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
Cholesterol Granuloma
MRI T1, sagittal: Lobulated, but sharply marginated 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 marginated 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.

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

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

- https://radiopaedia.org