Young female with tinnitus and headache.

John A Cieslak III, MD, PhD
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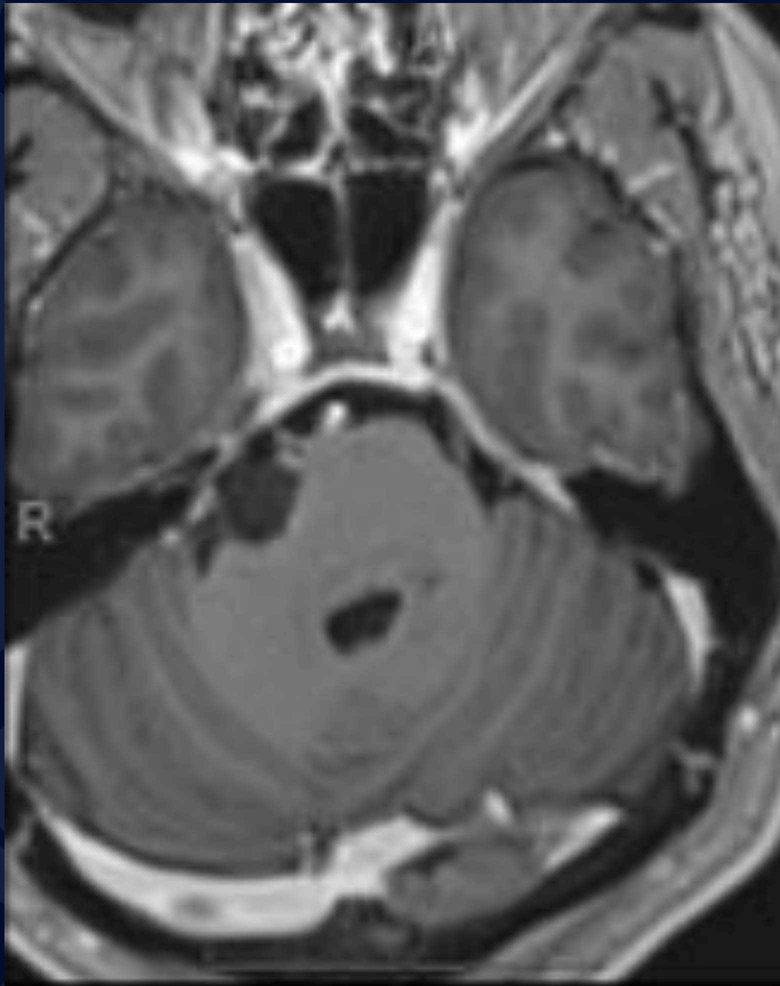

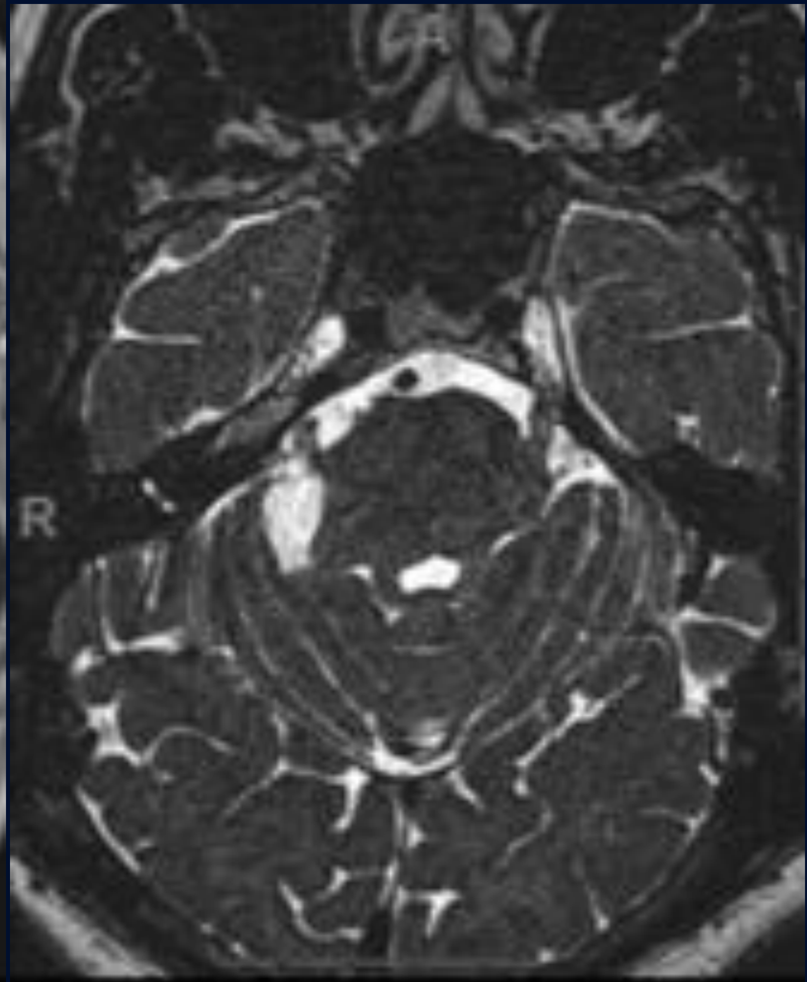

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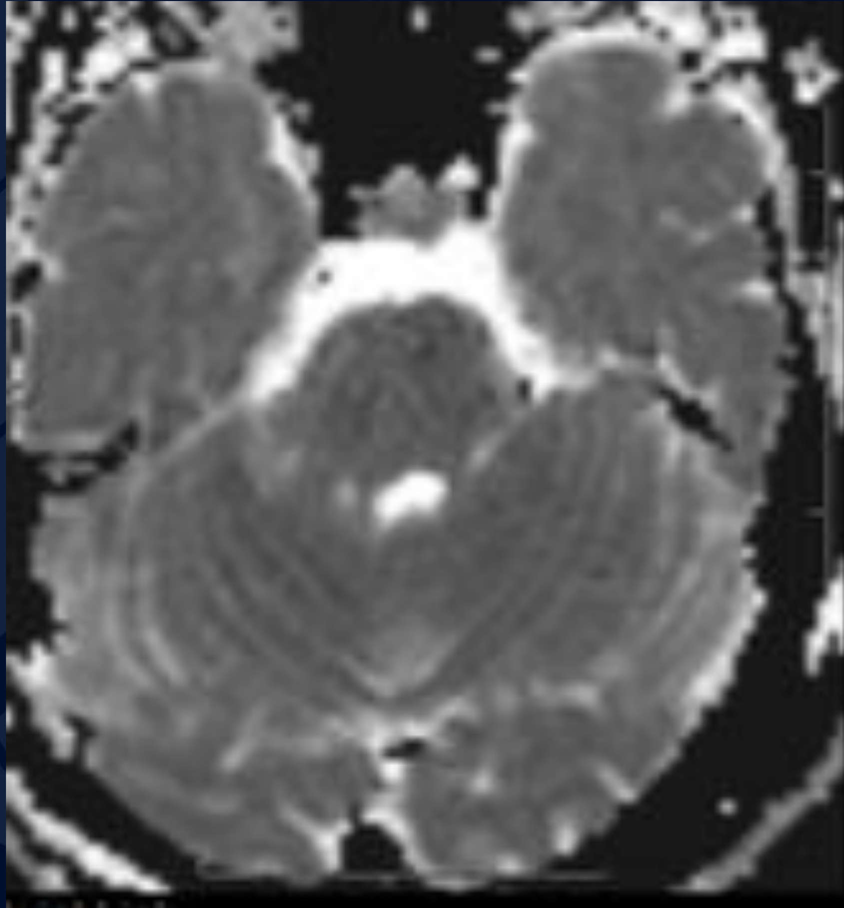

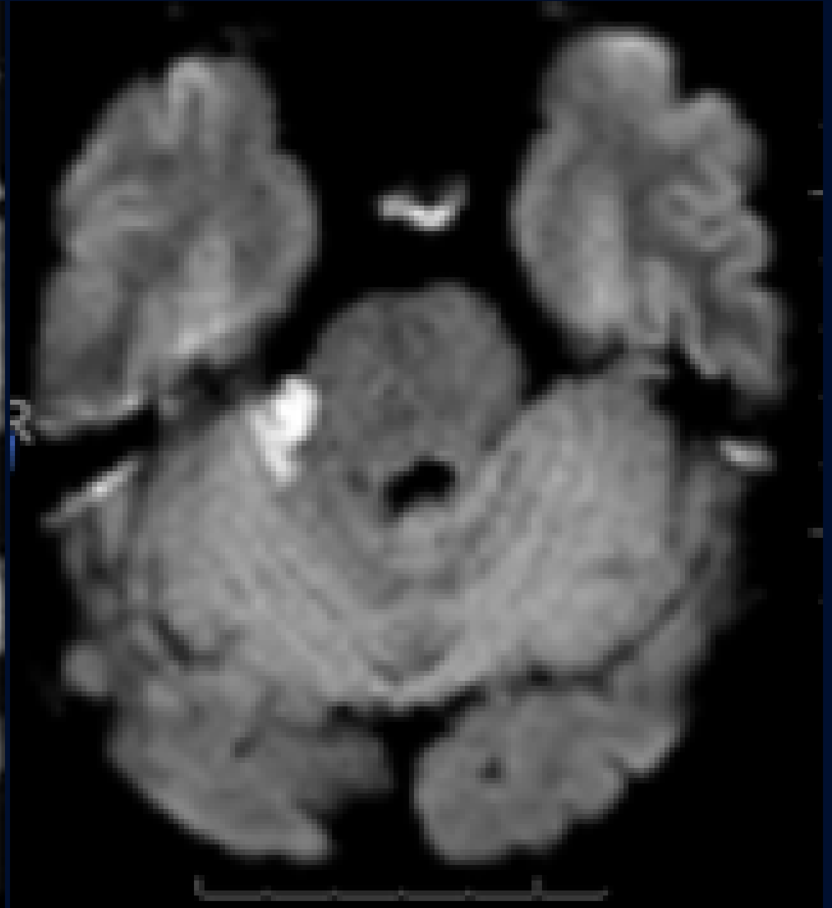

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Cerebellopontine angle epidermoid

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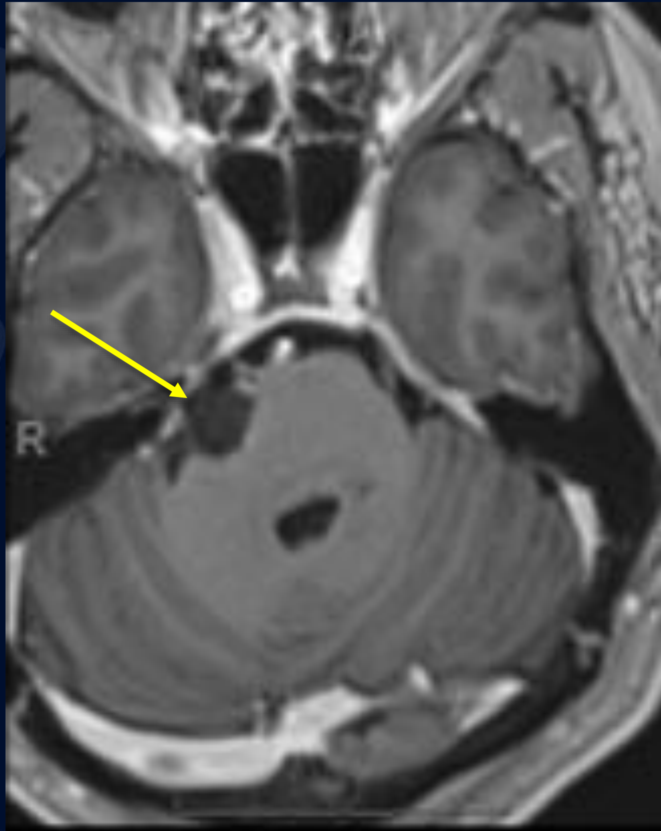
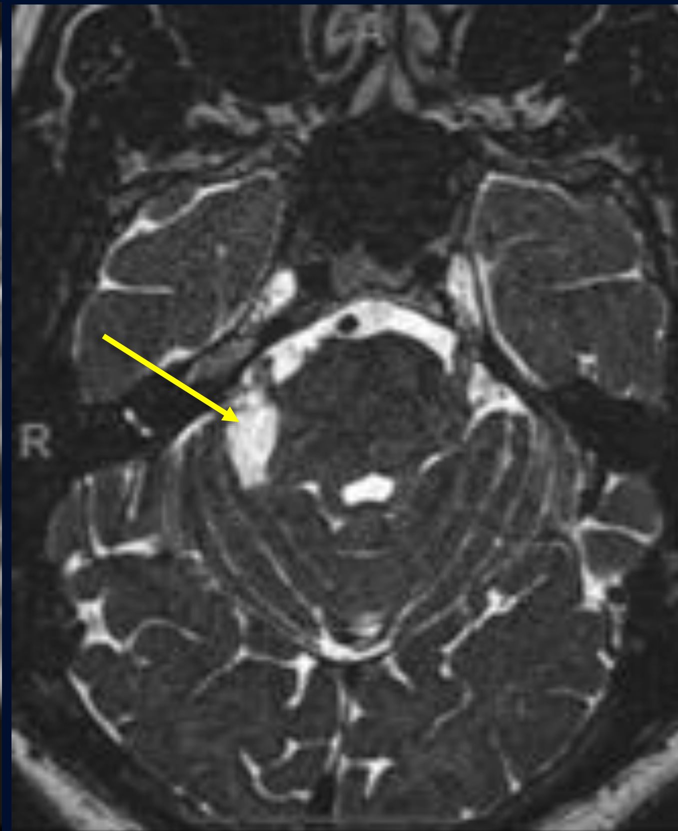
T1 hypointense & T2 hyperintense lesion in the right cerebellopontine angle





T1-weighted MRI image, post contrast, fat saturated, axial

T2-weighted MRI image, axial

Epidermoid cysts follow the intensity of the CSF on CT, T1, T2

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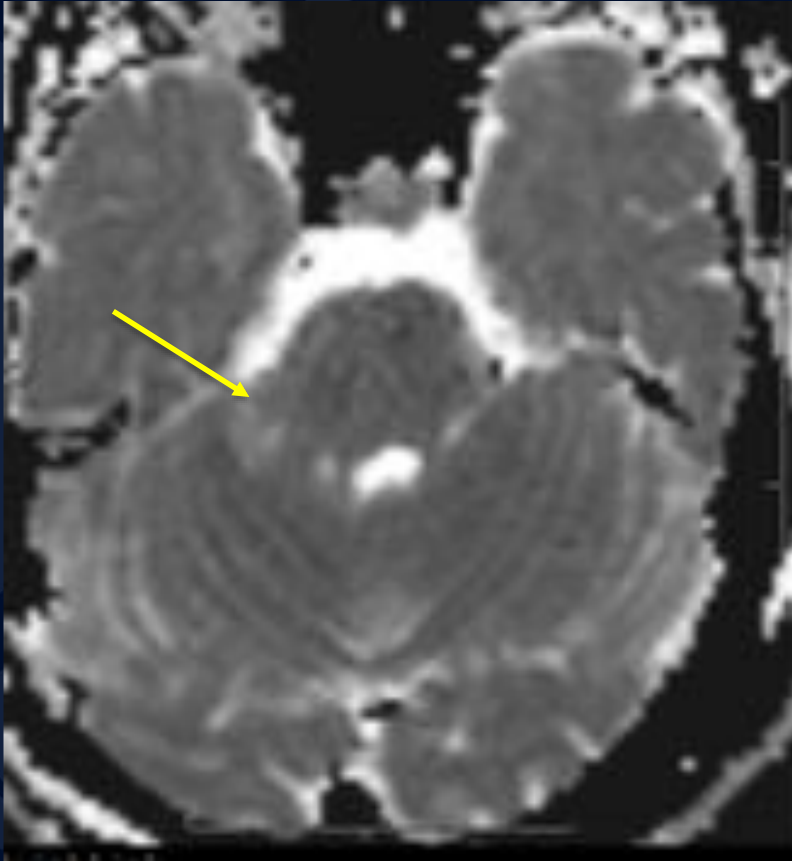
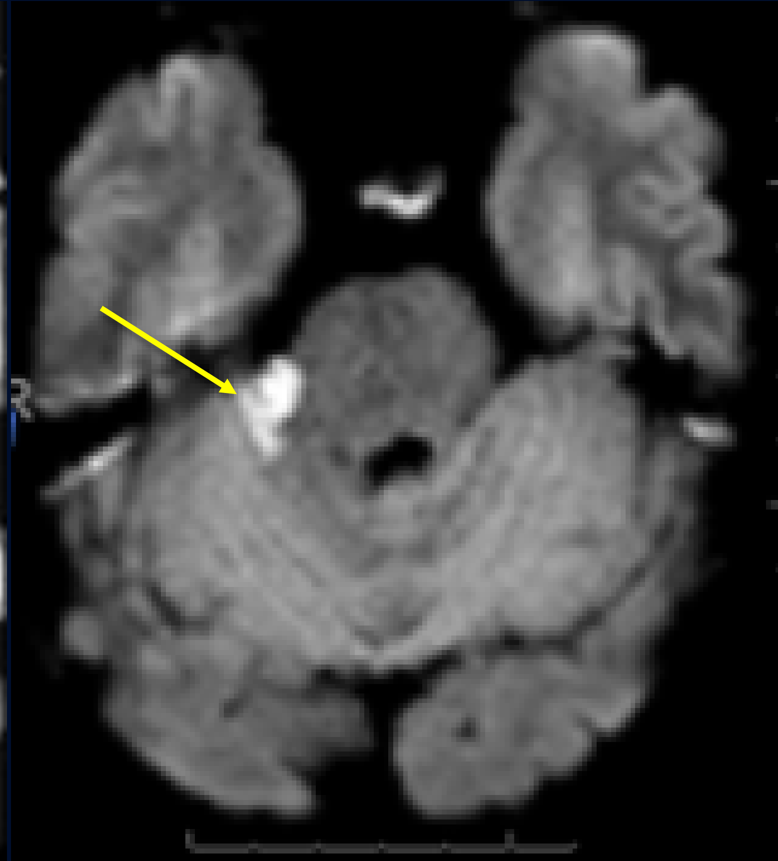
Epidermoid cysts demonstrate restricted diffusion



Apparent diffusion coefficient (ADC)-MRI image, axial



Diffusion weighted (DWI)- MRI image, axial

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Epidermoid cysts

- An inclusion cyst:
  - Benign congenital lesions of ectodermal origin.
  - 1% of all intracranial lesions
  - Increase in size as the patient ages, usually asymptomatic until age 20-40.
  - Most common locations:
    - Cerebellopontine angle (40-50%), supracellar cistern (10-15%), fourth ventricle (~17%).

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Epidermoid cysts

- Presentation:
  - Headaches (most common).
  - Cranial nerve deficits (tinnitus, vertigo, etc)
  - Cerebellar symptoms
  - Seizures
  - Recurrent aseptic meningitis (from cyst rupture)

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Epidermoid cysts

- CT Findings:
  - Attenuation similar to CSF.
  - Calcifications seen in 10-25%.
  - No contrast enhancement.
- MRI Findings:
  - Typically have intensity similar to CSF on T1 and T2
  - No contrast enhancement.
  - Similar to brain parenchyma on ADC.
  - Restricted diffusion on DWI.
  - Heterogeneous/dirty signal; higher than CSF.

Epidermoid cysts

- Differential diagnosis and distinguishing characteristics:
  - CSF collections (arachnoid cyst or mega cisterna magna).
    - Follow CSF on ALL sequences, including FLAIR and DWI.
  - Dermoid Cyst
    - Often fat density due to sebum, and often located along the midline.
  - Inflammatory cyst (neurocysticercosis)
    - May enhance peripherally and have associated edema. Usually no restricted diffusion.
  - Cystic tumors (acoustic schwannoma or craniopharyngioma)
    - Usually a solid, enhancing component present.

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4. Tampieri D, Melanson D, Ethier R. MR imaging of epidermoid cysts. *American Journal of Neuroradiology*. 1989; 10(2): 351-356.

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