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

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T1 Sagittal
Gd-T1 Axial
Cholesterol Granuloma
MRI T1, sagittal: Lobulated, but sharply margined signal abnormality in the right petrous bone.
MRI T1-Fat-Suppressed, axial:
Lobulated, but sharply marginated signal abnormality in the right petrous bone. Hyper-intense on T1.
MRI T2-FLAIR, axial:
Lobulated, but sharply margined signal abnormality in the right petrous bone. Hyperintense on T2-FLAIR.
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.
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.

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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.

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References

- https://radiopaedia.org