Working Around A Cerebellopontine Angle Mass.

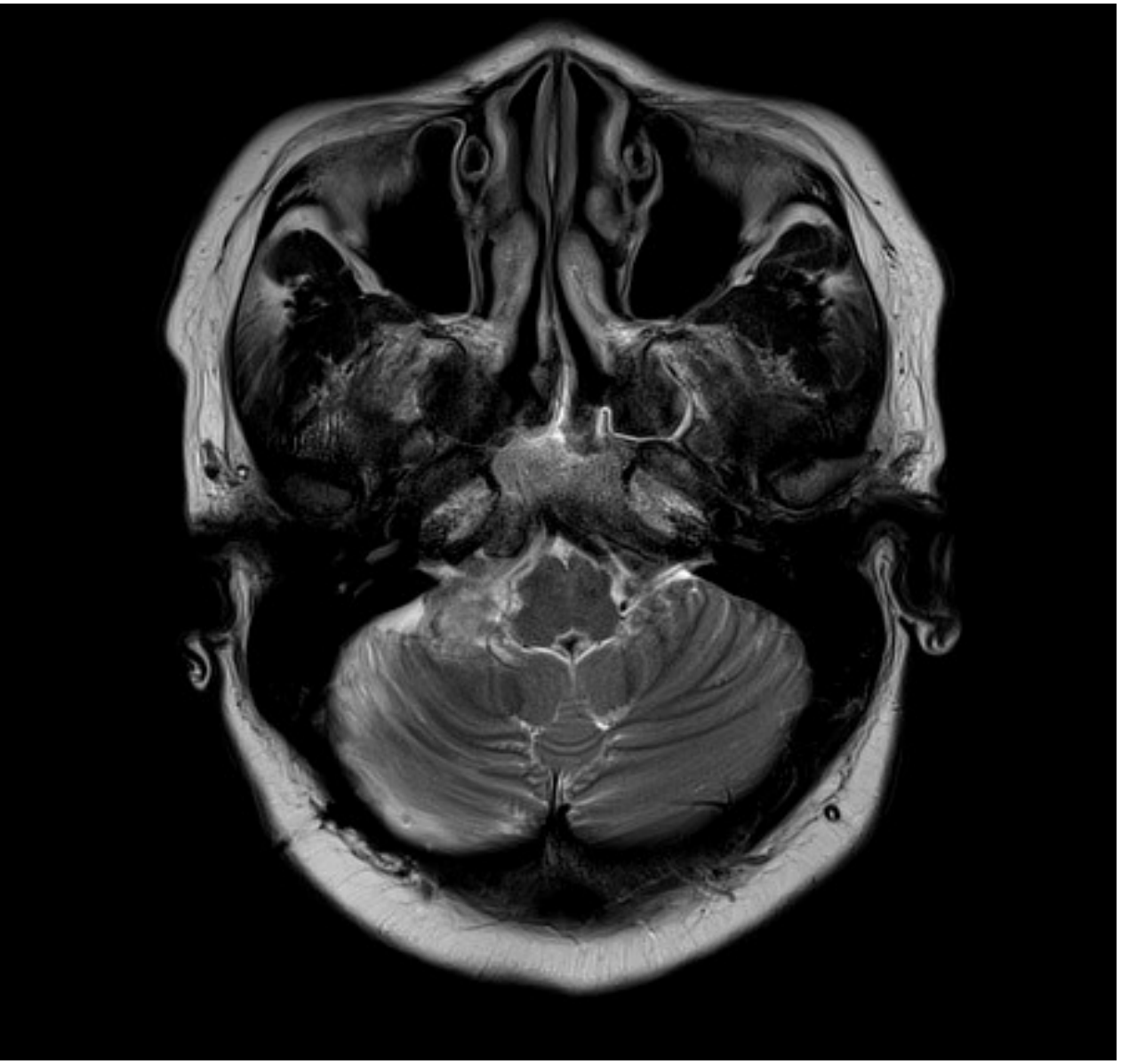
Dr NW Mbuyisa

Outline

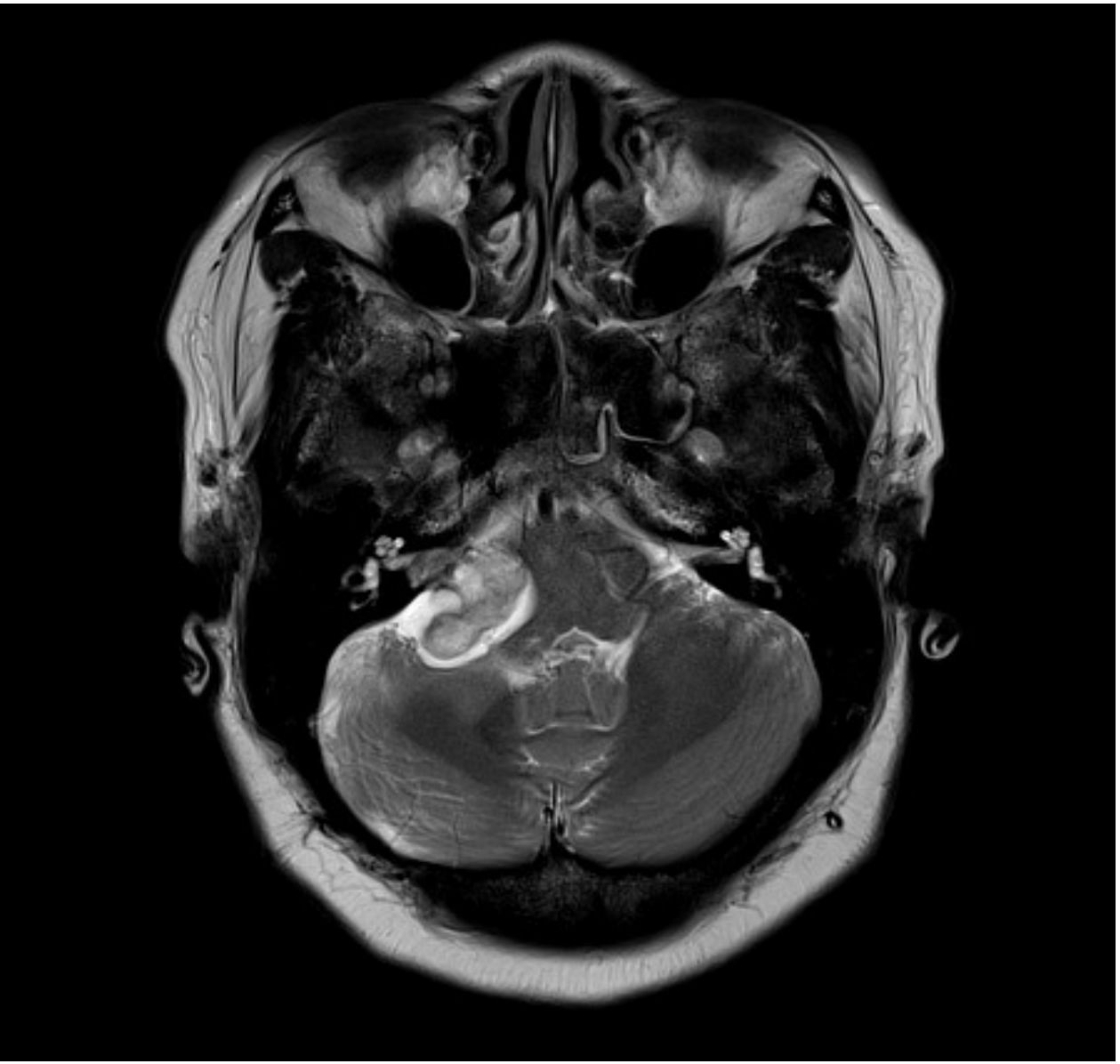
- Patent history
- Imaging findings
- Differentials
- Final diagnosis.

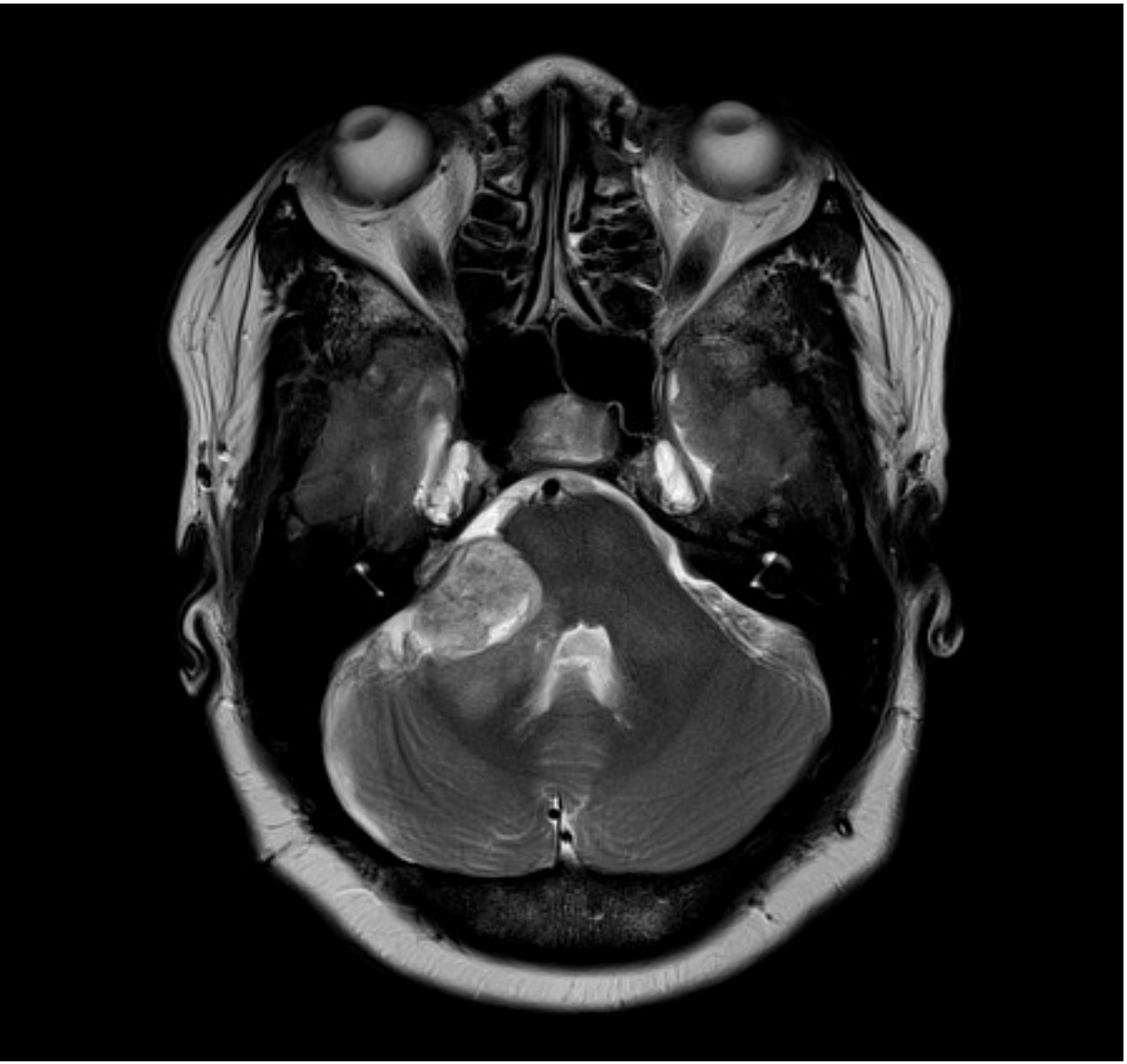
Patient details

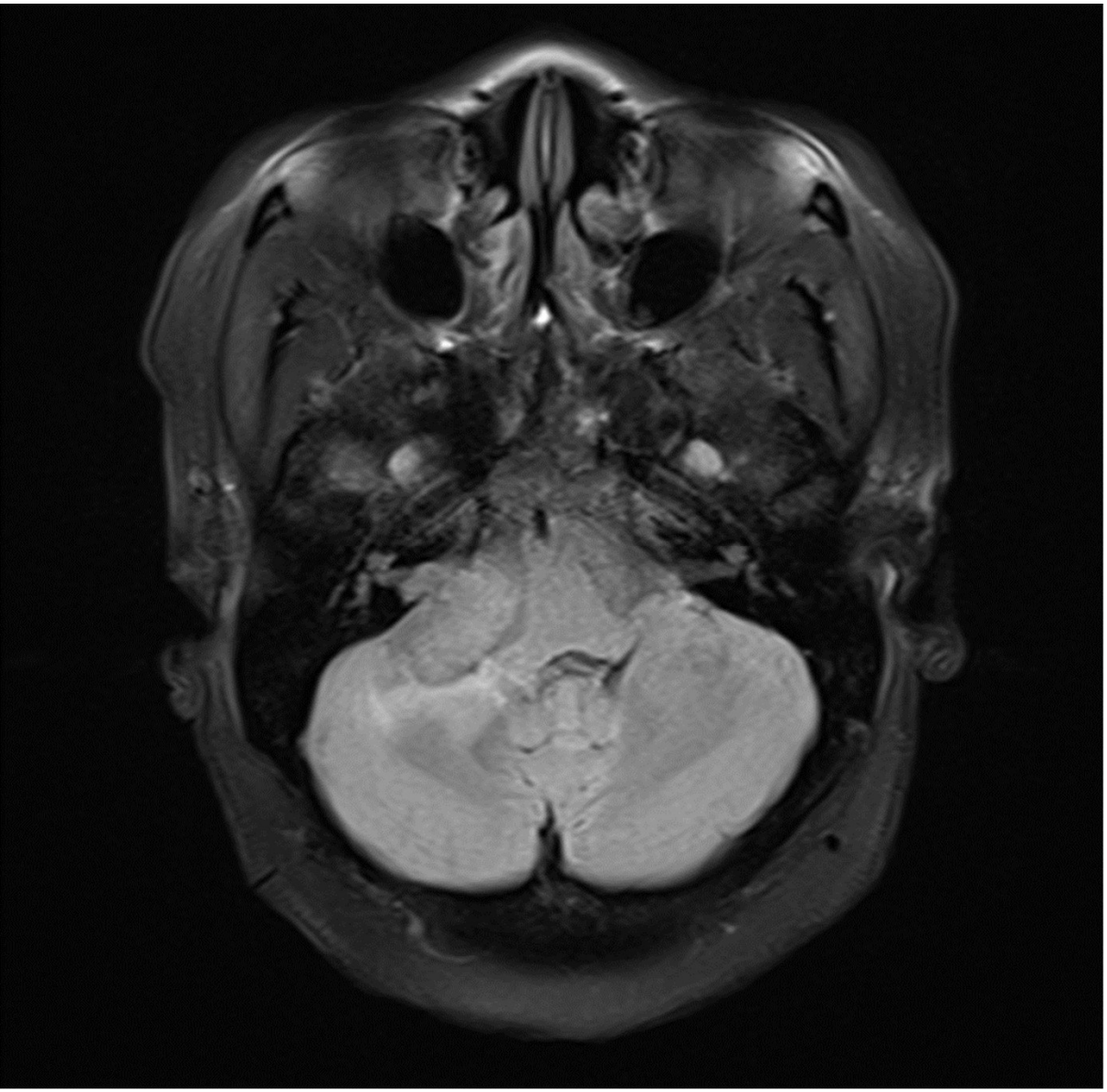
- Patient TM
- 49year old female presenting with unexplained loss of hearing and vision and facial nerve palsy.
- Imaging was done for further evaluation.



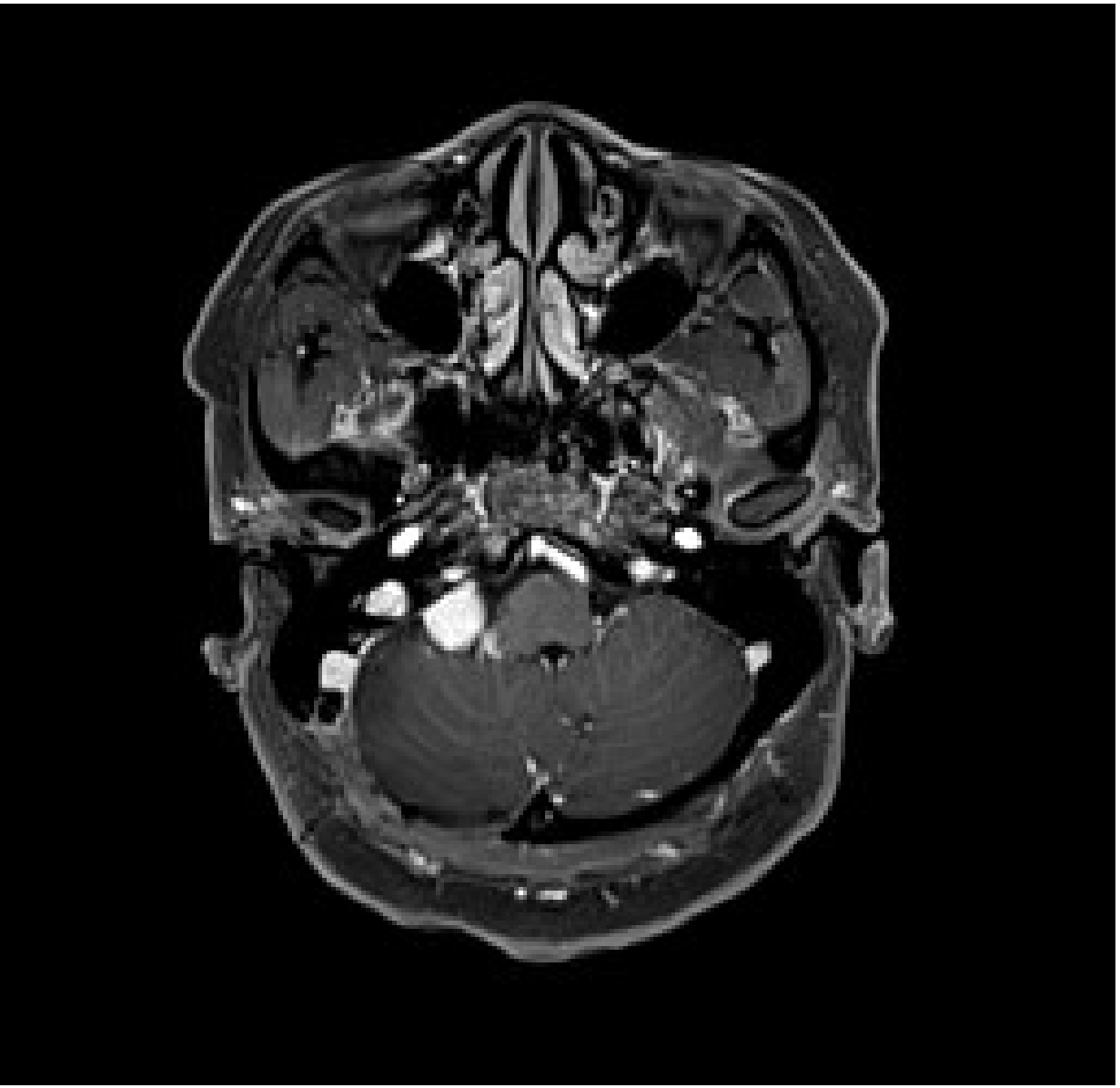
- T2WI



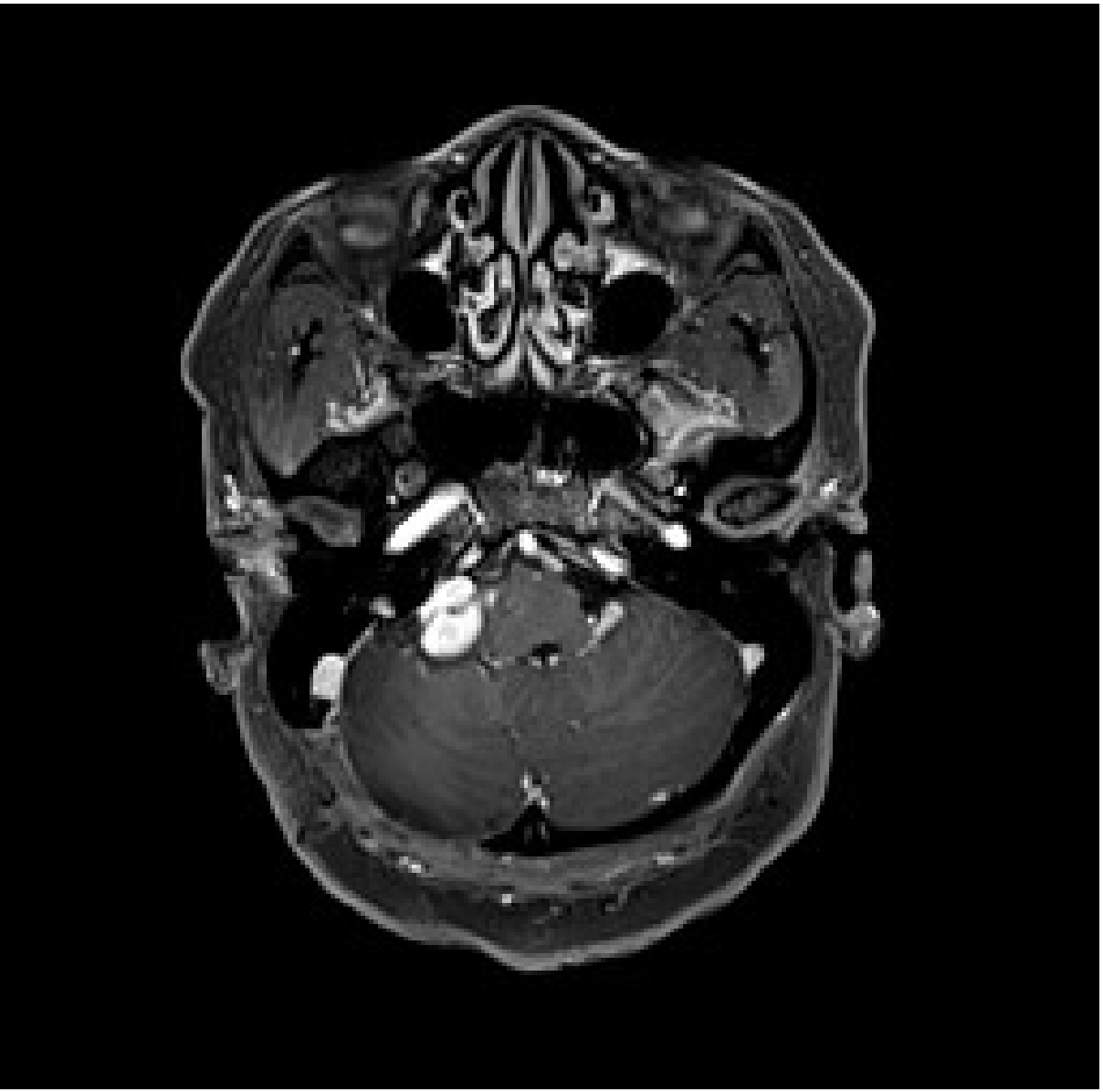


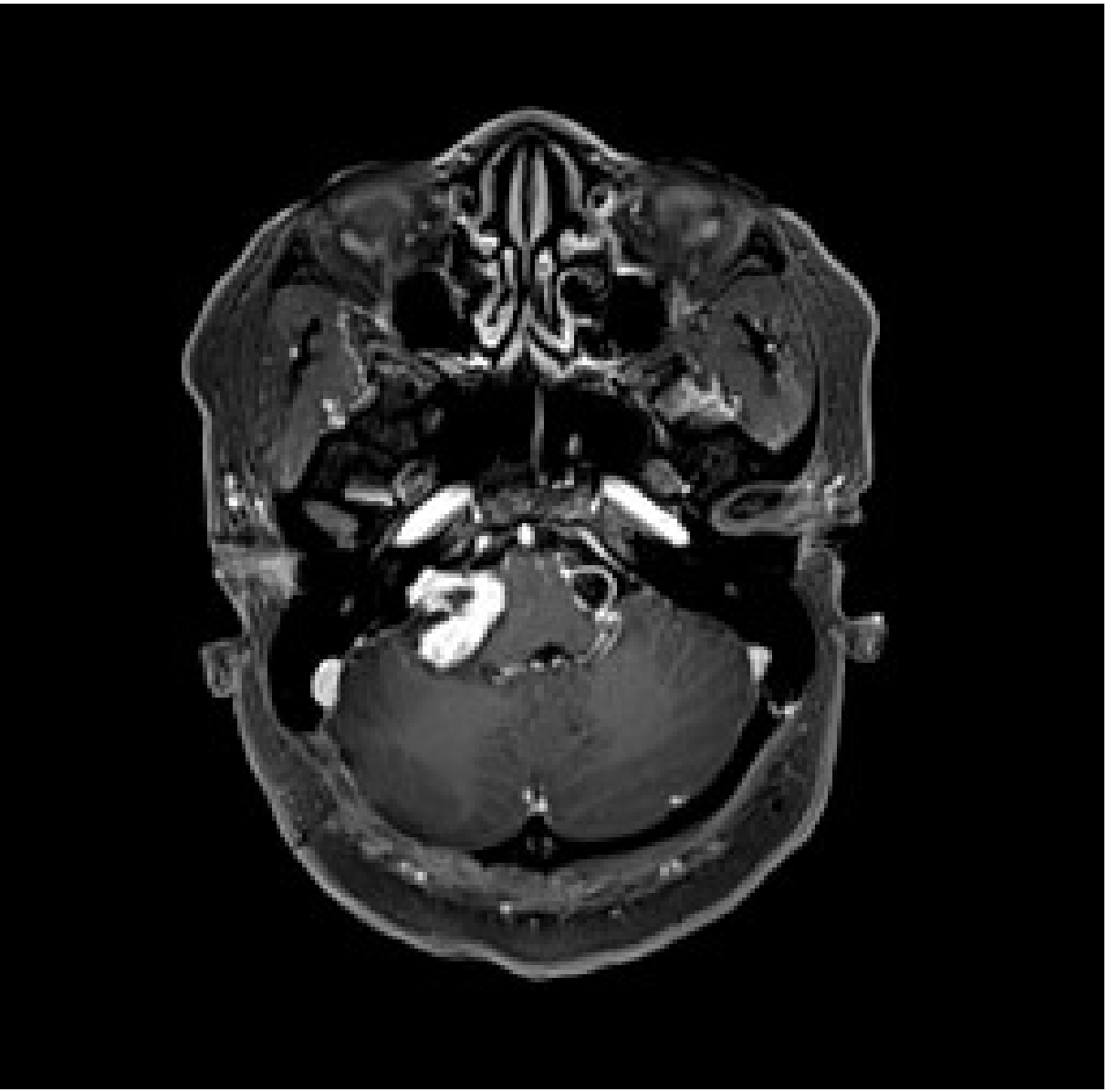


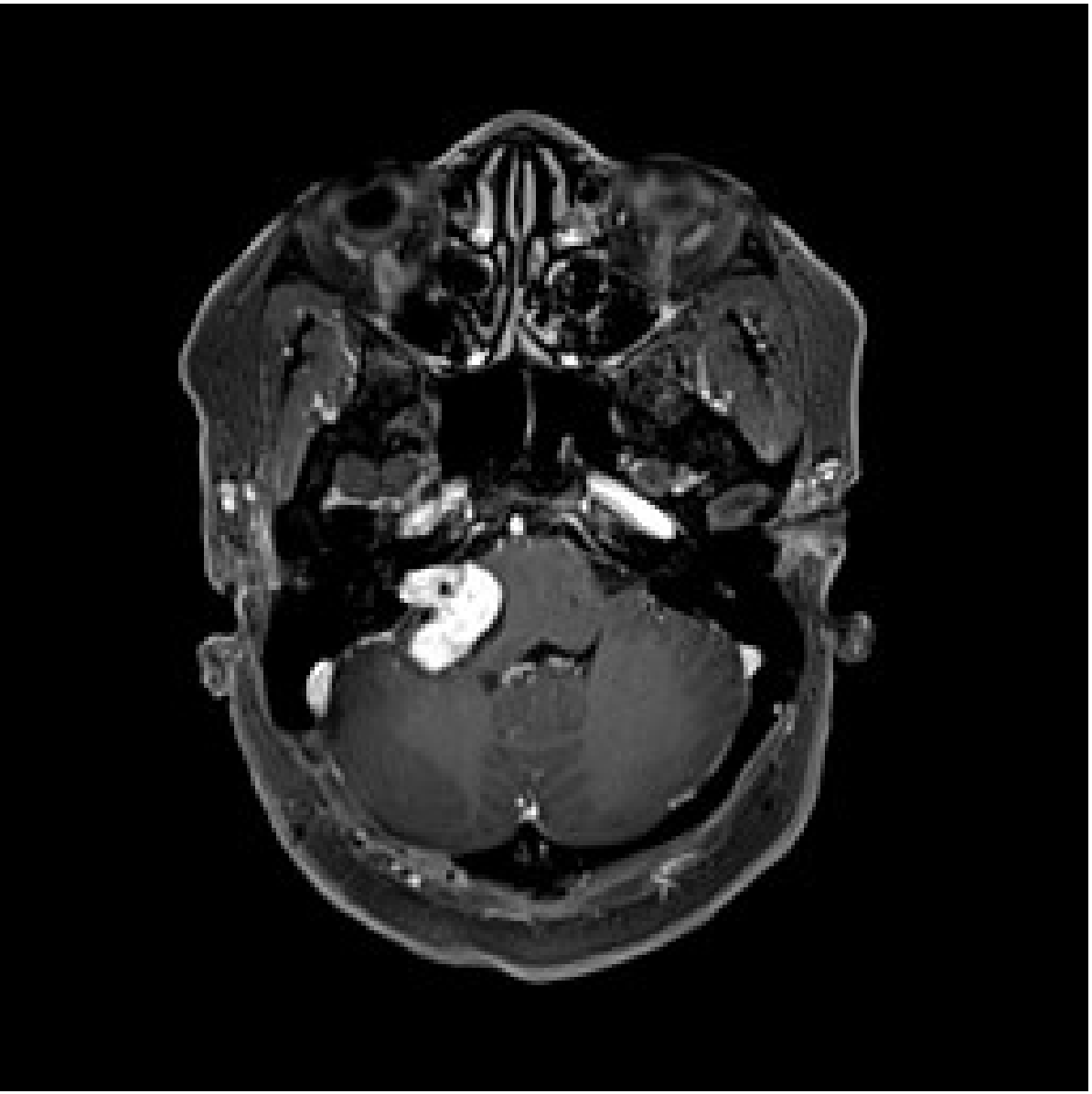
- FLAIR

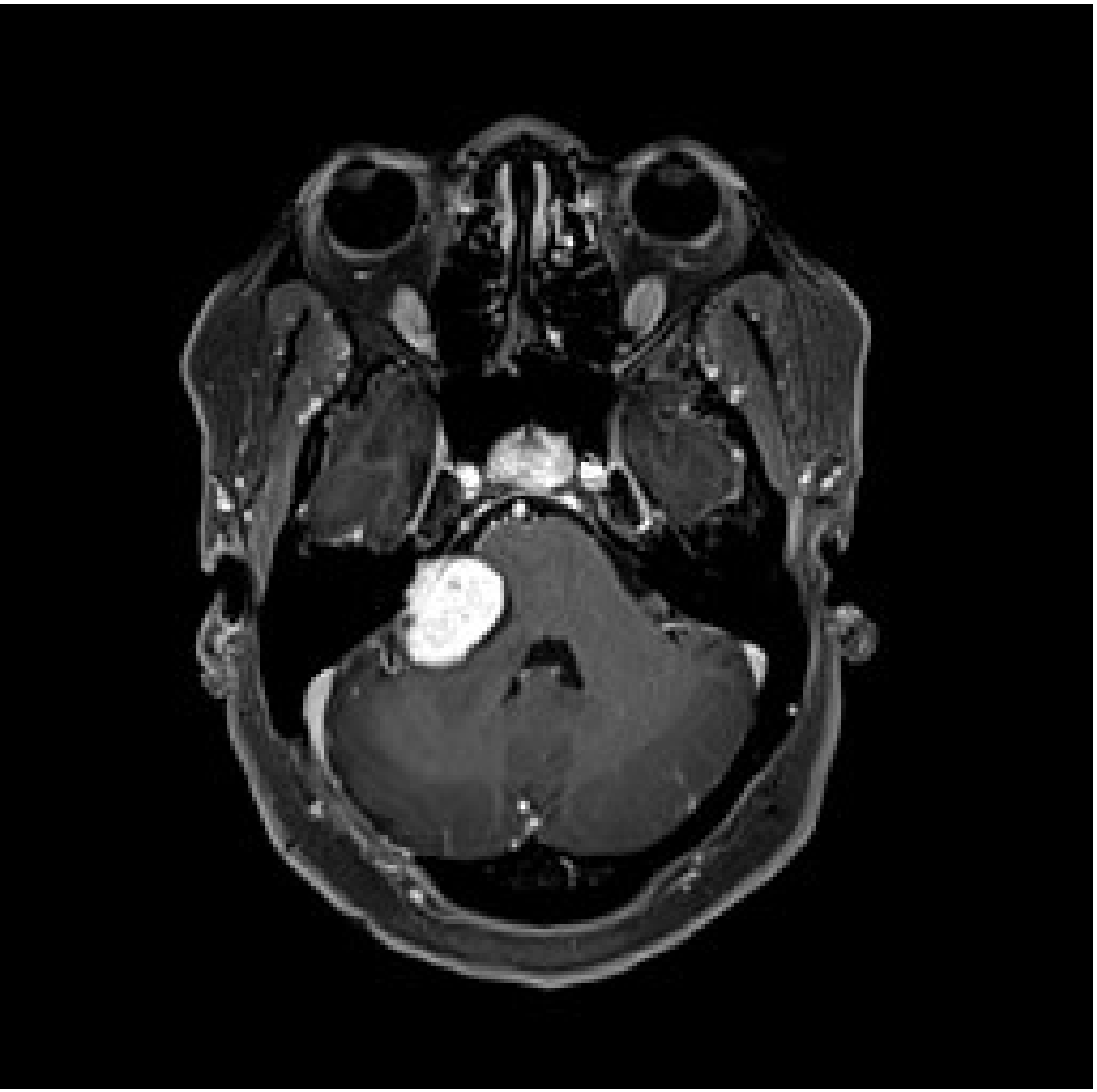


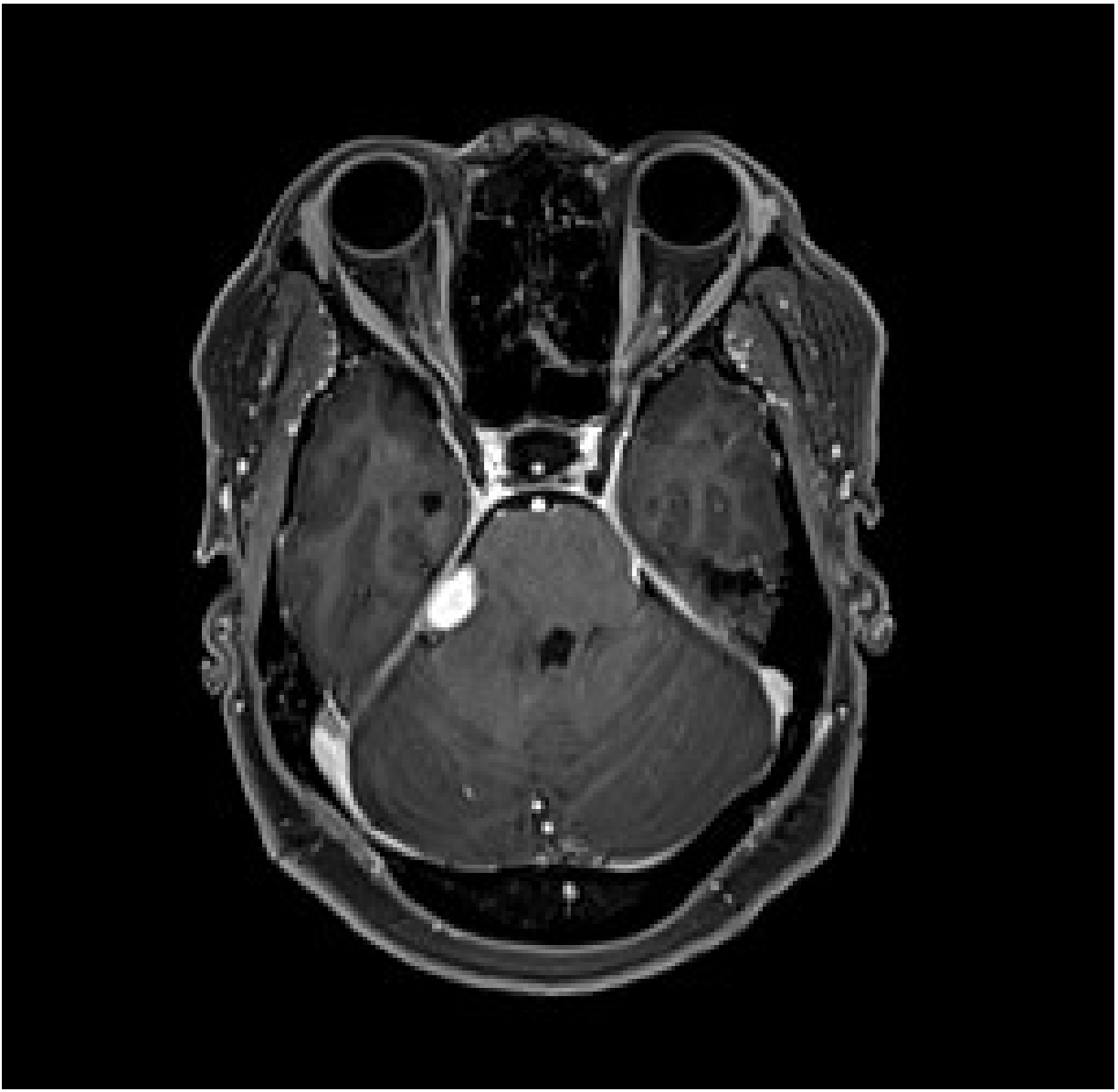
- T1WI +C











Summary of Imaging findings

- Well circumscribed lobulated inhomogeneous right extraxial cerebellopontine angle mass
- The mass lesion is hyperintense to grey matter on T2WI and FLAIR images.
- Demonstrated avid and homogenous post contrast enhancement.
- The mass extends into the right internal auditory canal causing canal expansion and the cranial nerves 7 and 8 are not visualised on the right.
- There is partial compression of the 4^{th} ventricle on the right side.
- Vasogenic oedema in the right middle cerebellar peduncle.
- No further abnormality noted.

- Comment
  - Strong enhancing lobulated CP angle mass that extends into and expands the porus acousticus.

  Differentials include

  ……

- Anatomy of the cerebellopontine angle
    - Basal cistern--CSF
    - Nerves Cranial Nerve VII and VIII
    - Foramen of Luschka
    - Flocculus of the cerebellum
    - Anterior inferior cerebellar artery(AICA)

Working through the differential diagnoses.

- Extra-dural mass in the right cerebellopontine angle
    - Knowledge of relative incidence of lesions key in cerebellopontine angle
        - Vestibular schwannomas account for ~ 70-80% of all CPA tumours
        - Meningiomas 2nd most common (~ 10-15%)
        - Epidermoid cyst 3rd most common (~ 5%)

- Less common differentials
    - Arachnoid cyst
    - Aneurysm
    - Metastases

- Rare
  - Neurofibromatosis 2
  - Sarcoidosis
  - Lipoma
  - Choroid Plexus Papilloma
  - Ependymoma, Schwannoma Facial Nerve, Jugular foramen etc

- When looking at the 3 most common masses; schwannoma and meningioma enhances post contrast.

- **Epidermoid cysts**
  - Fluid like low T1 signal intensity
  - High T2 signal intensity and **show lack of enhancement**
  - FLAIR: Relative hyperintensity to CSF
  - DWI: Restricted diffusion (high signal) makes diagnosis

- Other CPA masses that commonly enhance are lymphomas, metastasis and ependymomas.

From the list not all of them enhance

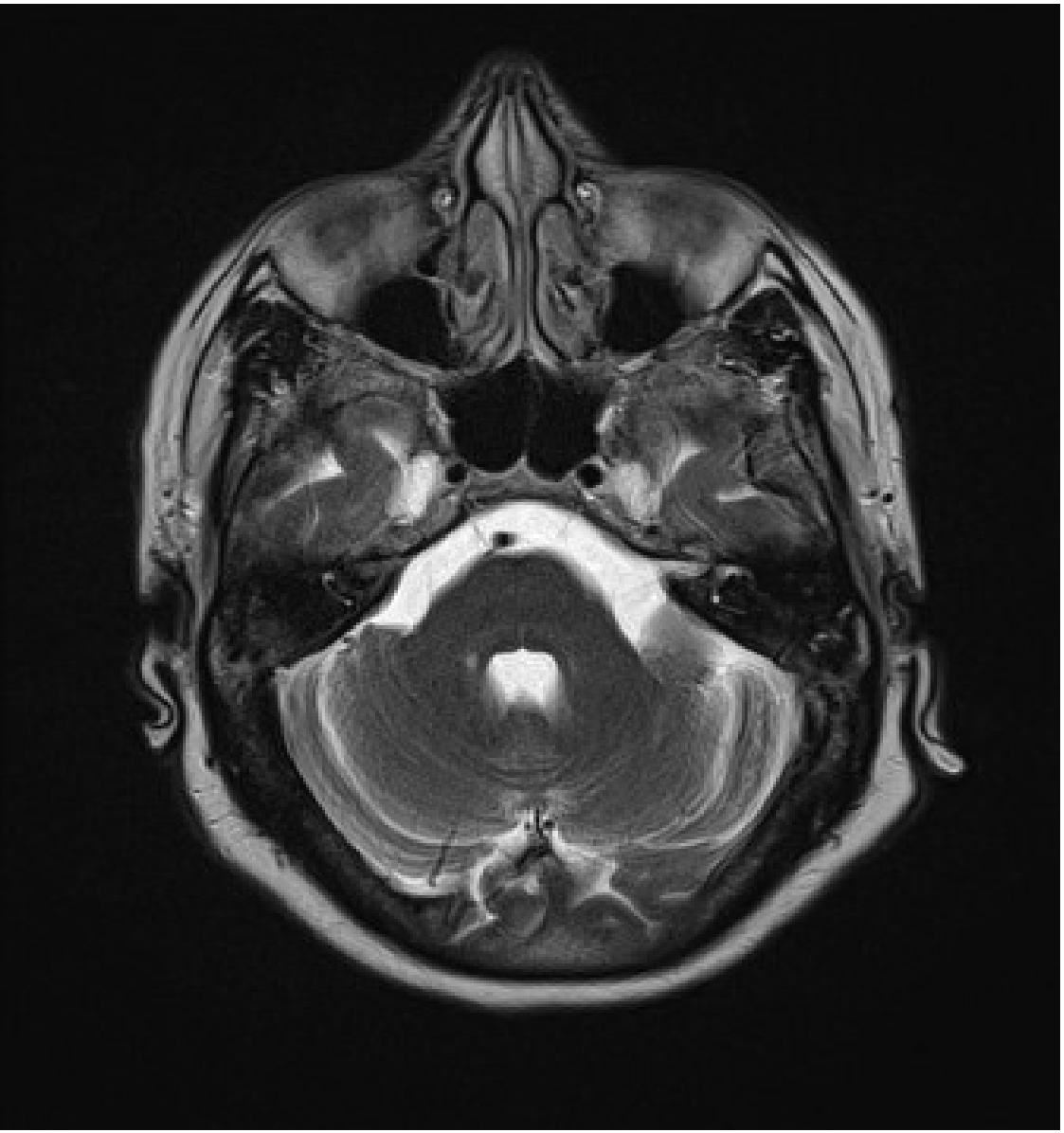
- From the list of differentials those cerebellopontine angle masses that show enhancement……
  - Each are looked at closely and their characteristic appearances for and against each of them reviewed.

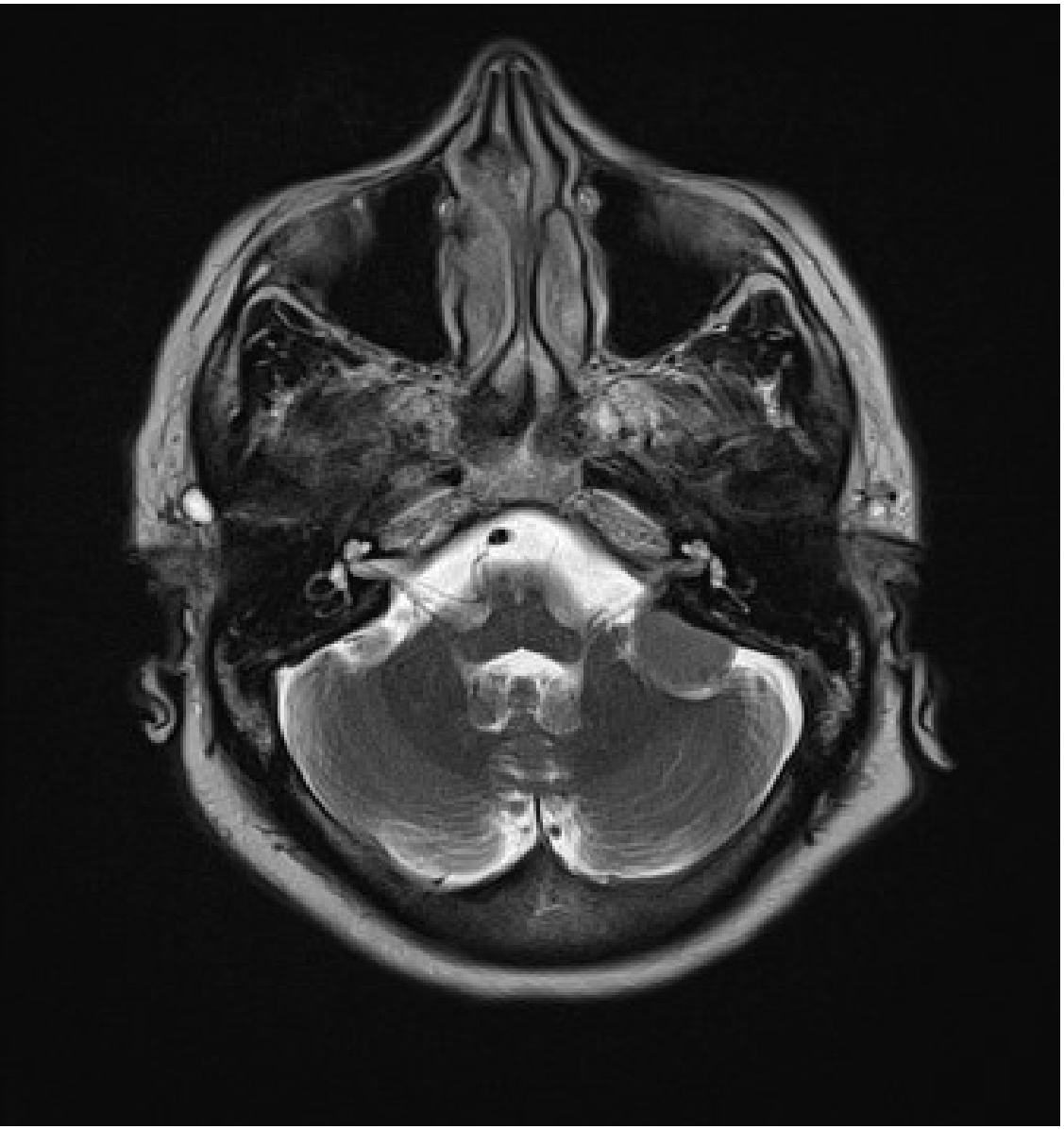
Schwannoma

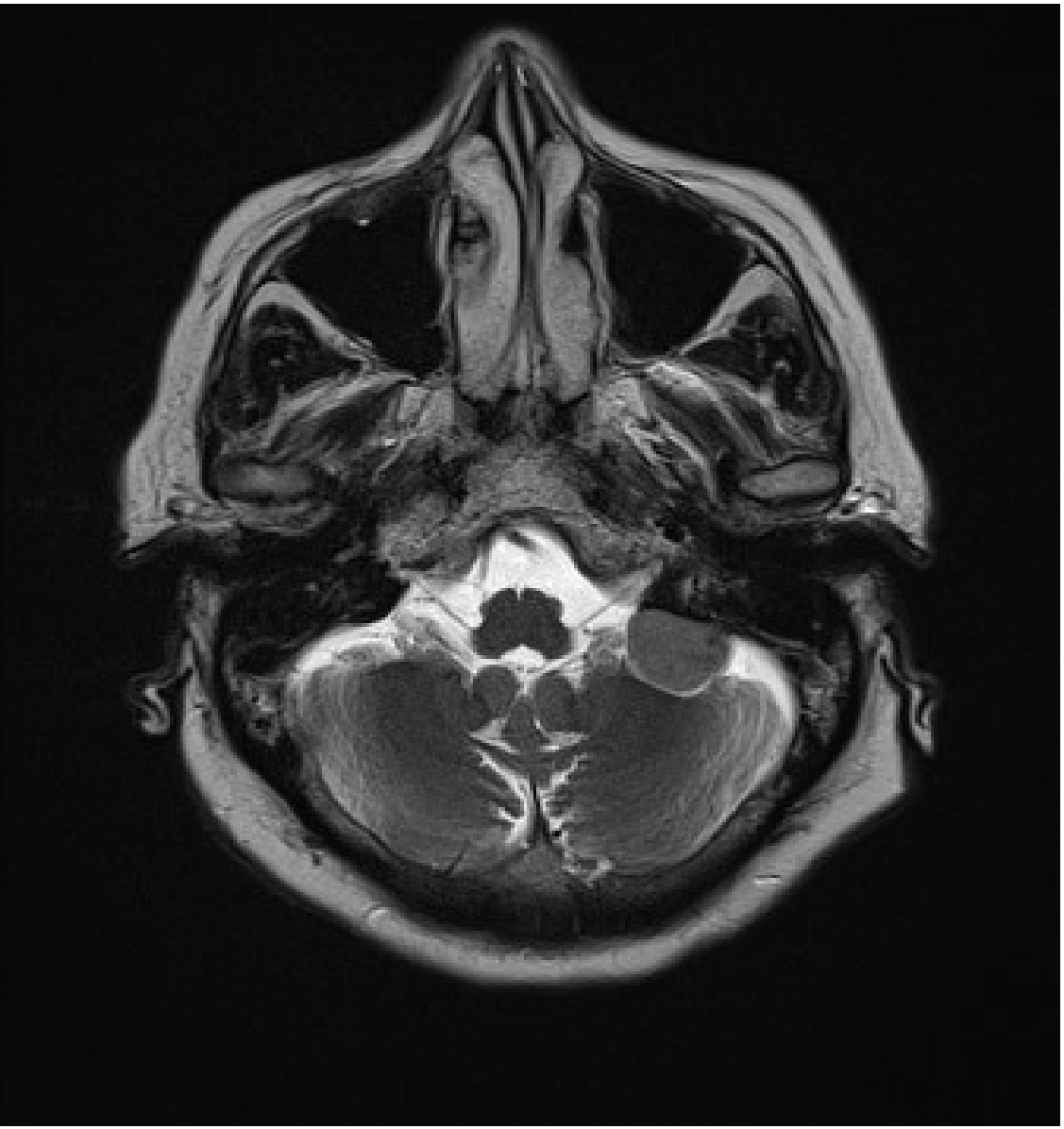
- **T1**
  - Slightly hypointense to the adjacent brain
  - Isointense to the adjacent brain
  - May contain hypointense cystic areas
- **T2**
  - Heterogeneously hyperintense to adjacent brain
  - Fluid intensity cystic areas
  - May have associated peritumoral arachnoid cysts
- **T1 C+ (gd)**
  - Contrast enhancement is intense
  - However, heterogeneous in larger tumours

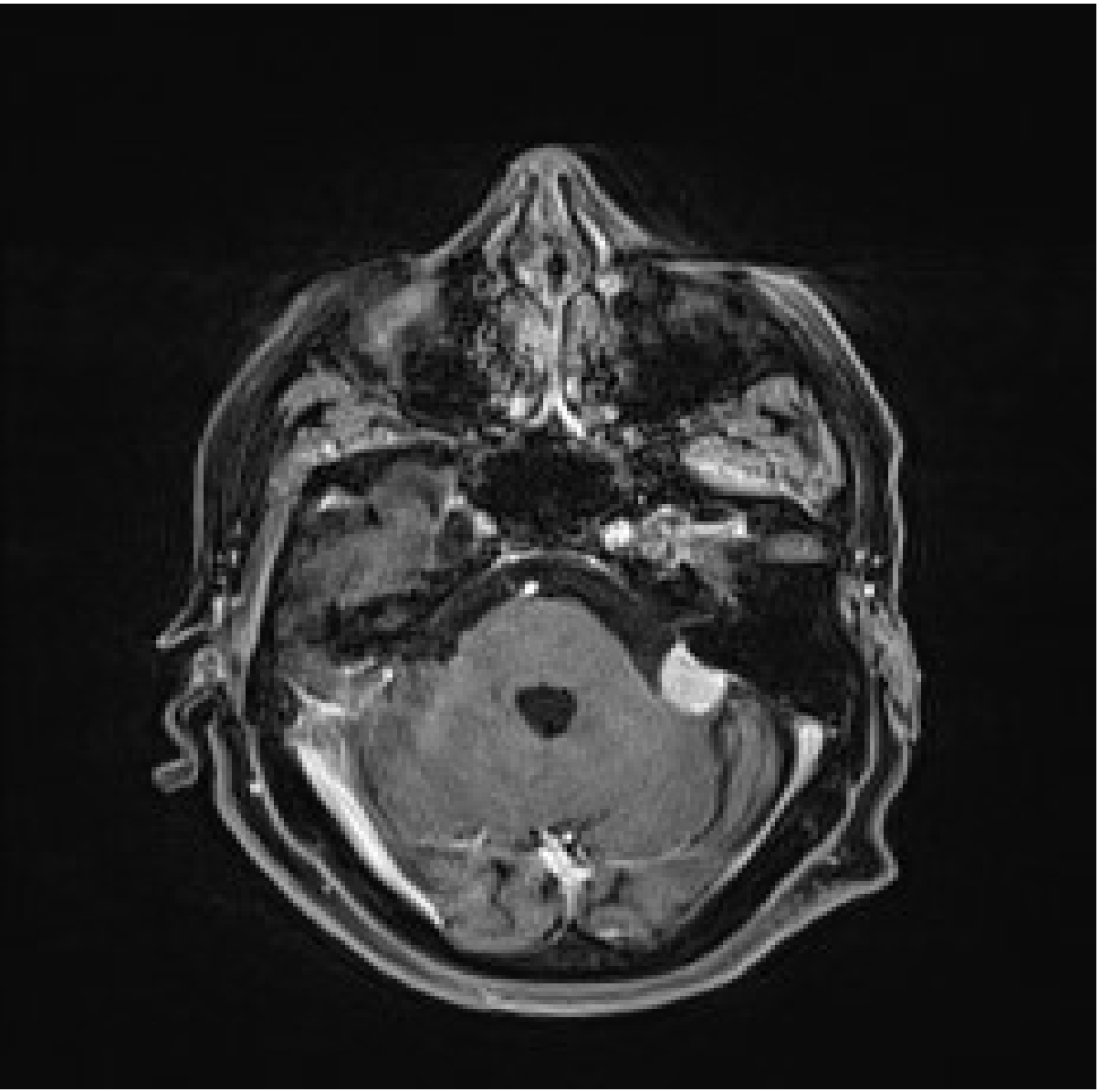
Meningioma

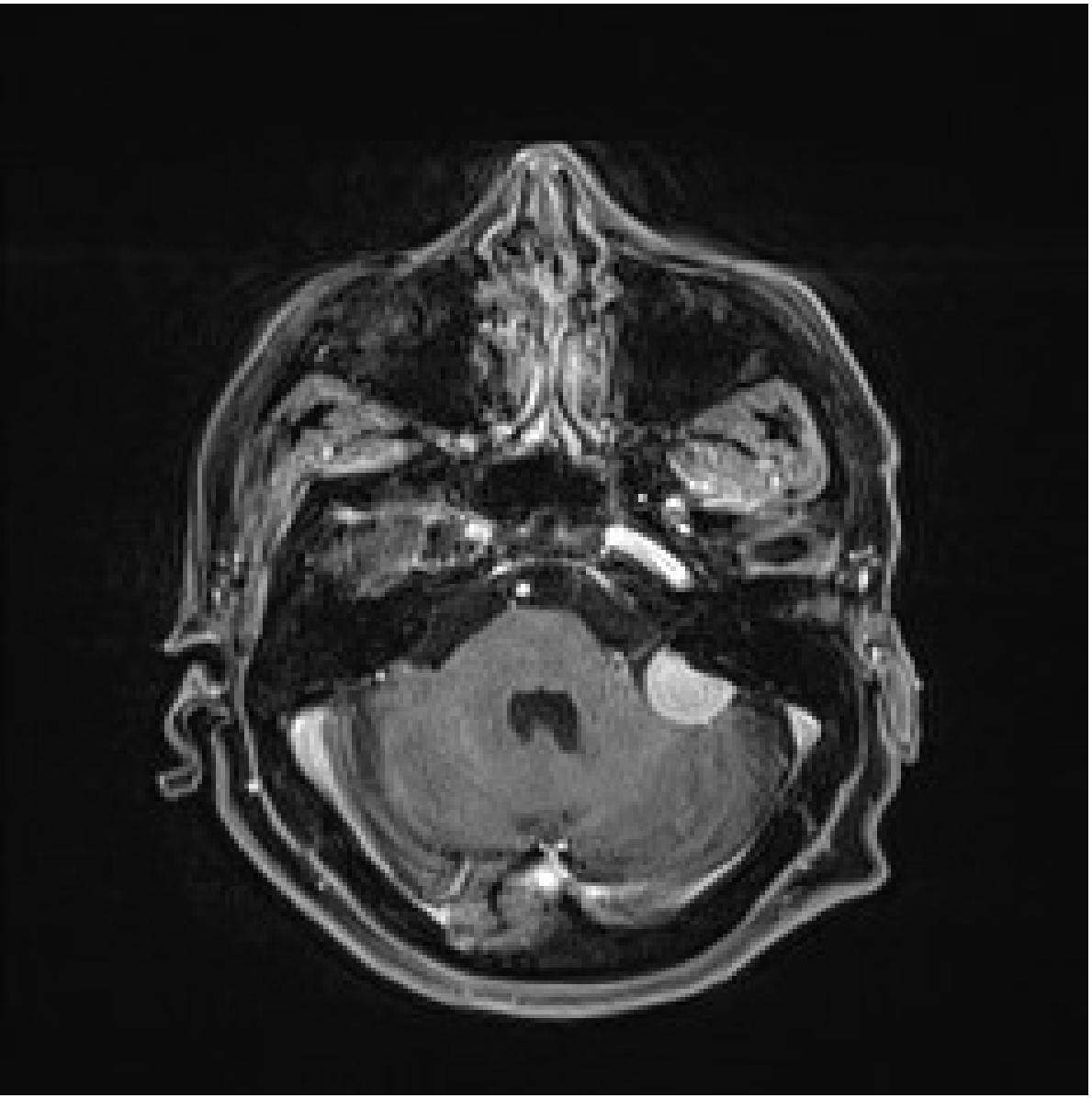
- Morphology: Mushroom-shaped, dural-based mass capping IAC asymmetrically
- T1 C+ MR: Enhancing ± dural tails ± CSF-vascular cleft if CPA component larger
- 25% of CPA meningiomas have extension/dural tail into IAC
- Detection of dural tail key to differentiate from vestibular schwannoma

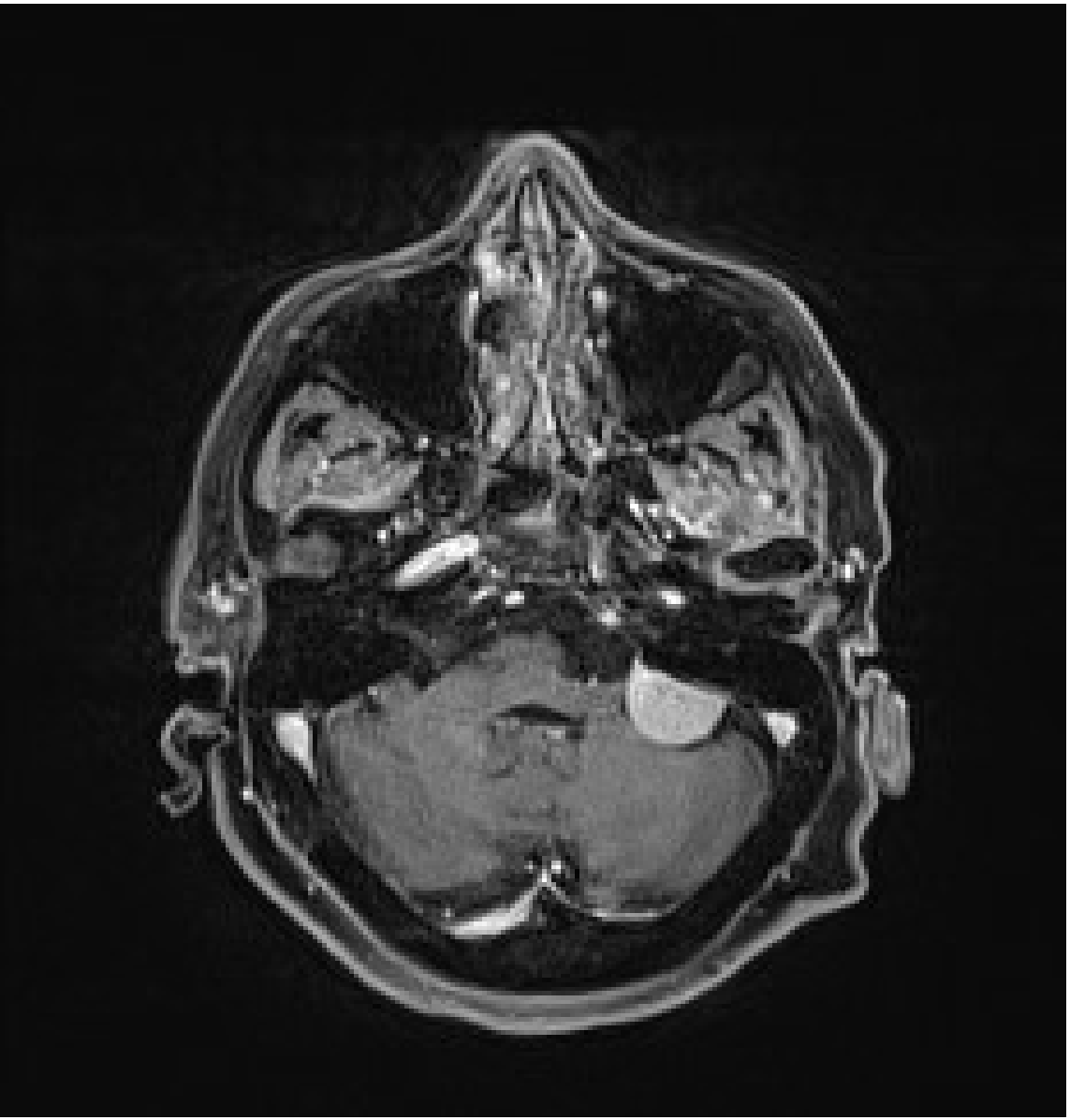


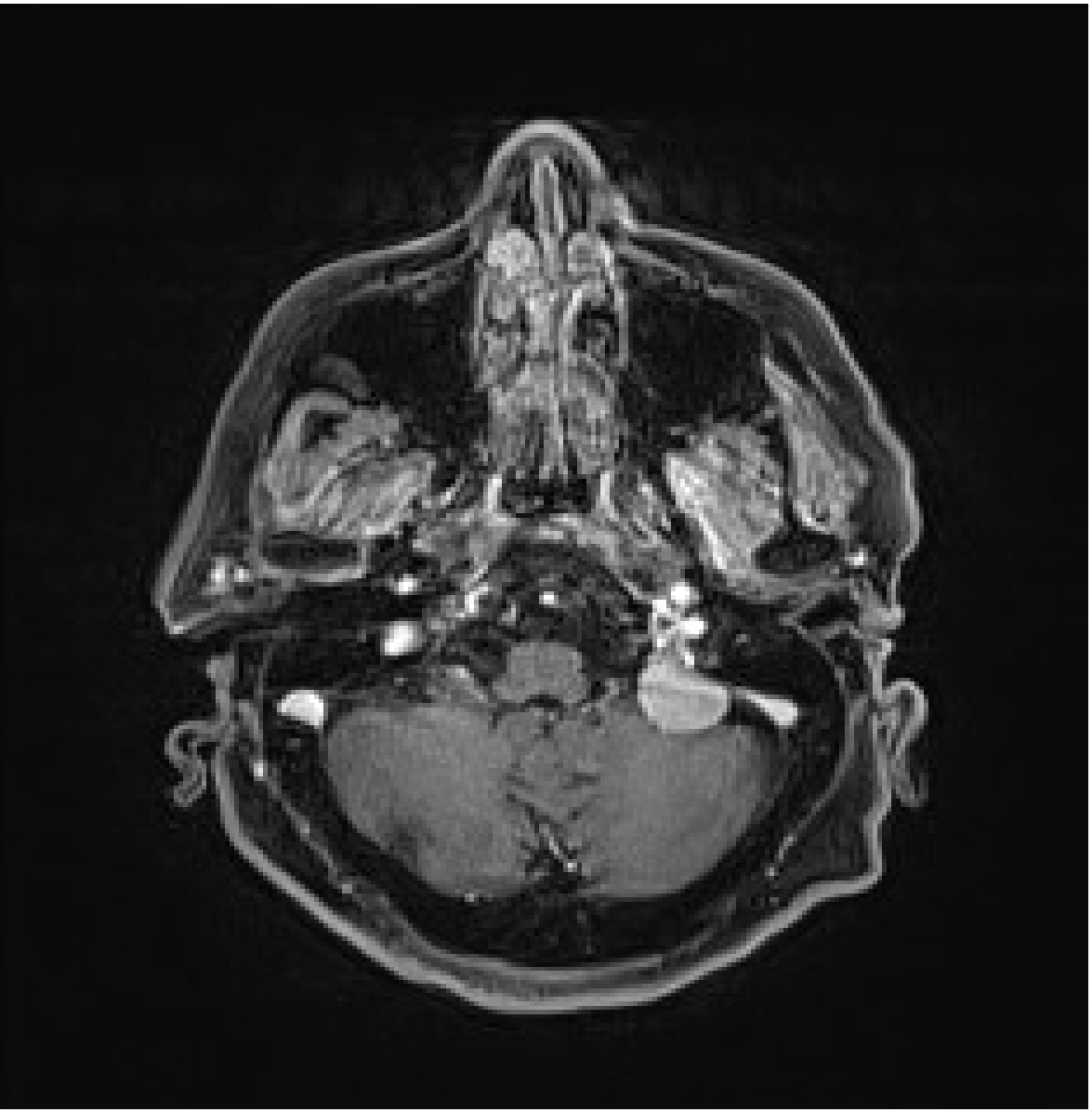












Working through the differentials cont,,,

- **Metastases**
  - Morphology: Irregular, invasive margins
  - T1 C+ MR: Single or multiple enhancing masses in CPA area
  - 4 sites primarily involved: Flocculus, choroid plexus, arachnoid-dura, or pia

- **Lipoma**
  - Morphology: Ovoid if IAC; CPA lesion may be broad-based against brainstem
  - Encase normal adjacent neurovascular structures
  - CT: Fat-density lesion of CPA ± IAC ± inner ear
  - T1 MR: High-signal lesion disappears with fat saturation

Final diagnosis

- Right acoustic schwannoma which was subsequently proven on biopsy.

Schwannoma

- Benign tumour that histologically arise from the perineural Schwann cells.
- Almost all intracranial schwannomas are related to cranial nerves.
- 90% are solitary; multiple schwannomas are commonly associated with NF2.
- 90% of intracranial schwannomas are located in the CPA originating from cranial nerve VIII (acoustic neuroma).

- Locations include:
  - CPA (CN VIII, most commonly from superior portion of vestibular nerve)
  - Trigeminal nerve (CN V)
  - Other intracranial sites (rare)
    - Intratemporal (CN VII)
    - Jugular foramen/bulb (CNs IX, X, XI)
  - Spinal cord schwannoma
  - Peripheral nerve schwannoma
  - Intracerebral schwannoma (very rare)

Thank You.

References

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