19-year-old male with new onset of right 6th nerve palsy. Symptoms began 3 months ago.

Erica Shen, MD PhD
Abner Gershon, MD
Leo Wolansky, MD

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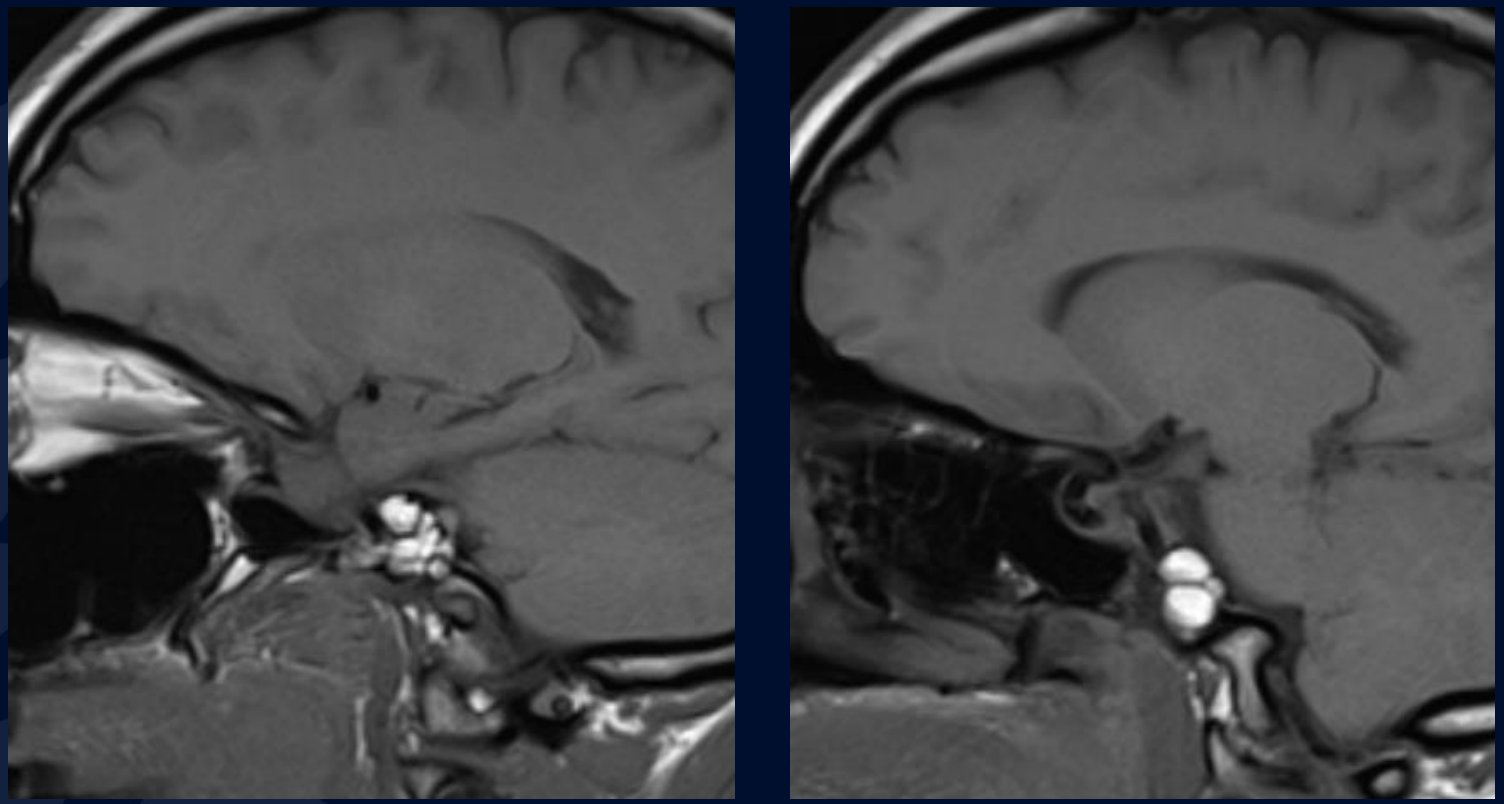

T1 Sagittal

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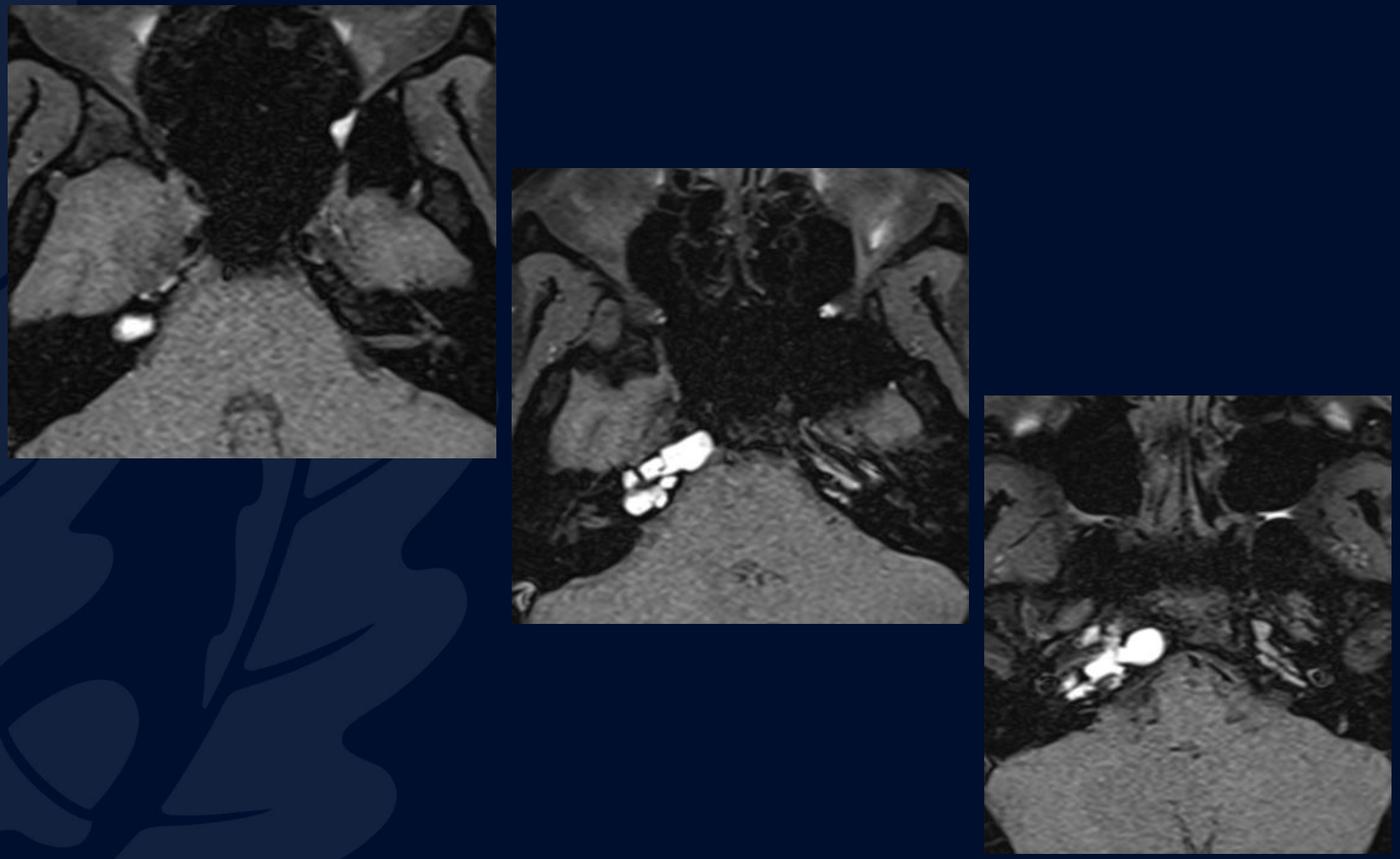

T1 Axial

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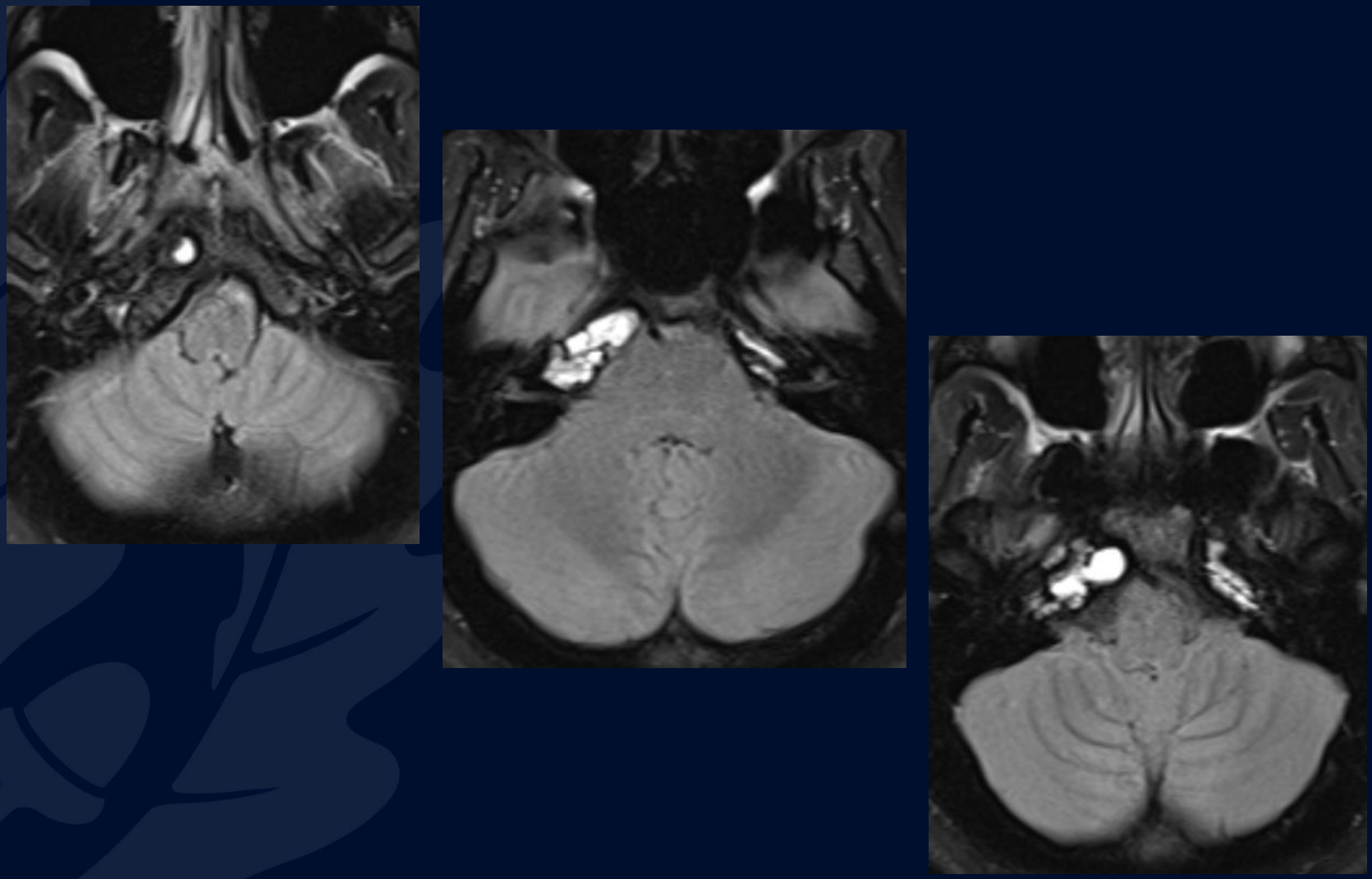

FLAIR Axial

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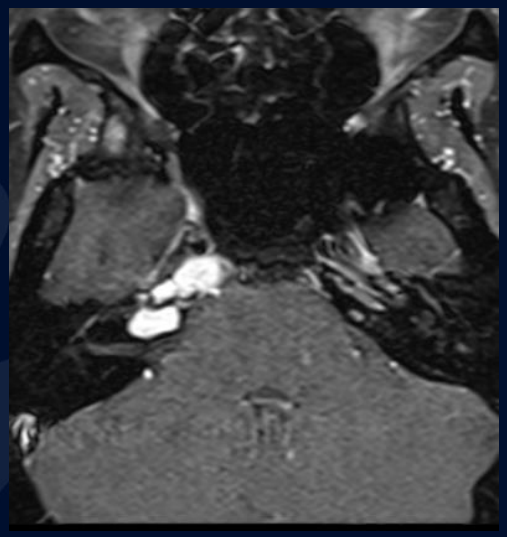


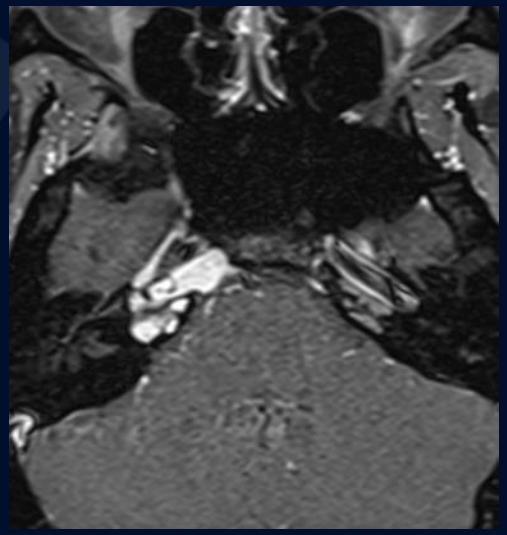

Gd-T1 Axial

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Cholesterol Granuloma

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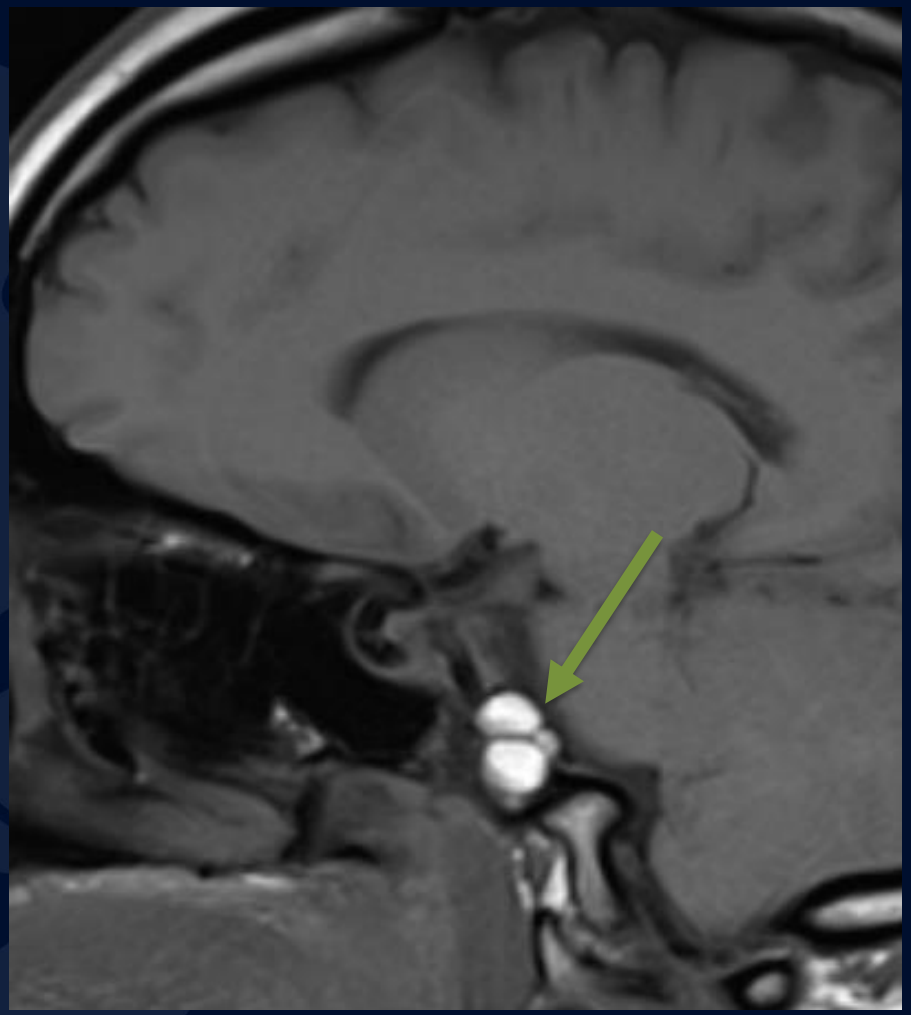

MRI T1, sagittal:
Lobulated, but sharply marginated signal abnormality in the right petrous bone.

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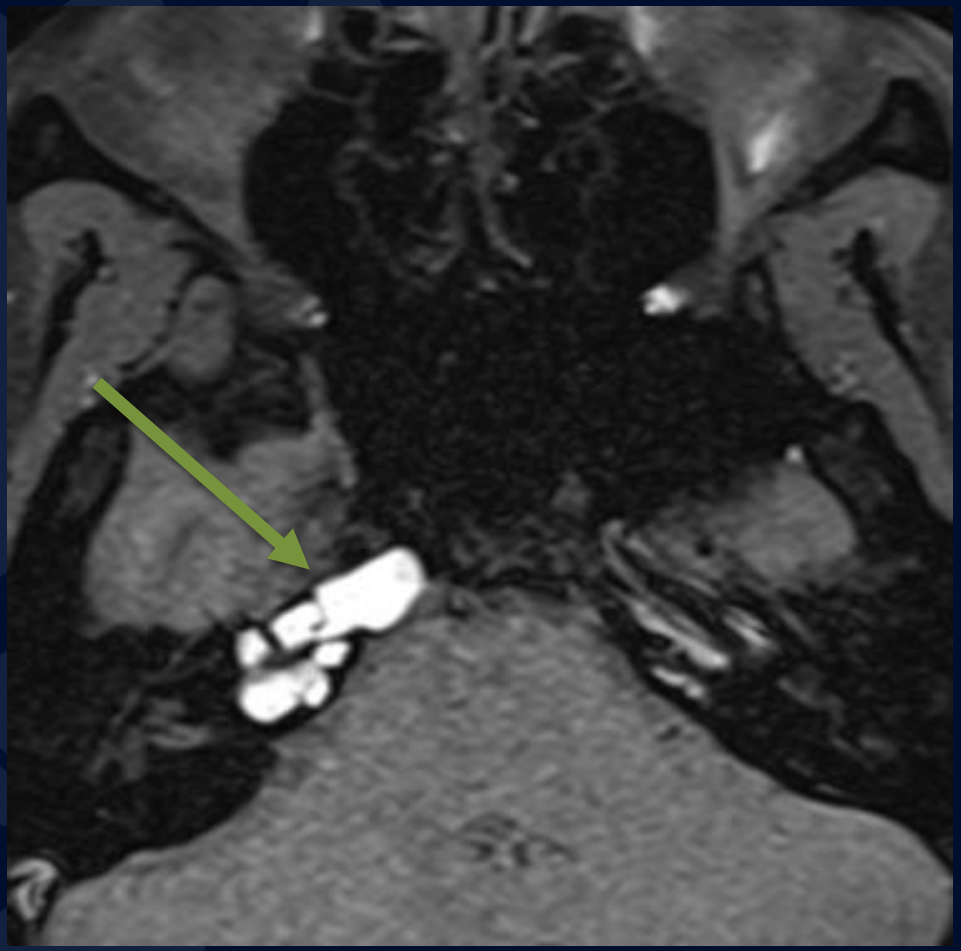

MRI T1-Fat-Suppressed, axial:
Lobulated, but sharply marginated signal abnormality in the right petrous bone. Hyper-intense on T1.

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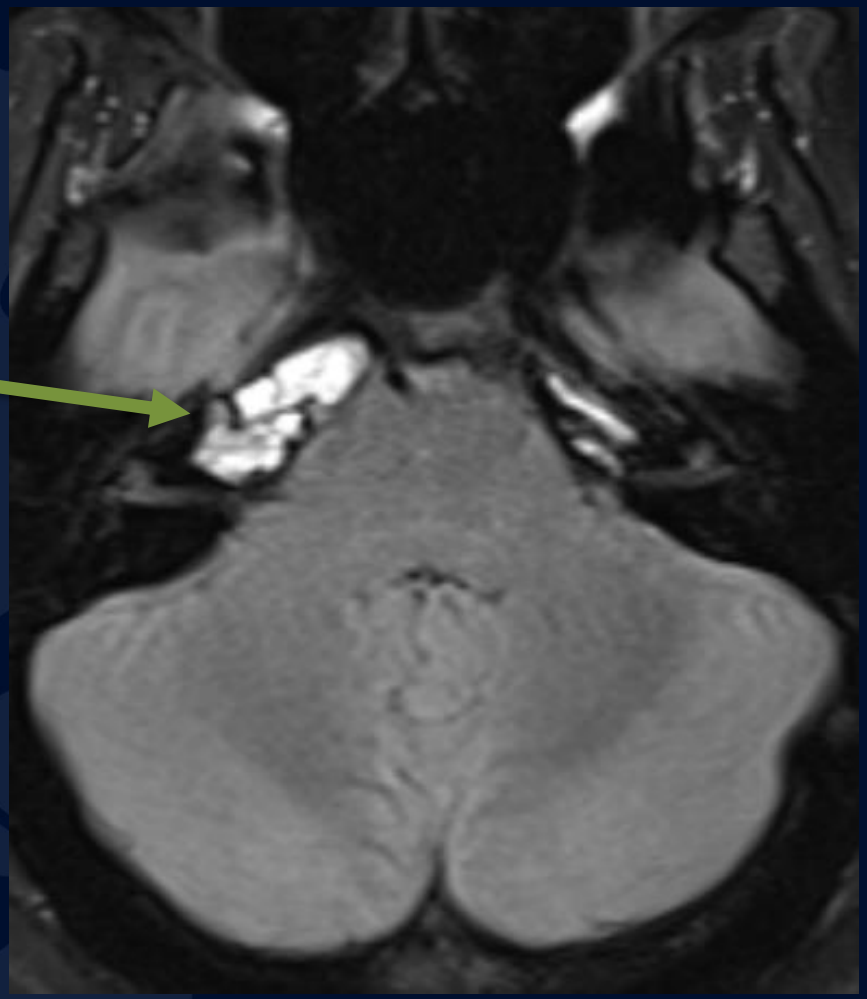

MRI T2-FLAIR, axial:
Lobulated, but sharply marginated signal abnormality in the right petrous bone. Hyperintense on T2-FLAIR.

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MRI T1, post-contrast, axial: Lobulated, but sharply marginated signal abnormality in the right petrous bone. Hyper-intense on both T1 & T2 signals. Minimal enhancement on right petrous apex following gadolinium contrast administration.

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Cholesterol Granuloma

- The most common cystic lesion of the petrous apex.
- Also known as “chocolate cyst of the ear,” or “blue domed cyst.”
- Typically affected young to mid-aged patients with past medical history of chronic otitis media.
- Two hypotheses for pathogenesis: (1) obstruction-vacuum theory; (2) exposed marrow theory.
- Clinical presentation:
  - ✓ Conductive hearing loss due to middle ear effusion;
  - ✓ CN VII palsy if present in the middle ear;
  - ✓ CN VI palsy and tinnitus if present in petrous apex;
  - ✓ Headache if present in the mastoid.
- Surgical excision required for symptomatic lesions.

https://radiopaedia.org/articles/cholesterol-granuloma

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Imaging Findings

- Expansile, cystic lesion.
- Composed of yellow-brownish fluid that contains cholesterol crystals, blood breakdown products, hemosiderin, and inflammatory cells.
- High MRI T1 and T2 signals due to cholesterol crystals.
- No attenuation on FLAIR.
- No central enhancement on T1 with Gadolinium contrast.
- No restricted diffusion on DWI / ADC.

Barăth, K., Huber, A.M., Stämpfli, P., et al. Neuroradiology of cholesteatomas. AJNR Am J. Neuroradiol. 2011; 32 (2): 221-9.
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Razek, A.A., Huang, B.Y. Lesions of the petrous apex: classification and findings at CT and MR imaging. Radiographics. 2012; 32(1): 151-73.
https://radiopaedia.org/articles/cholesterol-granuloma

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