protocols, techniques, etc.

CASE 1

4 Y/O BOY

Brief history

- **Past history**

None

- **Chief complain**

Seizure

Imaging studies

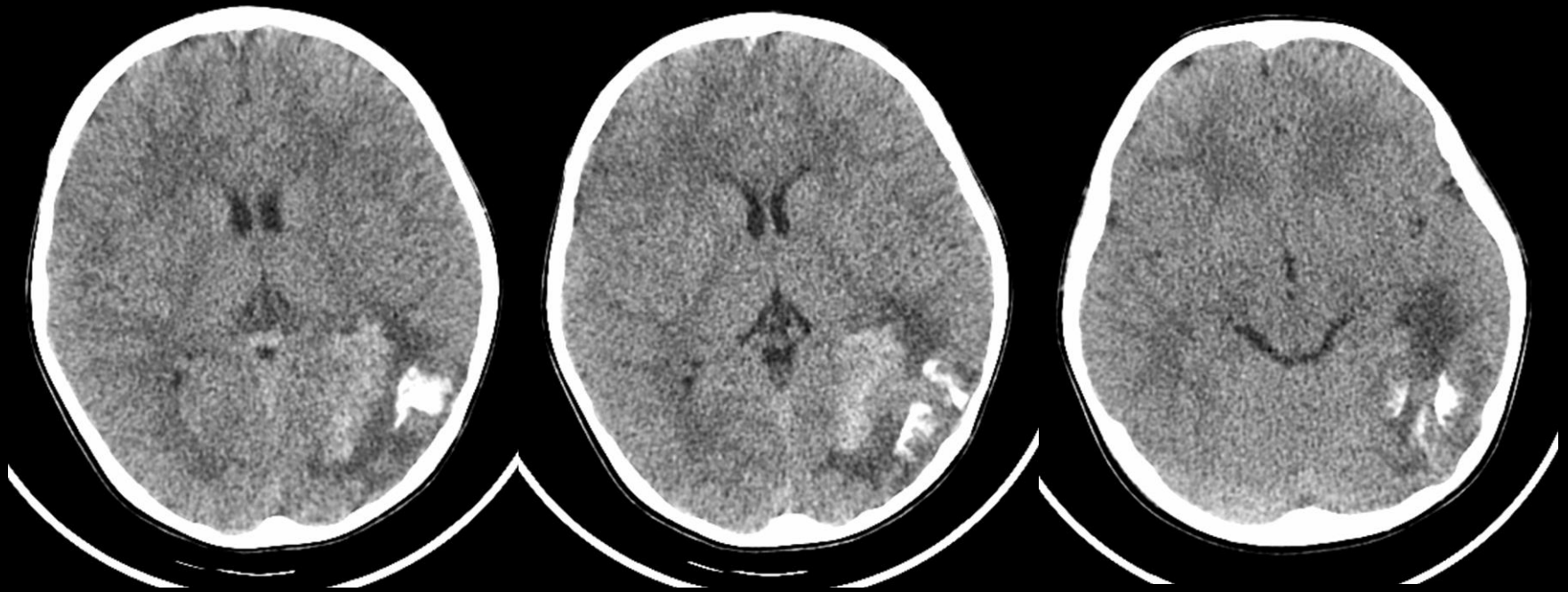
Brain CT (2019.11.06)

Brain angiography (2019.11.13)

Brain MRI (2019.11.14)

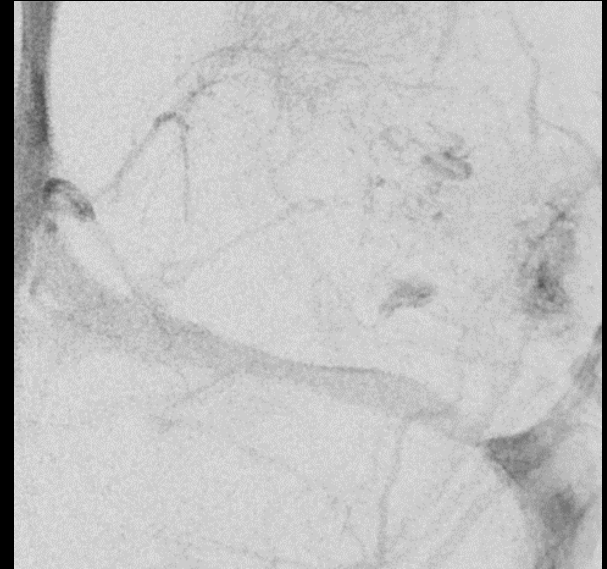
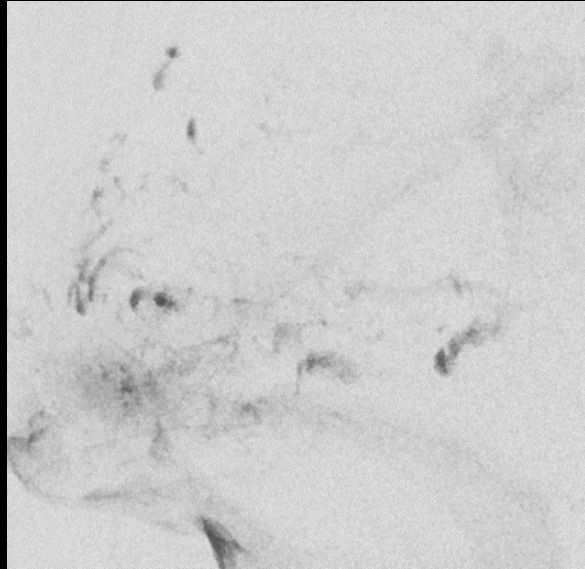
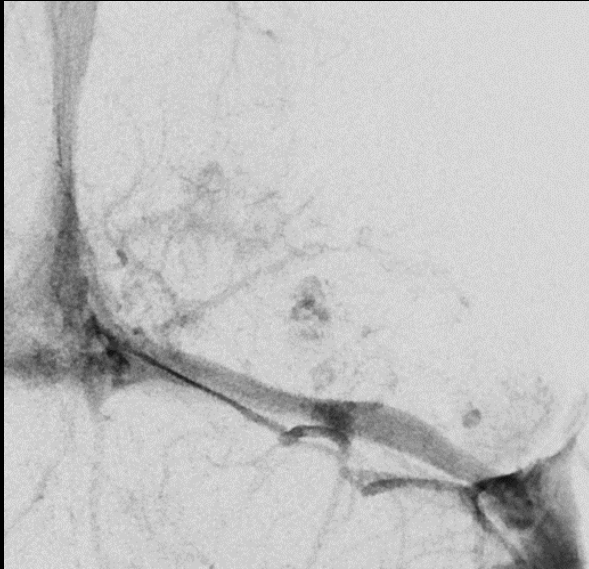
Brain CT

- ✓ A large hyperdense lesion at the L't parieto-occipital lobe with focal calcifications & perifocal edema



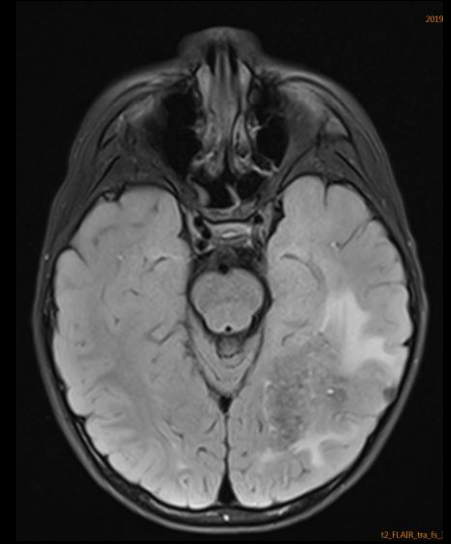
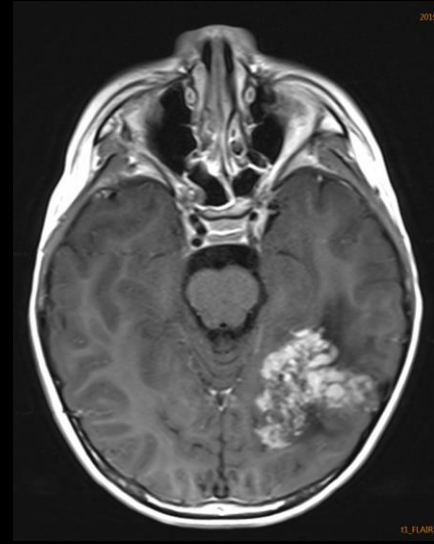
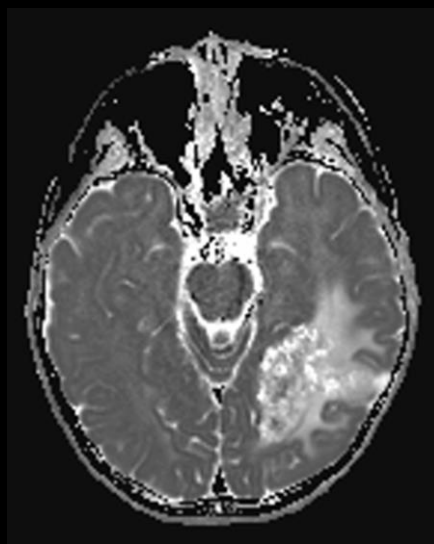
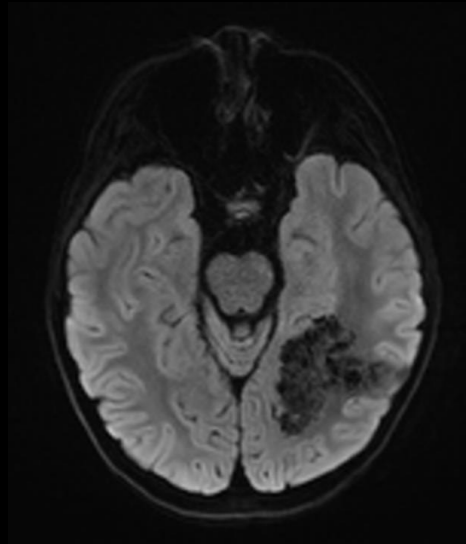
Brain angiography

- ✓ Multiple spots of venous lake were noted at the late venous phase in L't parieto-occipital lobe



Brain MRI

- ✓ A large strong-enhanced lesion at the parieto-occipital lobe with irregular contour, involving the paraventricular white matter to the cortical region, along with remarkable perifocal edema



Differential Diagnoses

- **Thrombosed (criptic) arteriovenous Malformation (AVM)**
 - Cavernous malformation
 - Calcified neoplasm
- **Pathology report: AVM**

Arteriovenous Malformation (AVM)

- **High-flow classic vascular malformation** characterized by a **nidus** forming the transition between the **feeding artery** and **draining vein**
- **Pial (superficial) and deep (parenchymal)?**
- Angiographically **criptic** AVM: less than 3 cm in size (cavernous hemangioma?)

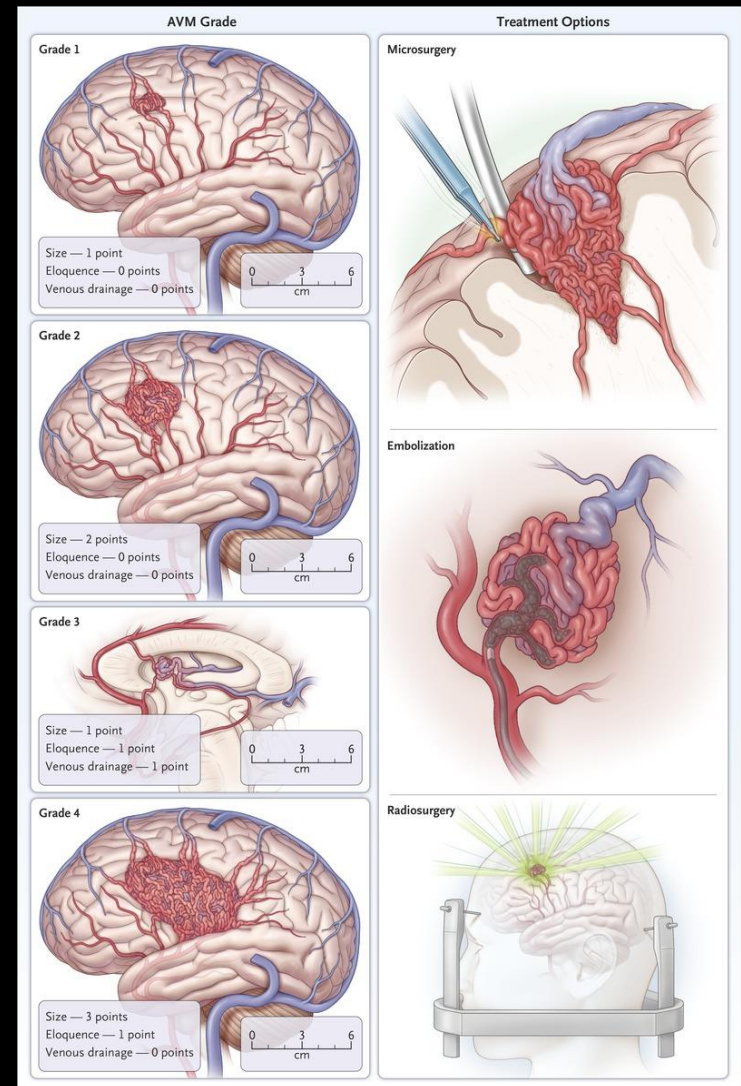
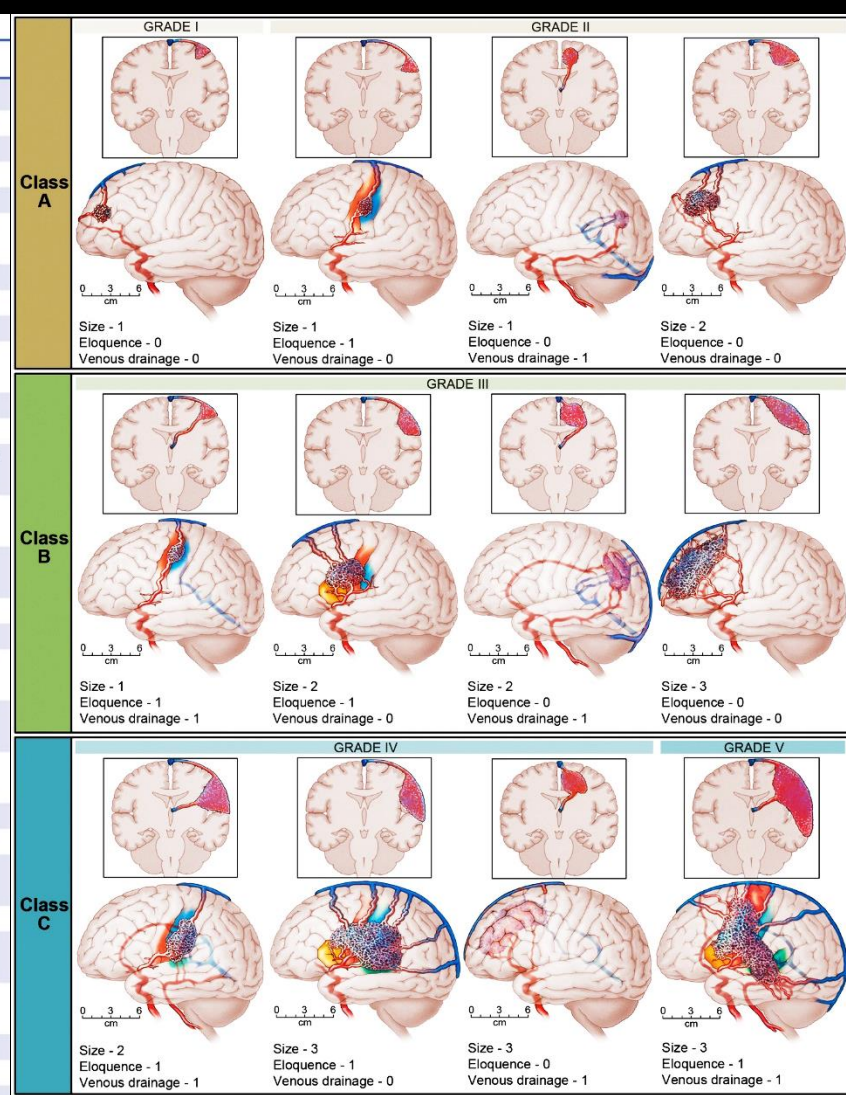


Table 6.1 Summary of AVM Subtypes and Their Cortical Anatomy and Eloquence

Type	Subtype	Cortical Anatomy	Eloquence
Frontal AVMs			
	Lateral frontal	SFG, MFG, IFG, precentral gyrus	Precentral gyrus (motor)
	Medial frontal	SFG, paracentral lobule, cingulate gyrus	Paracentral lobule (motor)
	Paramedian frontal	SFG, precentral gyrus, paracentral lobule	Precentral gyrus, paracentral lobule (motor)
	Basal frontal	Gyrus rectus, orbital gyri	None
	Sylvian frontal	Pars orbitalis, pars triangularis, pars opercularis	Broca's area (pars triangularis, pars opercularis)
Temporal AVMs			
	Lateral temporal	STG, MTG, ITG	Wernicke's area (STG)
	Basal temporal	ITG, fusiform gyrus, parahippocampal gyrus	None
	Medial temporal	Parahippocampal gyrus, uncus, hippocampus	Hippocampus (memory)
	Sylvian temporal	Planum polare, planum temporale	Heschl's gyrus (auditory)
Parieto-occipital AVMs			
	Lateral parieto-occipital	Postcentral gyrus, SPL, IPL; SOG, IOG	Postcentral gyrus (sensory), IOG (visual), angular gyrus (speech conduction)
	Medial parieto-occipital	Paracentral lobule, post. cingulate gyrus, precuneus; cuneus, lingula	Paracentral lobule (sensory), lingula (visual)
	Paramedian parieto-occipital	Postcentral gyrus, SPL; SOG	Postcentral gyrus, paracentral lobule (sensory); lingula, IOG (visual)
	Basal occipital	Lingula, OTG, IOG	None
Ventricular/Periventricular AVMs			
	Callosal	Corpus callosum (genu, body, and splenium)	None
	Ventricular body	Choroid plexus, fornix, septum, velum interpositum, thalamus	Fornix (memory)
	Atrial	Choroid plexus, thalamus (pulvinar), crus of fornix, caudate	Fornix (memory)
	Temporal horn	Choroid plexus, hippocampus, fornix	Fornix (memory)
Deep AVMs			
	Pure sylvian	STG, planum polare and temporale; pars orbitalis, triangularis, opercularis	None
	Insular	Short gyri, long gyri	None
	Basal ganglial	Putamen, globus pallidus, caudate nucleus, internal capsule (ant. limb)	Basal ganglia, internal capsule
	Thalamic	Thalamus (superior and medial), internal capsule (post. limb)	Thalamus, internal capsule
Brainstem AVMs			
	Anterior midbrain	Cerebral peduncle, CN3	Midbrain
	Posterior midbrain	Tectum, CN4	Midbrain
	Anterior pontine	Pons, CN5, CN7/8	Pons
	Lateral pontine	Pons, MCP, CN5	Pons
	Anterior medullary	IVth ventricular floor, CN12	Medulla
	Lateral medullary	Olivary nucleus, CN9/10/11/12	Medulla
Cerebellar AVMs			
	Suboccipital cerebellar	Semilunar (sup. and inf.) lobules, biventral lobule	Deep cerebellar nuclei
	Tentorial cerebellar	Quadrangular, simple, and sup. semilunar lobules	None
	Vermian cerebellar	Superior vermis, inferior vermis	Deep cerebellar nuclei; cerebellar mutism
	Tonsillar cerebellar	Tonsil	None
	Petrosal cerebellar	Flocculus, MidCP	None



Spetzler-Martin arteriovenous malformation (AVM) grading system

- Size of nidus (1-3)
- Eloquence of adjacent brain (0-1)
- Venous drainage (0-1)

