Complete left-sided sensorineural hearing loss.

John A. Cieslak III, MD, PhD
Leo Wolansky, MD
Acute Labyrinthitis
Enhancement of the labyrinth on the left

T1-weighted MRI image, with contrast, axial (2D-FT)

T1-weighted MRI image, with contrast, axial (3D-FT)
T2-weighted MRI image, axial
Hypointensity of the labyrinth on affected side (yellow arrow)

Diffusion-weighted MRI image, axial
Restricted diffusion in the affected labyrinth (orange arrow)
Labyrinthitis

- Inflammation of the membranous labyrinth in the inner ear.
- Patients present with vertigo, hearing loss, fever, tinnitus, otorrhea, otalgia.
- Ddx: Vertebrobasilar insufficiency, cerebellar infarct, drug-induced vertigo or hearing loss, presyncope.
Labyrinthitis

- **Etiologies:**
  - **Tympanogenic**
    - Complication of acute mastoiditis with spread of infection from the middle ear to inner ear via the round or oval window.
    - Typically unilateral.
  - **Traumatic**
    - Post-temporal bone fracture with perilymphatic fistula formation.
  - **Meningogenic**
    - Most frequently bacterial, typically causing bilateral labyrinthitis, and seen most frequently in children. Most common cause of acquired deafness.
  - **Hematogenic**
    - Most frequently viral, after respiratory tract infections. Controversial if hematogenous spread is real or direct infection from the middle ear.
Labyrinthitis

- MRI Findings:
  - Enhancement of the labyrinth on post-contrast T1-weighted images.
  - T2 hypointensity of the affected side in comparison to the normal side.
  - Restricted diffusion.
References:

1. Radiopedia


