Intraparenchymal CSF Pseudocyst: *Rare Complication of Ommaya Reservoir*

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DISCLOSURE OF COMMERCIAL INTEREST:

Neither I, my co-author, nor any of our immediate family members have a financial relationship with a commercial organization that may have a direct or indirect interest in the content.

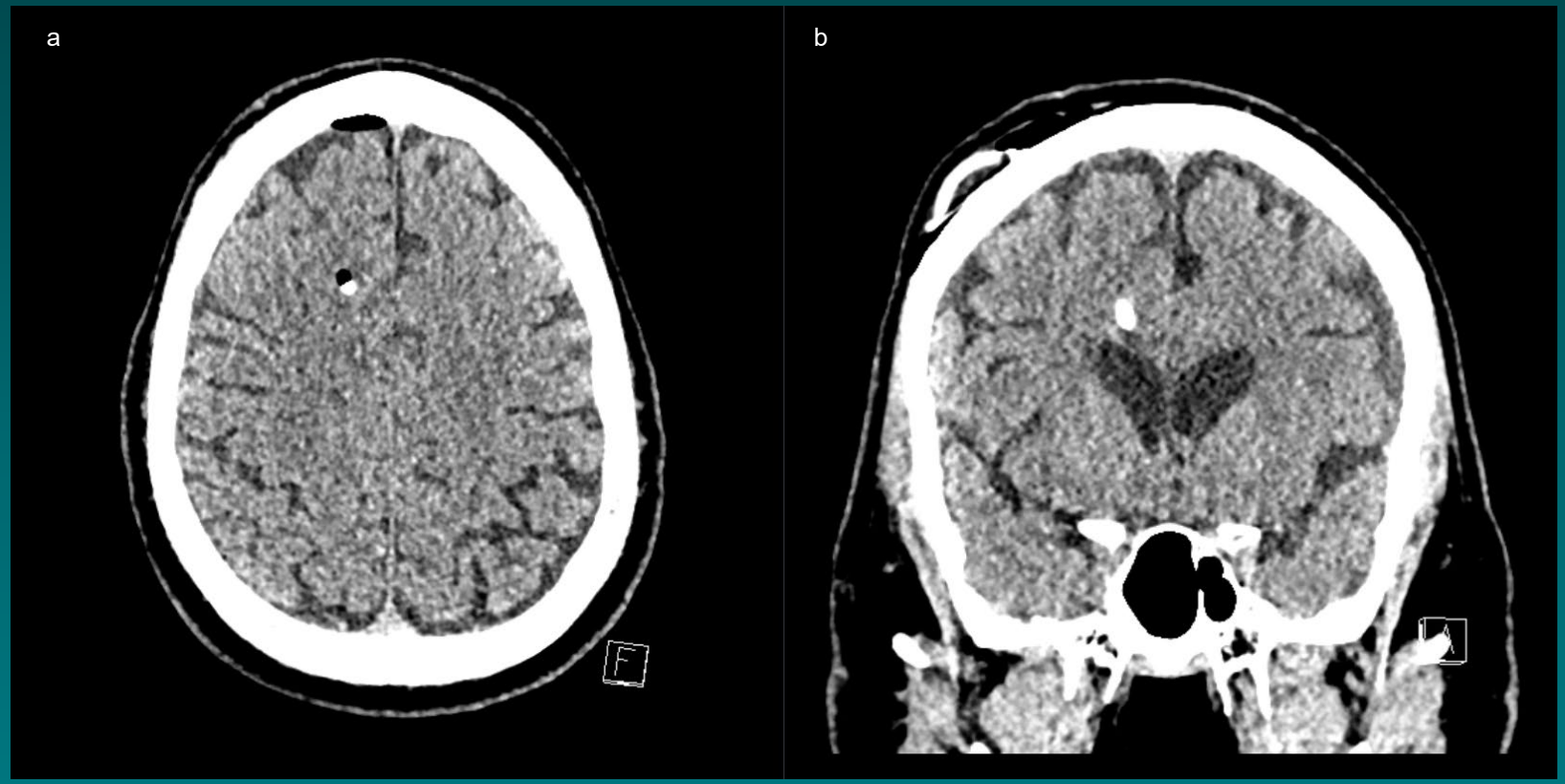
CLINICAL PRESENTATION:

67-year-old female with diffuse large B-Cell lymphoma and secondary intracranial involvement – status post placement of an Ommaya reservoir and intraventricular catheter system without complication.

Was re-admitted 2 months later in setting of two-day history of worsening altered mental status.

On physical exam, she denied any neck rigidity and had no focal neurological deficit on exam. Initial lab work up was non-revealing and without leukocytosis.

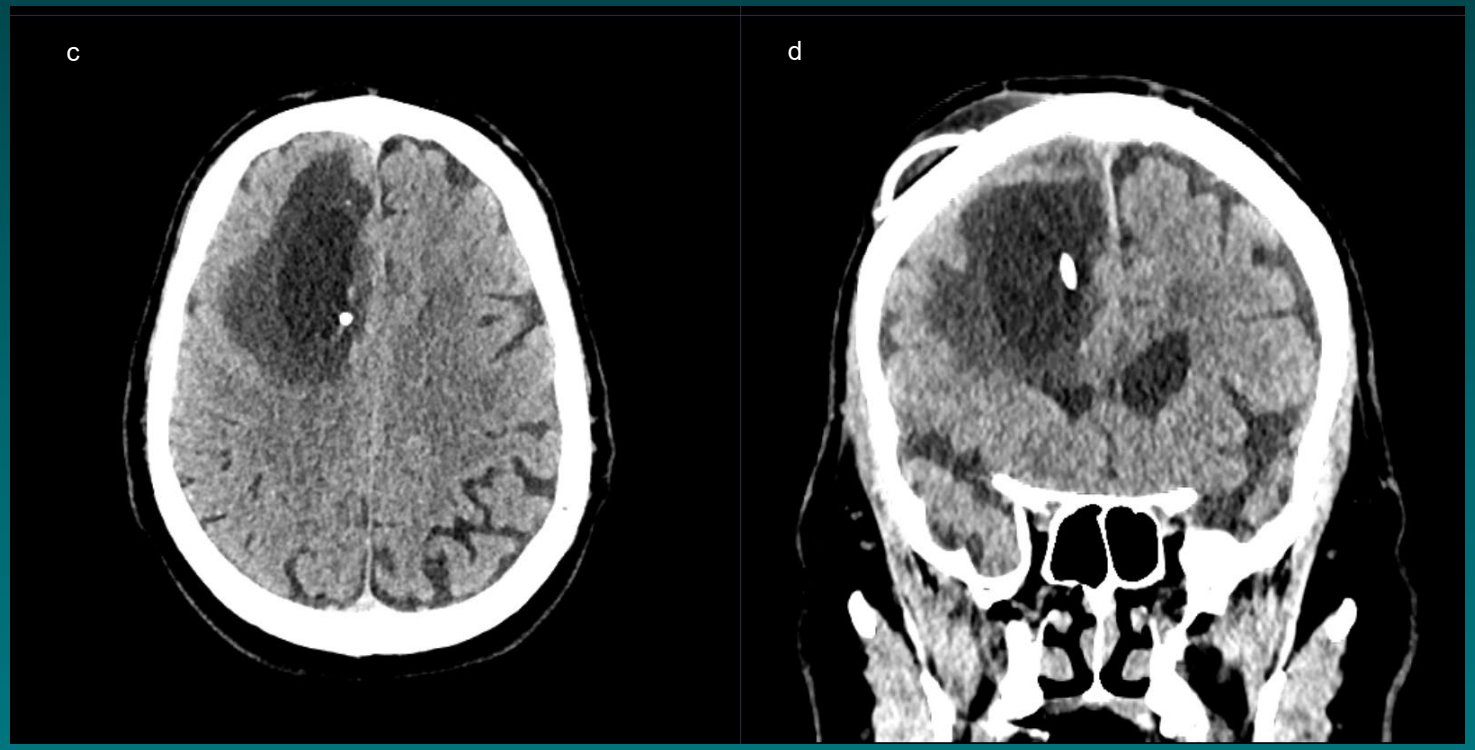
Post placement CT Head:



Axial (a) and coronal (b) CT following Omaya shunt placement.

Initial CT Head (*figures a & b*) demonstrates appropriate placement of the right frontal approach Ommaya reservoir construct without evidence of complication.

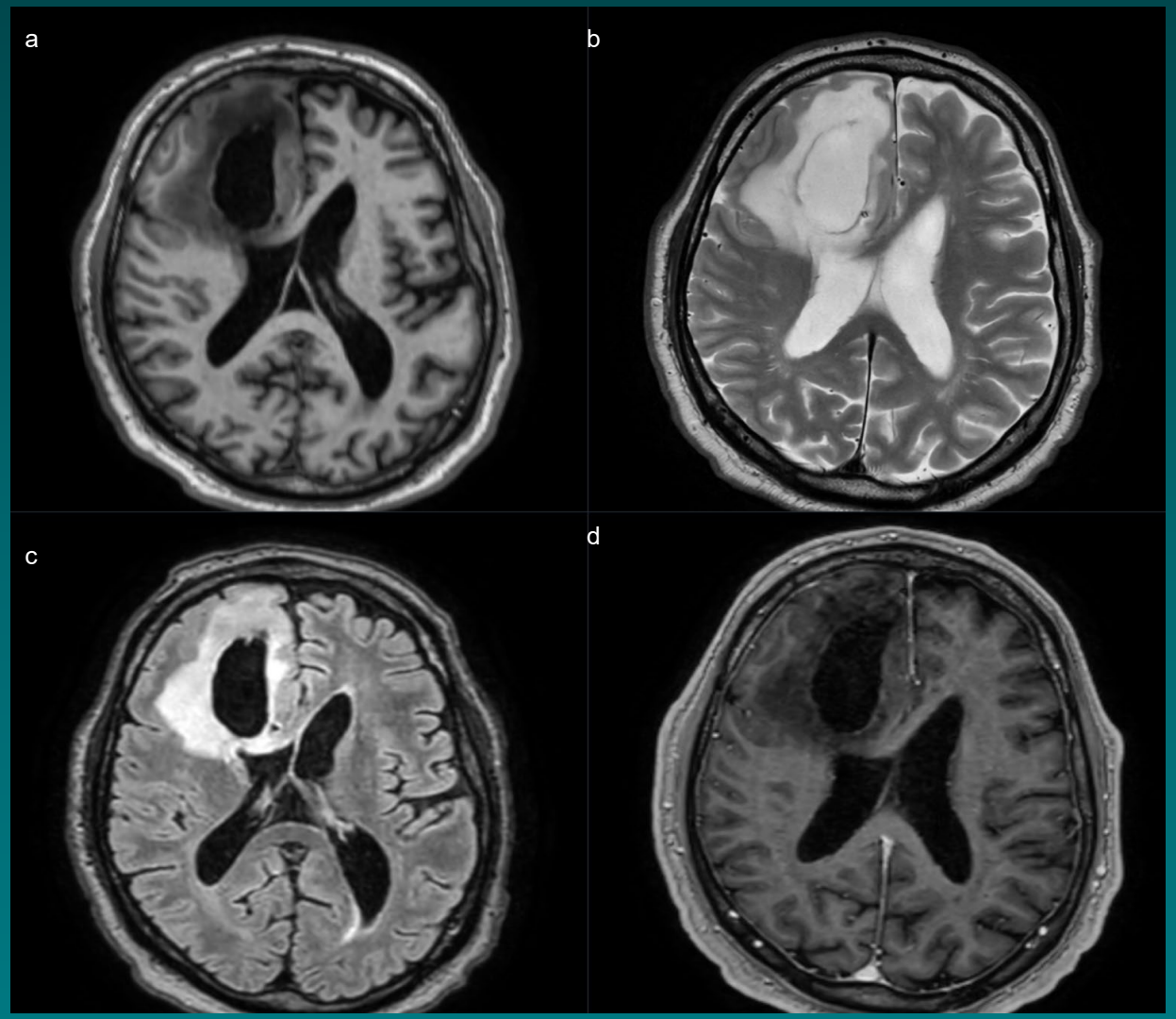
Post placement CT Head:



Coronal (c) and Axial (d) obtained one month later following 2-day history of worsening mental status .

Interval CT Head performed 1 month later *(figures c & d)* demonstrates a new 5.5 cm right frontal lobe hypoattenuating lesion with moderate amount of edema that surrounds the catheter

Follow up MRI:



(a) axial T1 imaging, (b) axial T2 imaging, (c) axial FLAIR imaging, (d) axial T1 post contrast imaging, all at the level of the lateral ventricles / shunt catheter

Follow up MRI Brain the next day shows a 5.5 cm ovoid lesion within the right frontal lobe following CSF signal intensity on all sequences.

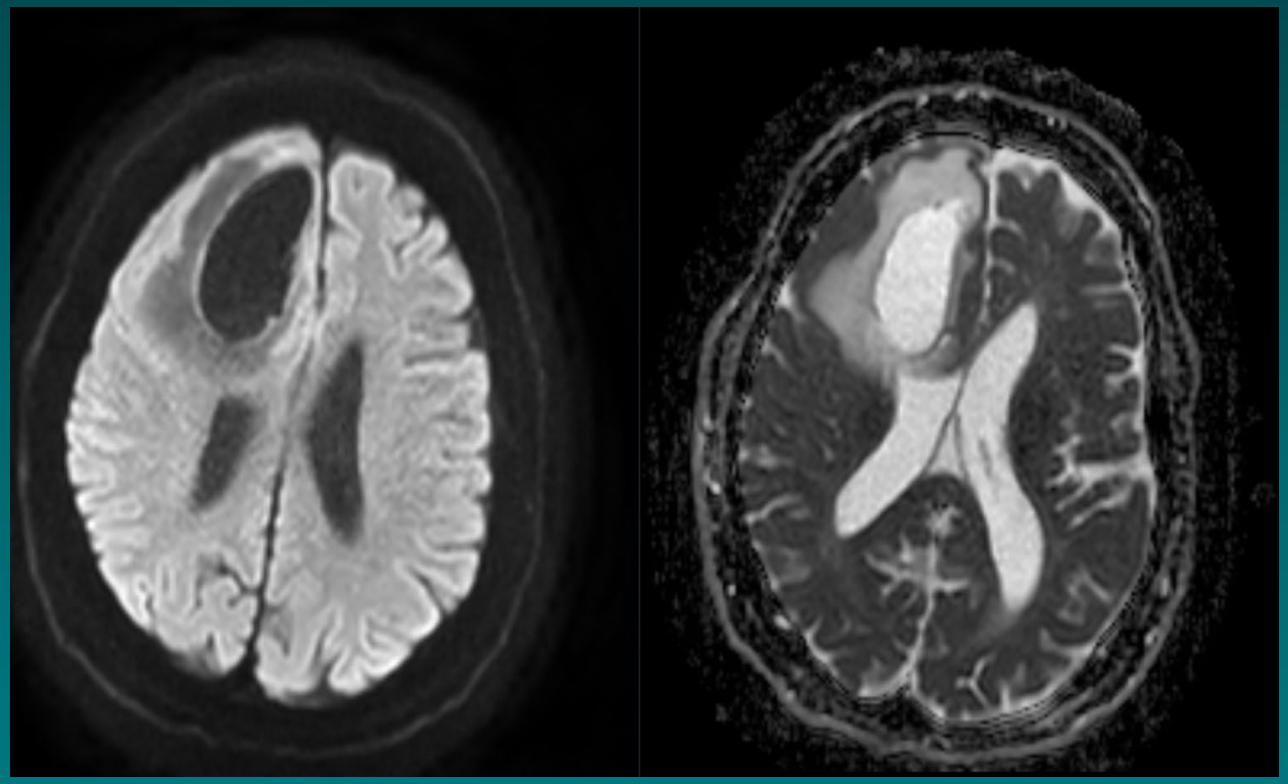
The catheter is seen coursing through this lesion.

No associated post contrast enhancement *(figure d)*.

Internal contents do not demonstrate diffusion restriction *(figures e & f)*.

Again, the collection demonstrates moderate amount of surrounding edema with locoregional mass effect and effacement of the right lateral ventricle.

Follow up MRI:



(e) axial DWI imaging (f) axial ADC map

Follow up MRI Brain the next day shows a 5.5 cm ovoid lesion within the right frontal lobe following CSF signal intensity on all sequences.

The catheter is seen coursing through this lesion.

No associated post contrast enhancement *(figure d).*

Internal contents do not demonstrate diffusion restriction *(figures e & f).*

Again, the collection demonstrates moderate amount of surrounding edema with locoregional mass effect and effacement of the right lateral ventricle.

IMAGING REVIEW:

- On CT (typically the initial imaging study), findings demonstrating a hypoattenuating pericatheter lesion with varying amounts of surrounding vasogenic edema; differential diagnosis at this point includes:
  - Tumor/metastatic lesion
  - Infection/abscess
  - Intraparenchymal cyst

- MRI is most helpful for diagnosis
  - MRI often shows no wall enhancement or restricted diffusion, helping distinguish it from abscess or tumor
  - Internal contents will typically follow CSF on all sequences – further supporting the diagnosis

MANAGEMENT:

- While poorly understood, pericatheter cyst formation is thought to occur secondarily to weakening of the ependymal cells resulting from increased CSF pressure due to localized obstruction, with leakage into the surrounding parenchyma

- Presenting symptoms are variable and nonspecific, and may include: headache, vomiting, visual changes, altered mental status, hemiparesis, speech and gait disorders, tinnitus and epilepsy

- Treatment and management is ultimately shunt / catheter revision with washout