AMSER Case of the Month February 2021

An Incidental Finding from Syncope Workup

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Patient Presentation

- A 79-year-old man presented to the emergency department with light headedness and syncope. He was in the bathroom and noticed a large amount of bright red blood in the toilet, and then subsequently had an episode of syncope. He denied any tongue biting, incontinence, chest pain, SOB, or palpitations.
- PMHx – prostate cancer (2014), HTN, HLD, diverticulosis, and hemorrhoids
- PSHx – rotator cuff repair, hernia repair, appendectomy
- FHx – noncontributory
- Social Hx – smokes 3 cigars per week (quit cigarette smoking 1970s), no alcohol use

Pertinent Labs

- + Fecal occult blood test
- Anemia (Hgb ~12.1)
- EKG – normal sinus rhythm

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 2: **Acute head trauma, mild (GCS 13–15), imaging indicated by clinical decision rule. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
CT head without IV contrast	Usually Appropriate	☢☢☢
Radiography skull	Usually Not Appropriate	☢
Arteriography cervicocerebral	Usually Not Appropriate	☢☢☢
MR spectroscopy head without IV contrast	Usually Not Appropriate	O
MRA head and neck with IV contrast	Usually Not Appropriate	O
MRA head and neck without and with IV contrast	Usually Not Appropriate	O
MRA head and neck without IV contrast	Usually Not Appropriate	O
MRI functional (fMRI) head without IV contrast	Usually Not Appropriate	O
MRI head with IV contrast	Usually Not Appropriate	O
MRI head without and with IV contrast	Usually Not Appropriate	O
MRI head without IV contrast	Usually Not Appropriate	O
MRI head without IV contrast with DTI	Usually Not Appropriate	O
CT head with IV contrast	Usually Not Appropriate	☢☢☢
CT head without and with IV contrast	Usually Not Appropriate	☢☢☢
CTA head and neck with IV contrast	Usually Not Appropriate	☢☢☢
HMPAO SPECT or SPECT/CT brain	Usually Not Appropriate	☢☢☢
FDG-PET/CT brain	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the ER physician

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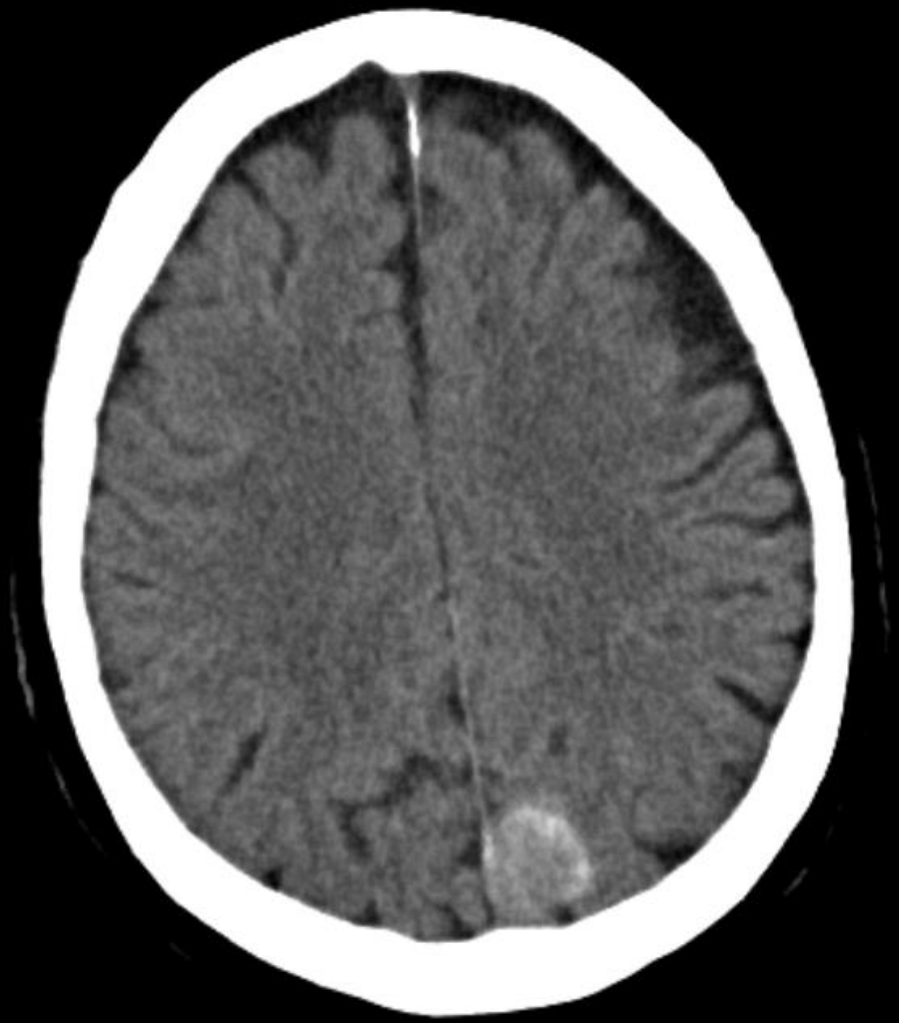
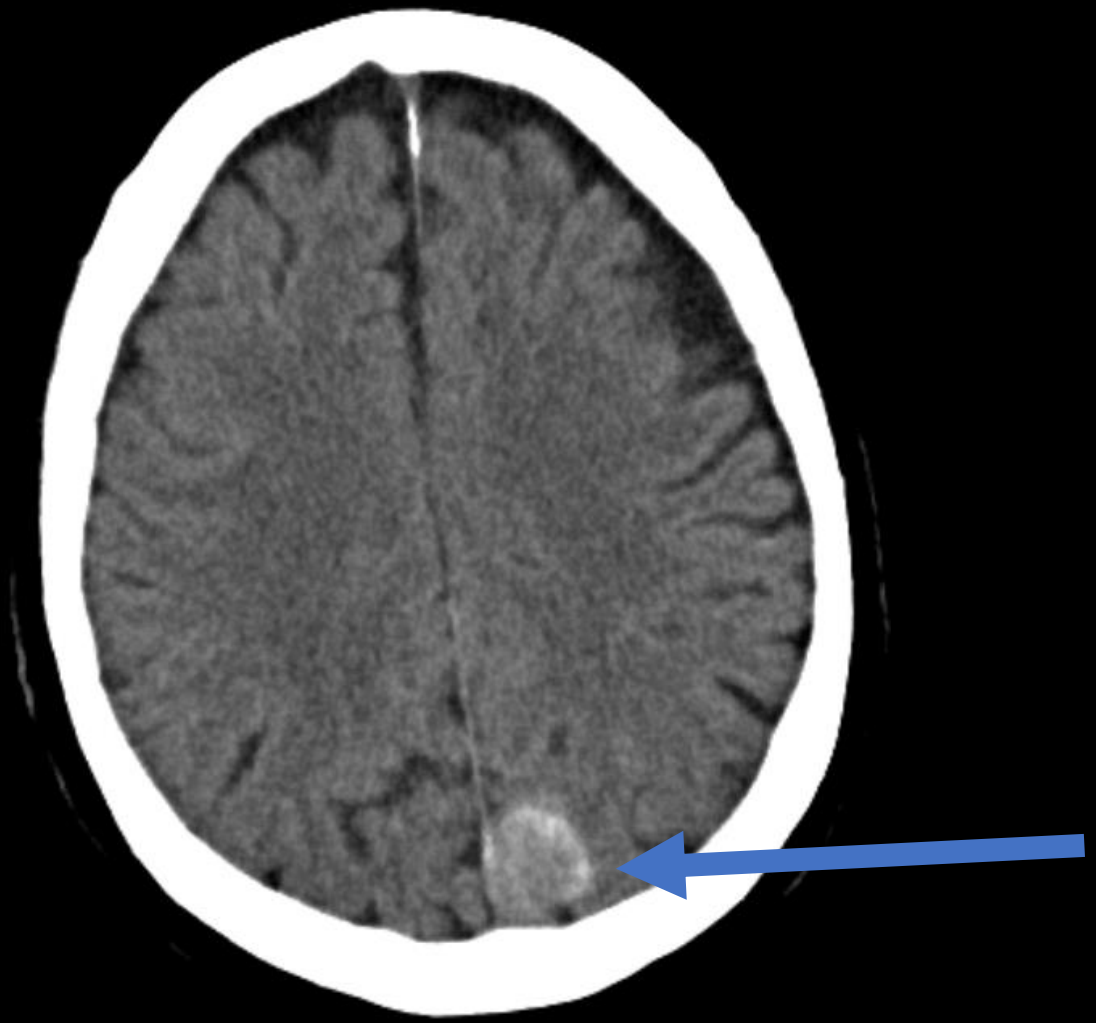
Findings (unlabeled)



Findings: (labeled)

Left posterior parafalcine hyperattenuating mass with peripheral calcifications measures approximately 1.5 cm transverse by 1.8 cm AP by 1.6 cm sagittal, most consistent with a meningioma. Ventricular and sulcal prominence is consistent with age-related involutional changes.



Final Dx:

Meningioma

Meningioma

- Most frequent extra-axial CNS tumor
  - Supratentorial (85-90%)
- Incidence increases with age (median age ~65)
  - Women > men
- Most often asymptomatic
  - Symptomatic presentations mostly due to mass effect – headache, seizures, visual changes/defects, cranial nerve defects, altered mental status
- 80-85% WHO grade I (benign)
  - Grade II (18%): atypical
  - Grade III (2%): anaplastic or malignant
- Hereditary syndromes
  - Neurofibromatosis type 2

Findings on CT

- Non-contrast CT
  - Hyperdense vs isodense,
  - Can contain calcifications
- Contrast CT
  - Bright, homogenous contrast enhancement
- Hyperostosis
  - Typical for meningiomas at the skull base
- Lytic regions
  - Only for high grade or atypical tumors

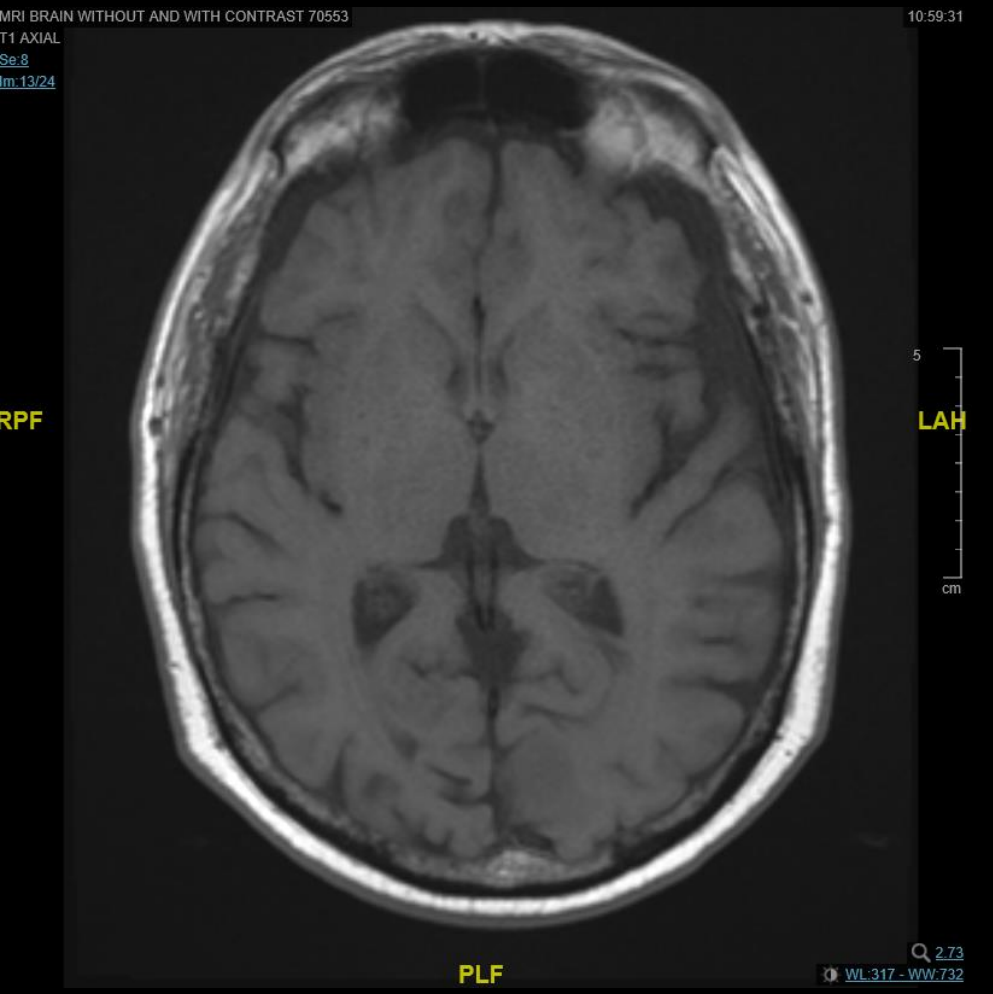
Findings on MRI

- T1
  - Isointense or hypointense to grey matter
- T1 contrast (gadolinium)
  - Strong, homogenous contrast enhancement
- T2
  - Usually isointense or hypointense to grey matter
  - Increased T2 signal seen in some variants
- DWI/ADC
  - Restricted diffusion typically demonstrated.

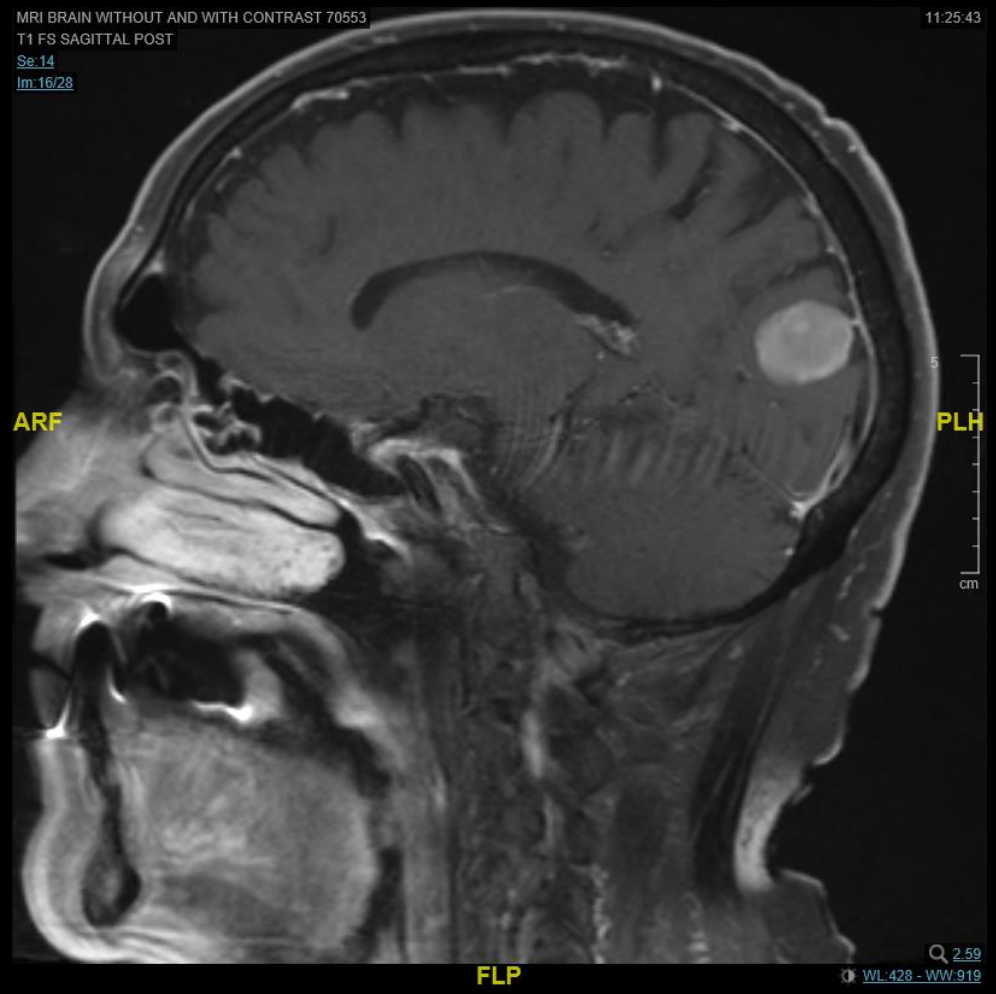
Imaging Signs

- ”Tail” sign/dural tail – marginal dural thickening that tapers peripherally. Seen in 72% of cases
- CSF cleft sign – differentiates extra-axial from intra-axial lesions
  - CSF between the tumor and brain
- Sunburst sign or spoke wheel pattern – vasculature supply/appearance of vessels typically on angiogram

MRI Images from the case

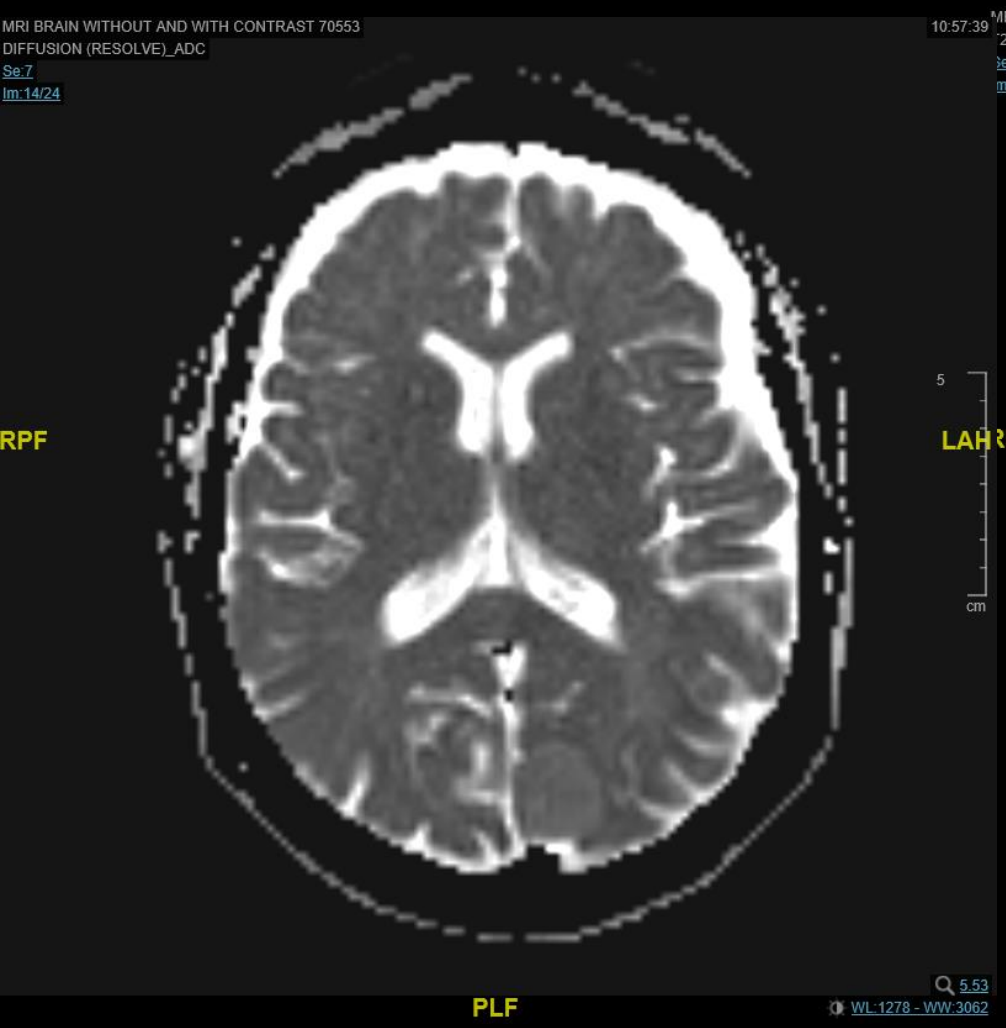


T1 axial without contrast

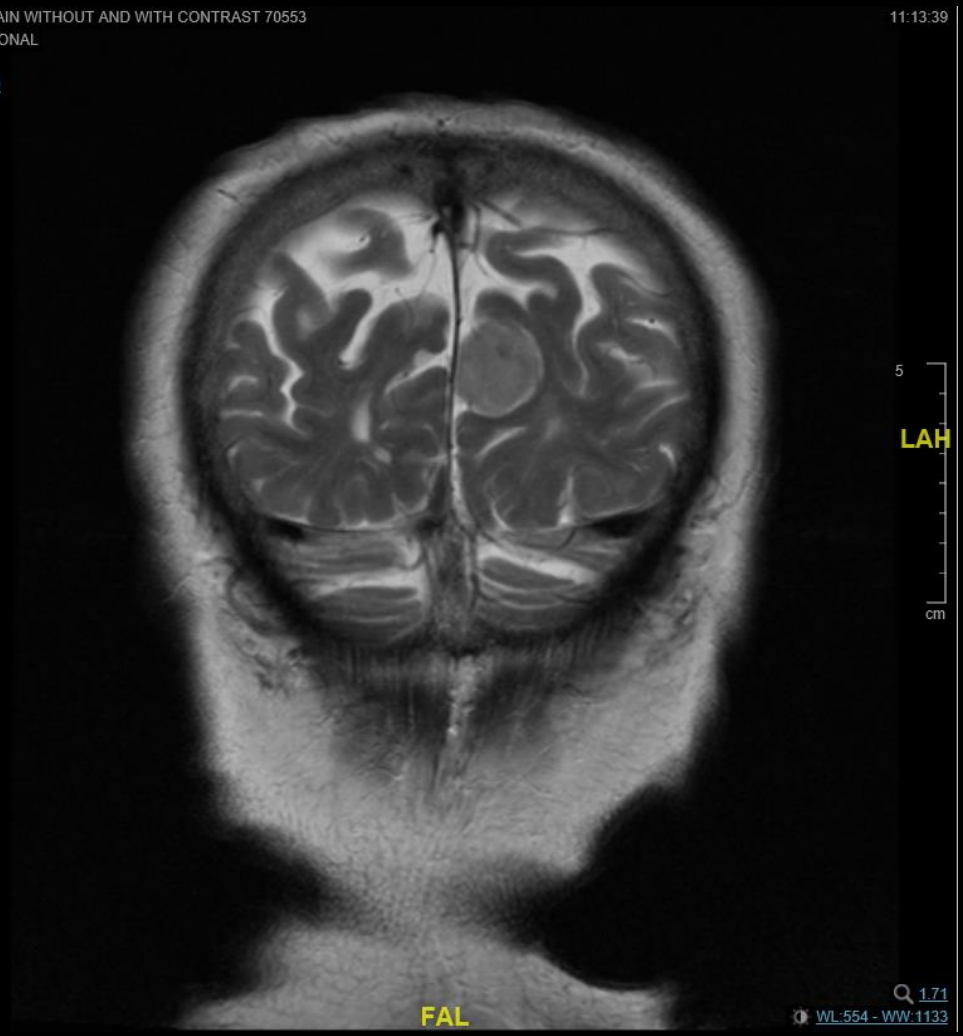


T1 sagittal post contrast

MRI Images from the case

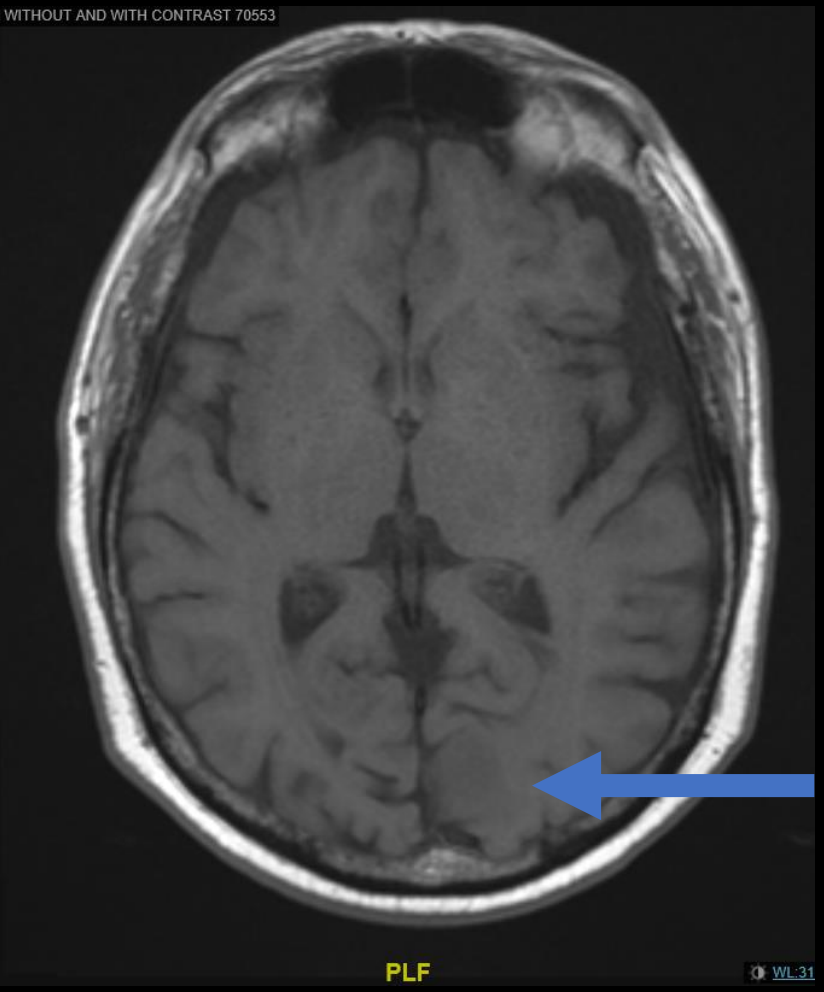


ADC axial

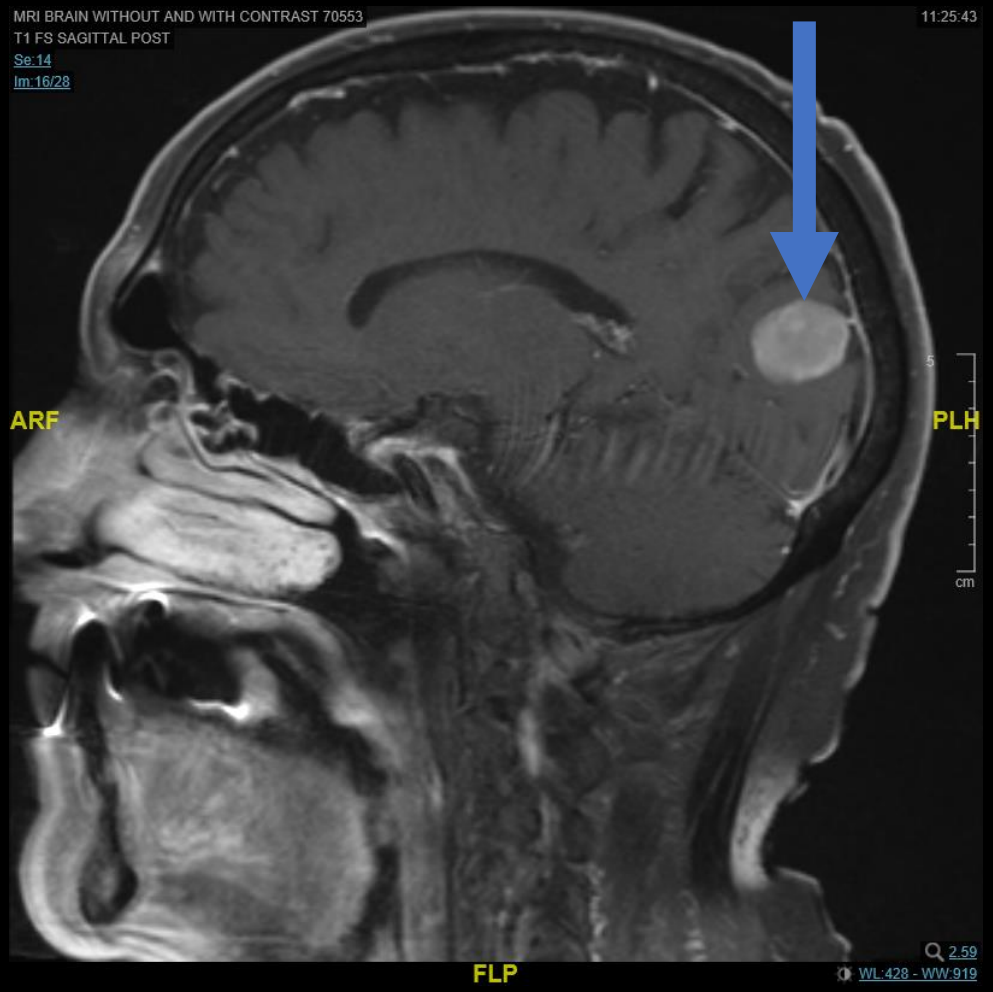


T2 coronal

MRI Images from the case (labeled)



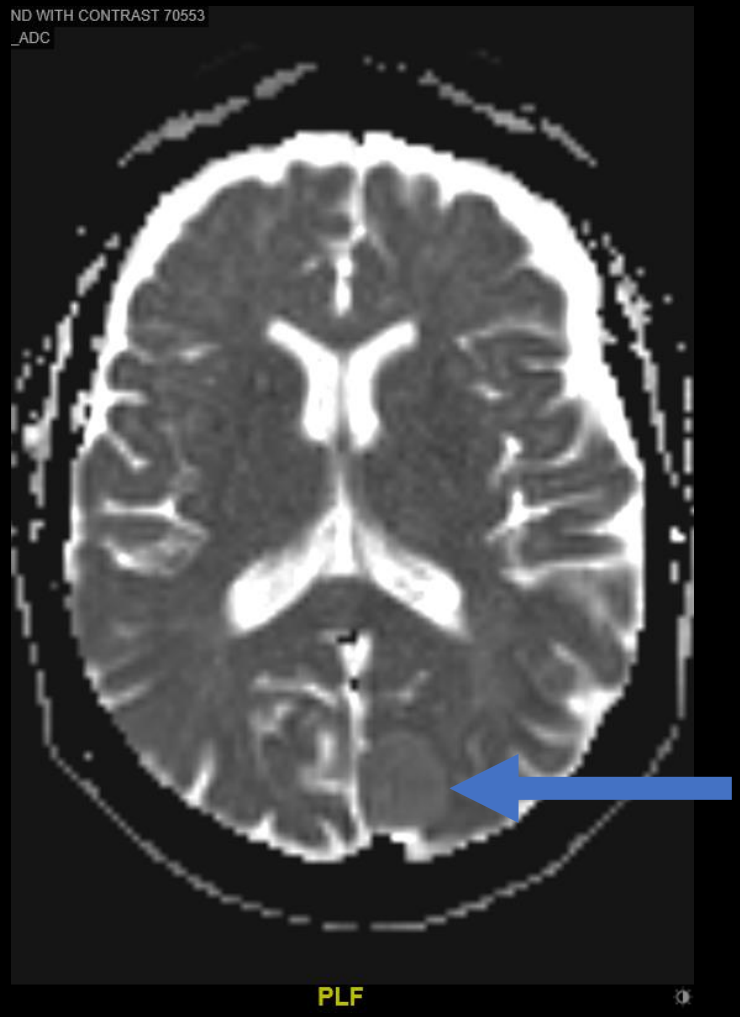
T1 axial without contrast



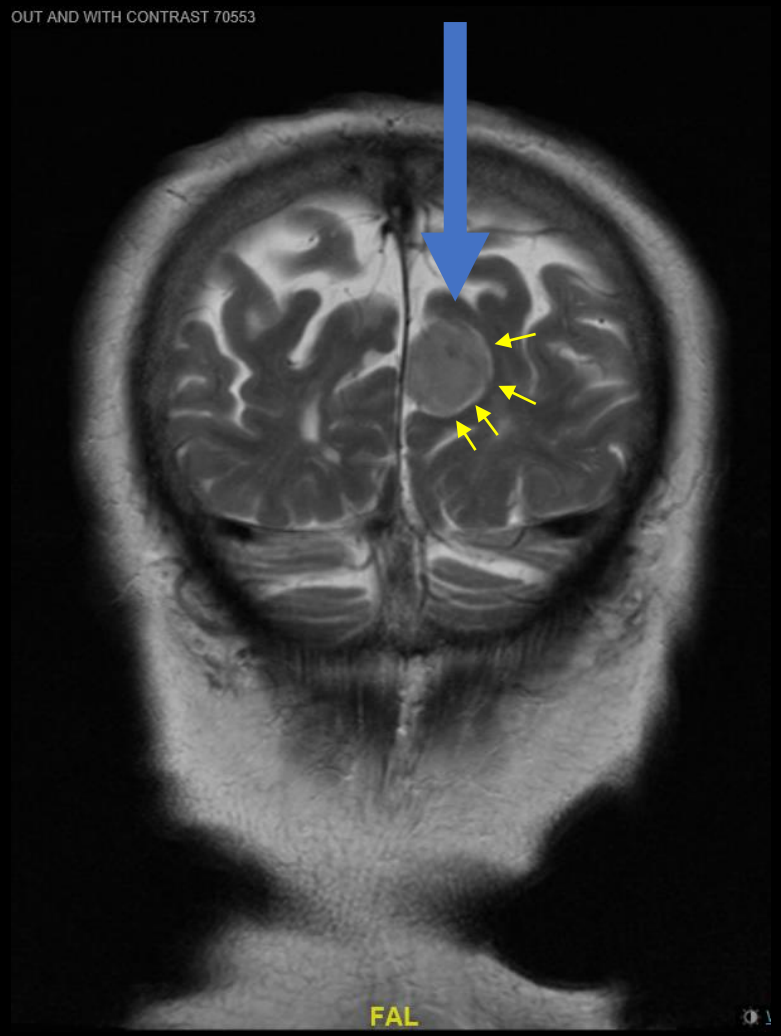
T1 sagittal post contrast

- T1 isointense, avidly enhancing extra-axial mass along the left posterior parafalcine region producing minimal mass effect upon the subjacent brain parenchyma.

MRI Images from the case (labeled)



ADC axial

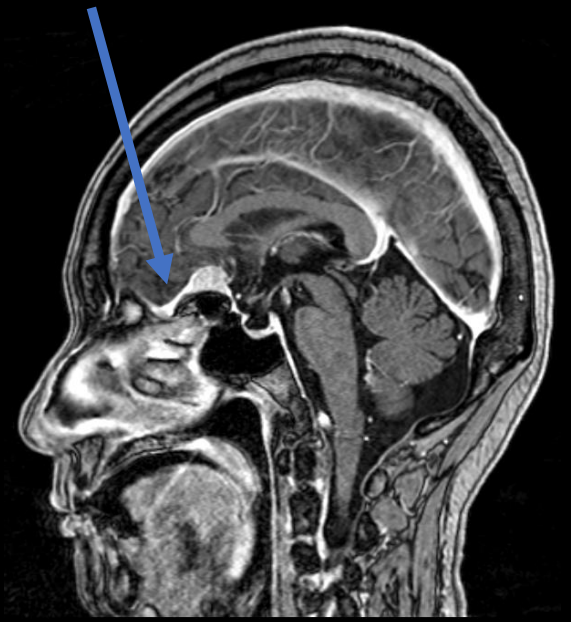


T2 coronal

- T2 isointense to hypointense mass (large blue arrow) with a CSF cleft demonstrated (small arrows)
- Low signal on the ADC sequence consistent with restricted diffusion.
- All imaging characteristics are consistent with a meningioma.

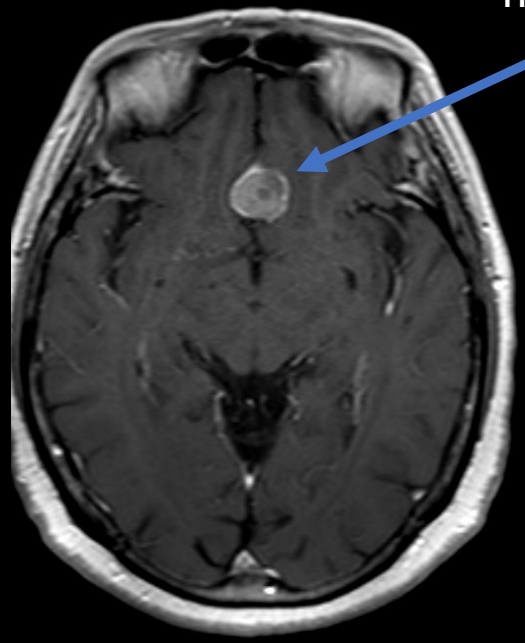
MRI Images from a different case (labeled)

Good example of the Dural tail from another meningioma—at the level of the planum sphenoidale



T1Sagittal
post contrast

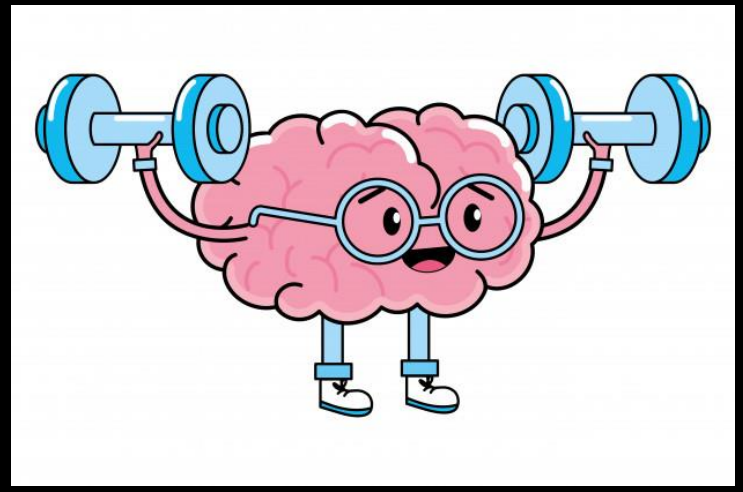
Homogenously enhancing meningioma



T1 Axial post contrast

Neurosurgery Follow up

- Patient remained asymptomatic from the incidental meningioma found on CT head
- No edema on imaging, normal PSA – low suspicion for metastatic prostate cancer
- Follow up scan in 3 months with CTA & CTV



References:

- Gaillard, Frank. “Meningioma: Radiology Reference Article.” Radiopaedia Blog RSS, radiopaedia.org/articles/meningioma?lang=us.
- Park, JK. Epidemiology, pathology, clinical features, and diagnosis of meningioma. In: UpToDate, Eichler, AF (Ed), UpToDate, Waltham, MA, 2020
- American College of Radiology. ACR Appropriateness Criteria®. Available at https://acsearch.acr.org/list . Accessed <November 24, 2020>
- Insights into imaging. Available at https://insightsimaging.springeropen.com/articles/10.1186/s13244-019-0697-7