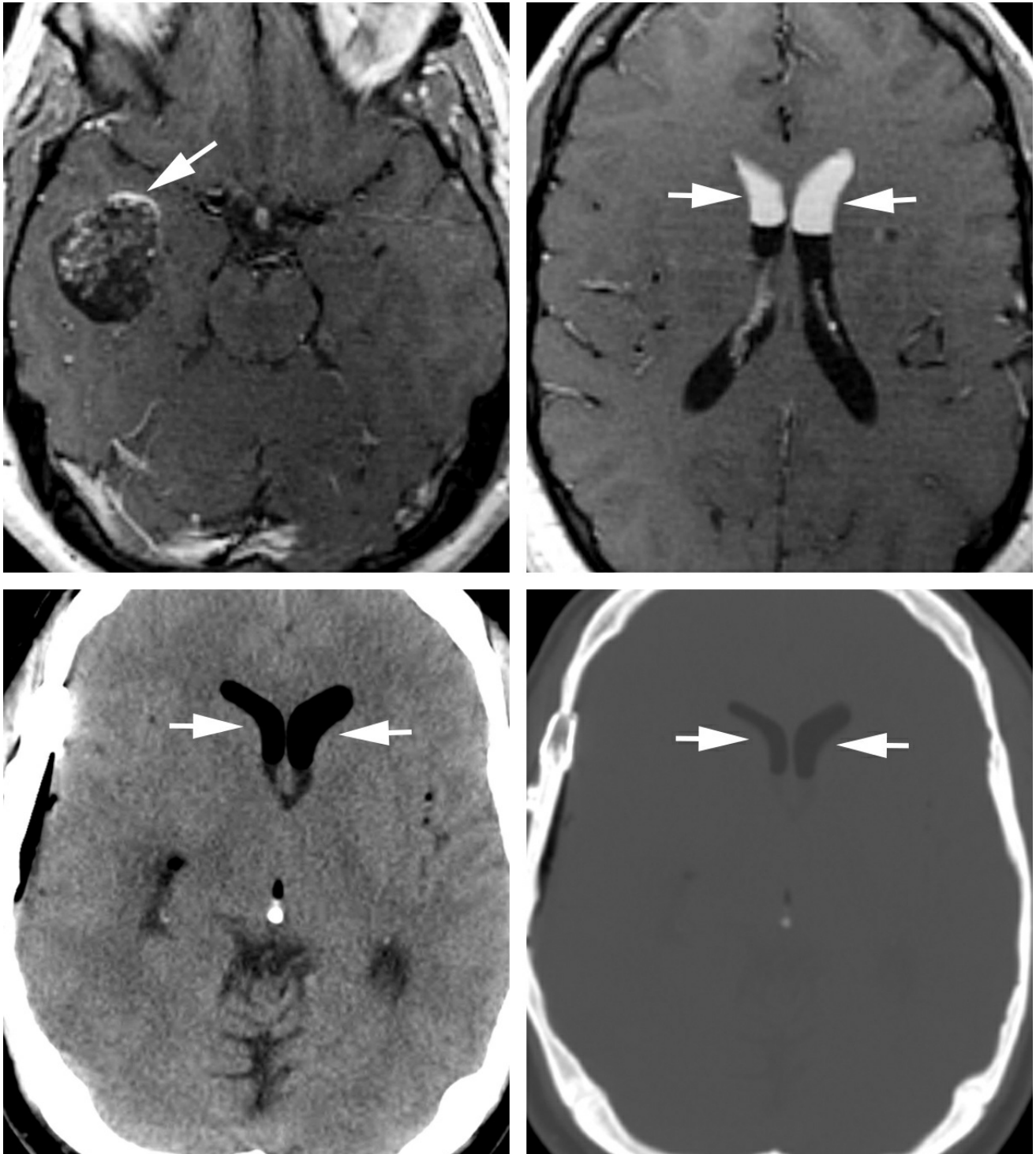




## Dermoid Cyst

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**Figure 1: 34-year-old man presenting with dizziness and migraine headaches. (Top Left) Contrast-enhanced T1-weighted image demonstrates a heterogeneous-appearing mass in the right temporal lobe**

demonstrating areas of hyperintensity both internally and in the periphery (arrow). These areas were also bright before the administration of contrast, implying blood products or fat. (Top Right) The similarly bright material layering nondependently in the frontal horns of the lateral ventricles (arrows) represents fatty material (sebum) due to rupture of the cyst/tumor. Postoperative head CT (bottom left) also demonstrates this fat-density material in the frontal horns (arrows) that can be easily mistaken for postoperative pneumocephalus unless window/level adjustments are properly made and evaluated (bottom right, arrows).

## DESCRIPTION

- Benign cystic developmental lesion
- Less than 0.5% of primary intracranial tumors
- Results from a failure of separation or abnormal sequestration of superficial ectodermal components from the deeper developing neural structures during embryogenesis
- Very common lesion of the head and neck, with extracranial lesions often occurring in the orbits

## PATHOLOGY

- Usually unilocular but with a thicker rim than epidermoid cyst
- Inclusion elements of lipid material from apocrine or sebaceous material
- Fat may float on fluid component
- Grow slowly over months to years due to secretions and desquamation

## CLINICAL FEATURES

- Signs and Symptoms
  - Often discovered incidentally on imaging
  - Sinus tract may be visible on the skin

- Can become infected through this communication
  - May rupture spontaneously due to trauma or in the iatrogenic setting, causing symptoms of severe chemical meningitis
- Age and Sex
  - Slight male predilection
  - Usually manifests in children
    - May manifest younger with higher-risk areas of the brain
      - Due to hydrocephalus
      - More tightly enclosed space of the posterior fossa
- Prognosis
  - Usually excellent due to benignity of lesion and resectability
  - Usually only resected if symptomatic or potentially obstructive

## IMAGING FEATURES

- General
  - Lesion containing or entirely made up of liquid fat
  - Usually extra-axial when intracranial
  - Often in the sellar/parasellar regions
  - Often present in other head/neck locations, most commonly in and around the orbits
  - Slow growing over months to years
  - Can cause obstructive hydrocephalus
  - Disseminated fatty sebaceous material layering nondependently in the cerebrospinal fluid (CSF) spaces with rupture
  - Rim may calcify
- Modality specific
  - CT
    - Predominantly hypodense due to fatty components
      - Hounsfield Units usually between  $-50$  and  $-300$
      - Hyperdense calcifications may be present in the rim
  - MRI

- T1WI
  - Hyperintense fatty components in the cyst, usually somewhat heterogeneous in pattern
  - Hyperintensity in the anterior aspects of CSF spaces (if patient is supine in the scanner), layering nondependently due to lower molecular weight than CSF
- T2WI
  - Dermoid components will follow fat signal
  - Bright or dark on T2WI
- DWI
  - May be bright on DWI, but usually no true restricted diffusion (ADC not dark)
- GRE/SWI
  - Black susceptibility signal of the fatty components
- T1+contrast
  - Bright components on contrasted images are usually not true enhancement but actually intrinsic T1 hyperintensity of fatty components
  - Leptomeningeal or ependymal enhancement may be present with chemical meningitis
  - If fat-saturated contrast sequence is obtained, dermoid elements will become dark

## IMAGING RECOMMENDATIONS

- MRI to include fat-saturated and non-fat-saturated sequences

## MIMIC

- Hematoma or hemorrhagic mass may have similar T1 hyperintensity but should not follow fat signal on all sequences
- Epidermoid cyst usually not bright on T1WI, demonstrates striking restricted diffusion

- [Lipoma](#) is usually more homogeneous in T1-bright signal intensity
- Other tumors, location dependent, do not contain fat
- Pneumocephalus has a similar appearance to ruptured dermoid on CT, and adjusting the window/level settings will demonstrate fat density that is less dark than air

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