AVM

- 2% multiple (usually with OWR)
- Usually present 20-40 years old
- 50% present with hemorrhage
- 30% SAH, 23% intraparenchymal, 16%intraventricular

AVM

- 0.5% of the population
- 11% of cerebrovascular malformations
- risk of spontaneous intracranial hemorrhage is 2-3% per year
- each episode has a 10-15% rate of mortality and a 20-30% rate of permanent neurologic deficit

AVM

- year after the first hemorrhage, the risk of rebleeding is 6%; thereafter, it decreases to 2-4%
- risks associated with a residual AVM of any size are widely believed to be equivalent to the risks associated with untreated lesions; however, this statement is controversial

Spetzler-Martin Grade

- Used to predict surgical morbidity and mortality
- 1 point for existence
- 1 point (<3 cm), 2 points (3-6 cm), 3 points (>6cm)
- An eloquent brain region is one in which injury results in a disabling neurologic deficit, with 0 points for noneloquent and 1 point assigned for involvement of eloquent brain
- 1 point for an AVM that drains into the deep venous system

Speztler-Martin

- Grade I AVM presents little risk of morbidity and mortality
- A grade V lesion is associated with significant risk
- A grade VI AVM is described as an inoperable AVM

AVM Associated Findings

- saccular aneurysm (6-20%)

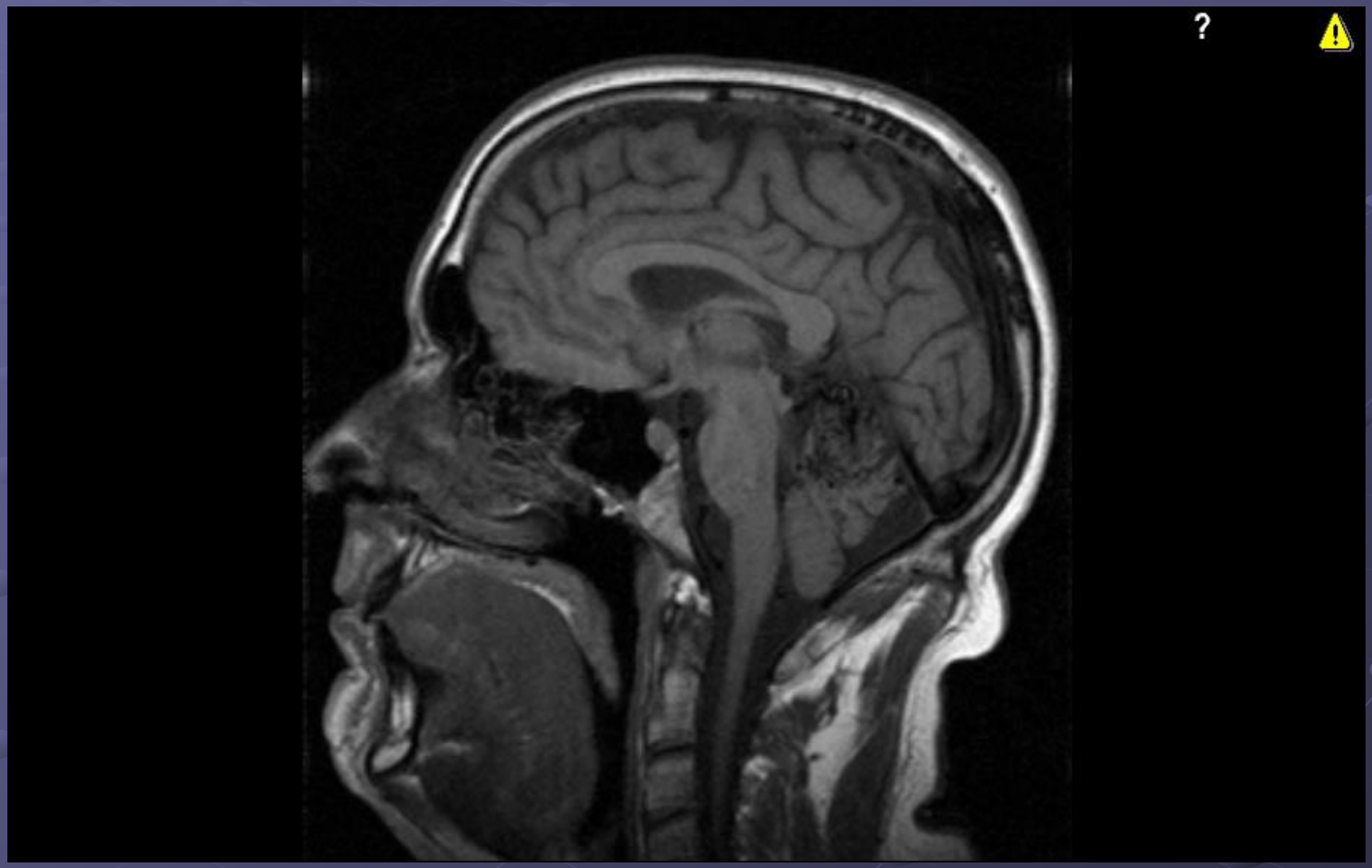
  - most commonly located at feeding artery

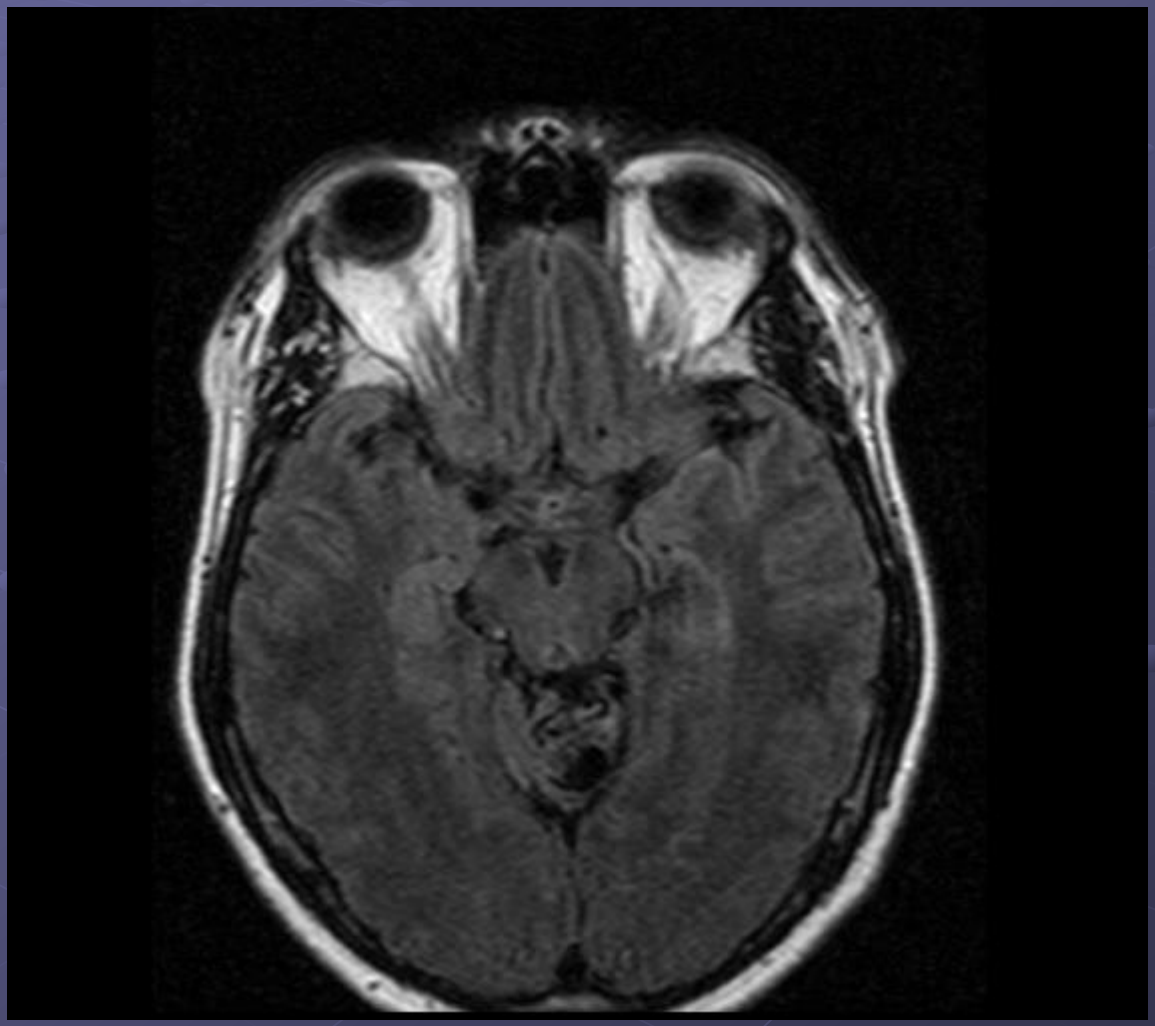
  -venous and intranidal aneurysms are less frequent

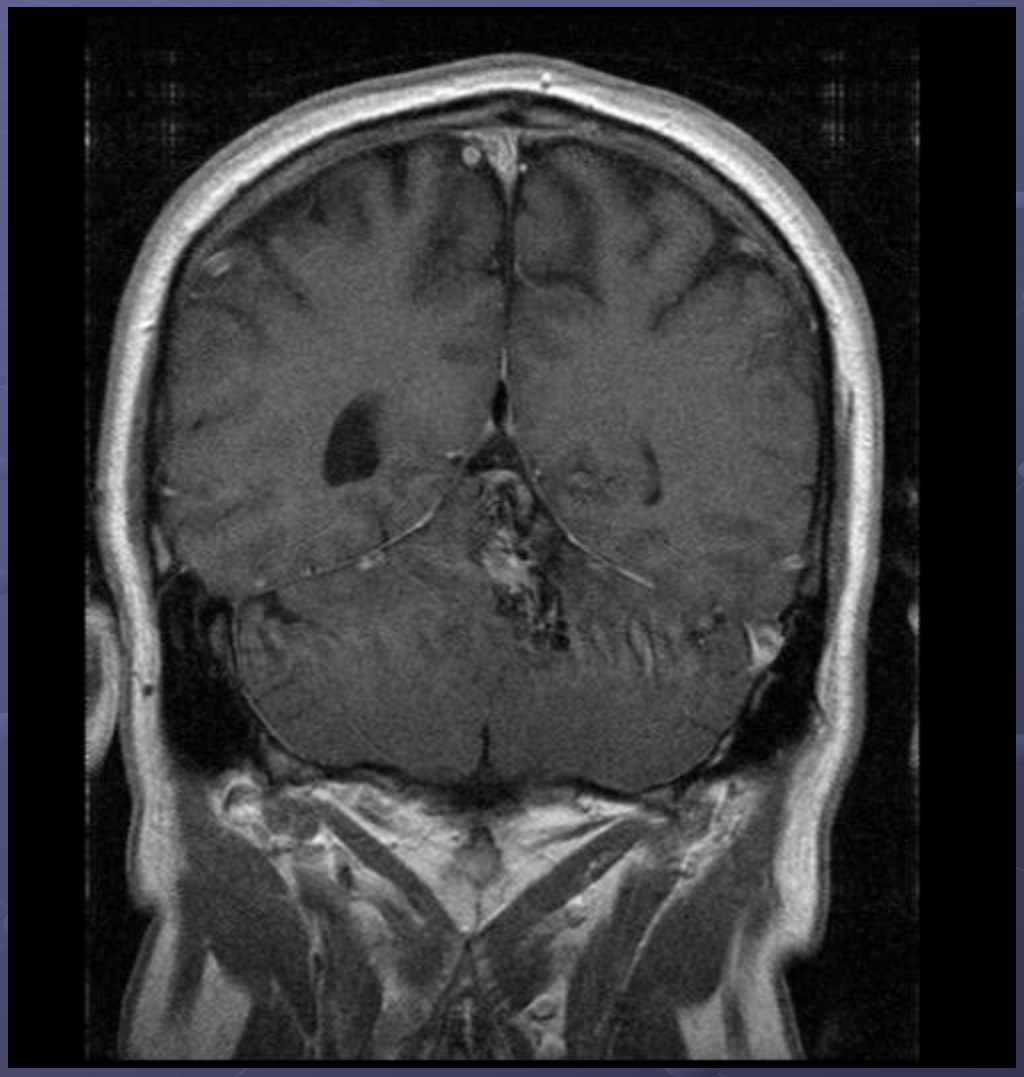
- angiopathy of feeding arteries and draining veins (such as venous outflow stenosis)

Current treatment modes

- direct microsurgical intervention
- intravascular intervention (eg, embolization or balloon insertion)
- radiosurgery
- large AVMs may require a combination of these modes over several sessions

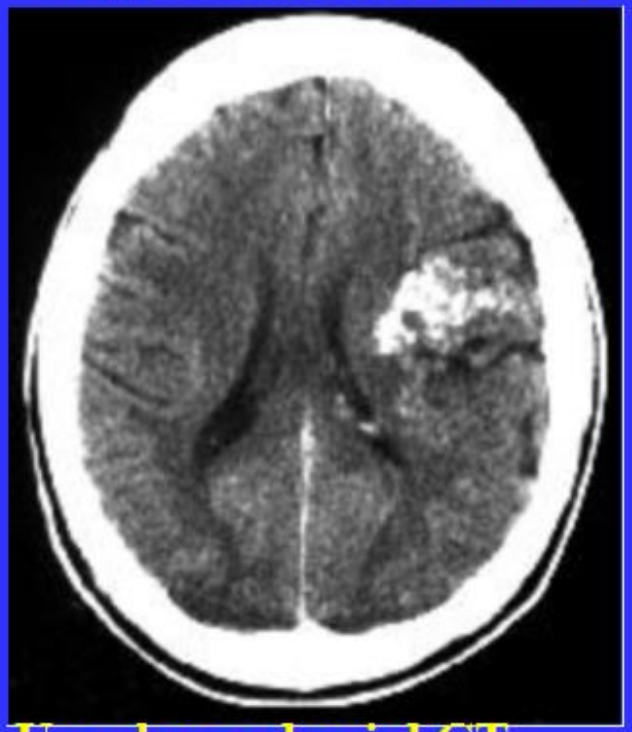






Arteriovenous Malformations

40 y.o. male with acute onset of generalized seizures



Unenhanced axial CT demonstrates extensive calcification just superior to the L sylvian fissure in an MCA distribution

Post contrast CT demonstrasted large feeding and draining vessels

Spetzler-Martin grading system

- Helps predict the likelihood of satisfactory outcome if an attempt at surgical resection is made
- High-grade AVMs are more difficult to resect, and, therefore, neurologic deficits from the surgery itself are more likely.
- 1 and 2 treated with microsurgery
- 4 and 5 treated with mulimodality
- 3 controversial.

Spetzler-Martin grading system

Table 1. Spetzler-Martin Grading System for AVMs

Size of AVM*		Eloquence of adjacent brain†		Pattern of venous drainage‡	
Small (<3 cm)	1	Noneloquent	0	Superficial only	0
Medium (3-6 cm)	2	Eloquent	1	Deep component	1
Large (>6 cm)	3	…		…	

* Measure the largest diameter of the nidus of the lesion on angiography.
† Eloquent areas include sensorimotor, language, visual, thalamus, hypothalamus, internal capsule, brain stem, cerebellar peduncles, and deep cerebellar nuclei.
‡ The lesion is considered superficial only if all drainage is via the cortical drainage system.