Dengue with cytotoxic lesion in the corpus callosum

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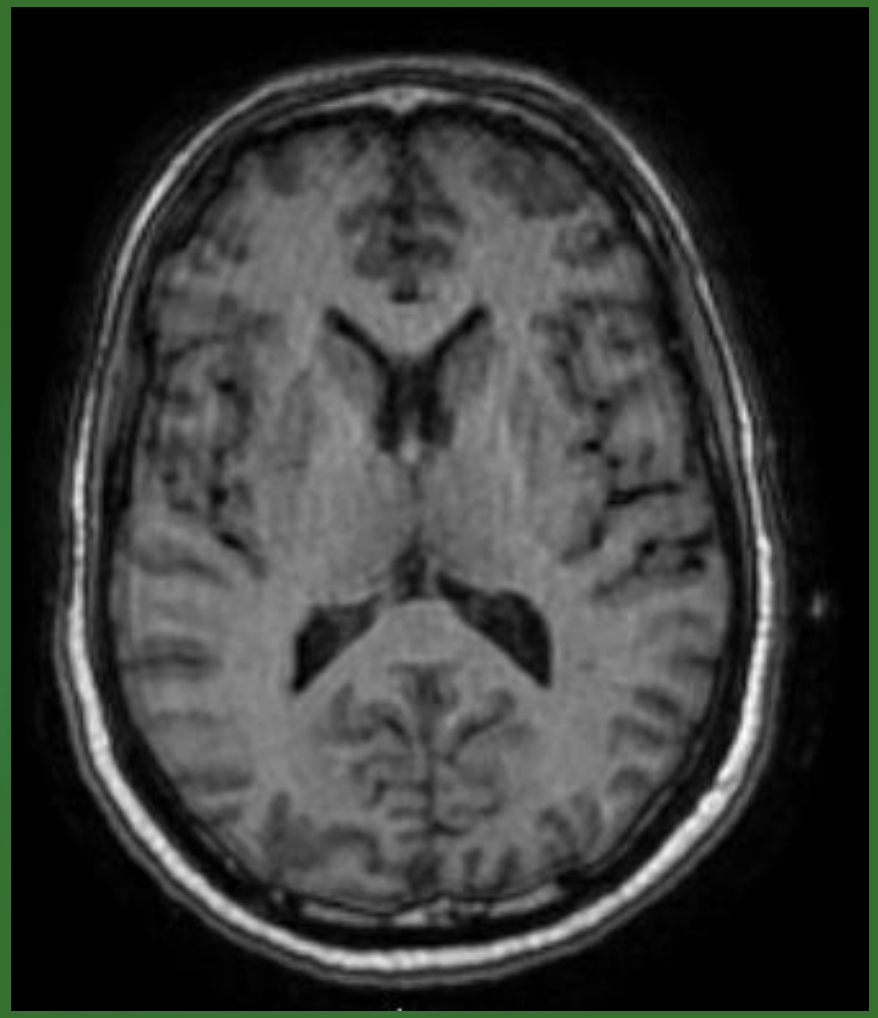
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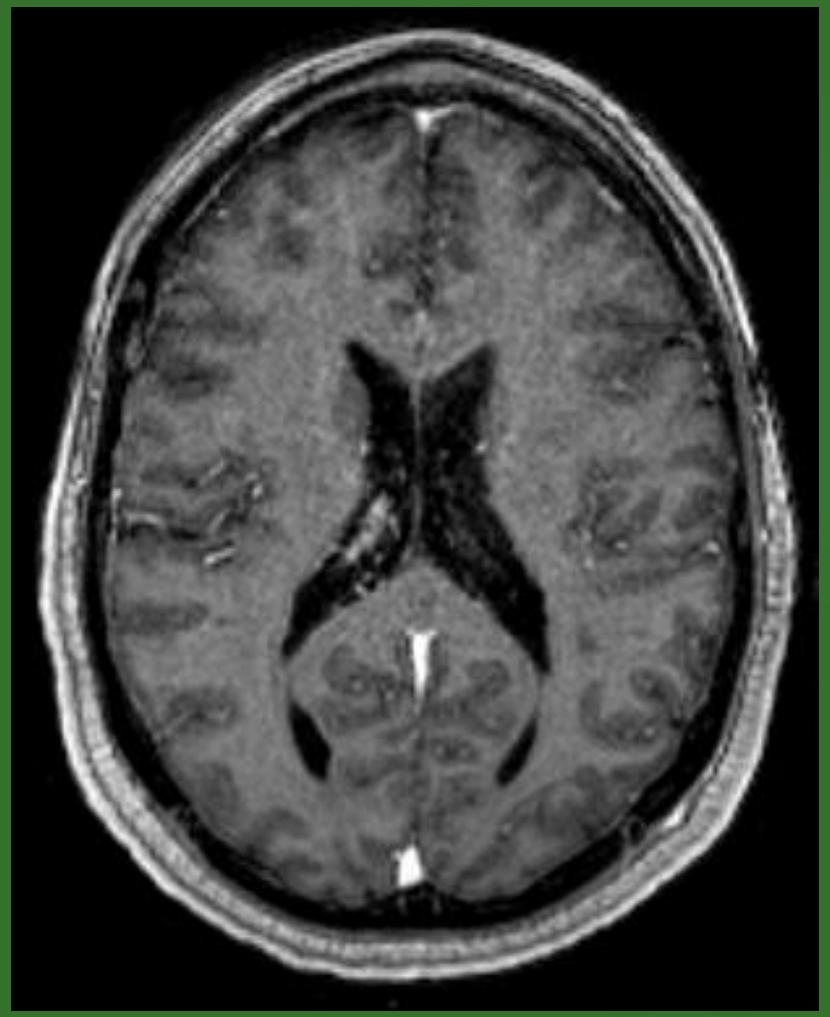
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Clinical presentation

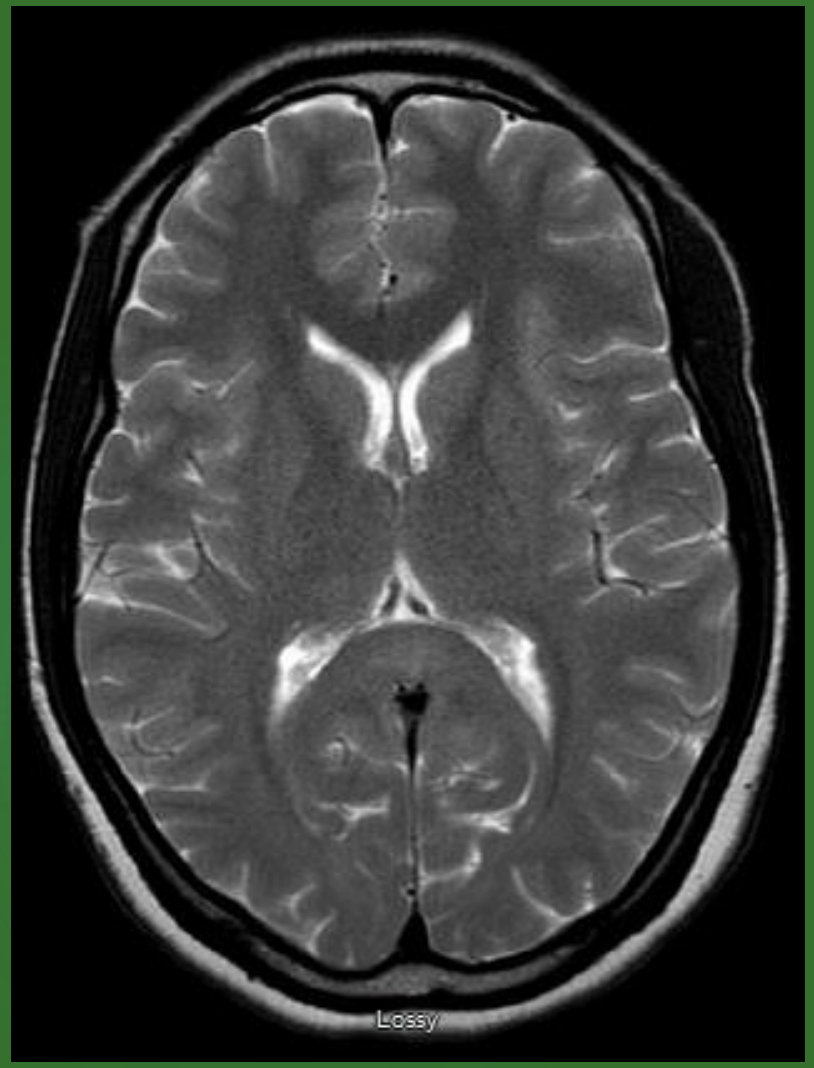
- 20 y.o. female who presented with a left-sided stabbing headache, fever, episodic vision loss, photophobia, pain with extraocular eye movement, transient peripheral paraesthesias and tinnitus, admitted for further workup.
- 47 y.o. female with no reported past medical history presented to the emergency department with approximately 2-week history of generalized headache which was throbbing in nature, blurry vision, and pain to her left arm and leg with some associated numbness/tingling and mild weakness.
- MRI brain demonstrated a cytotoxic lesion in the corpus callosum and both patients tested positive for dengue virus.

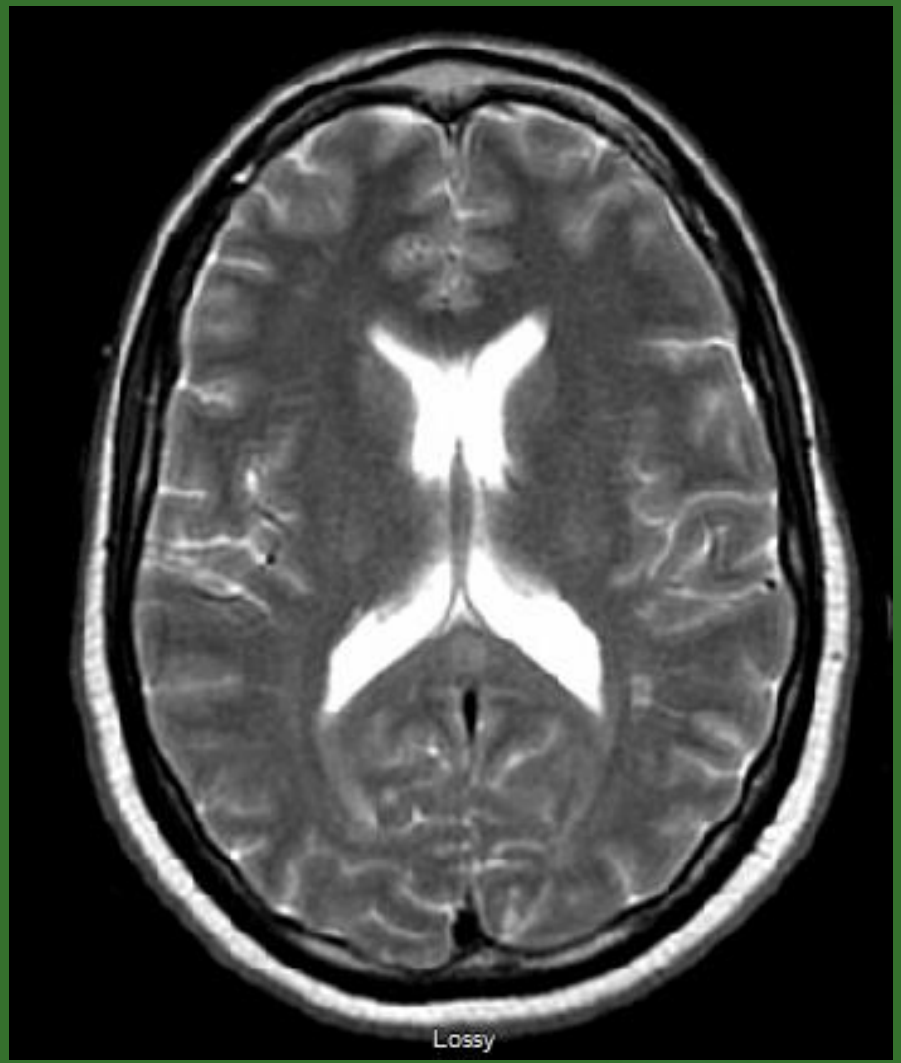
T1 and T1 post-contrast



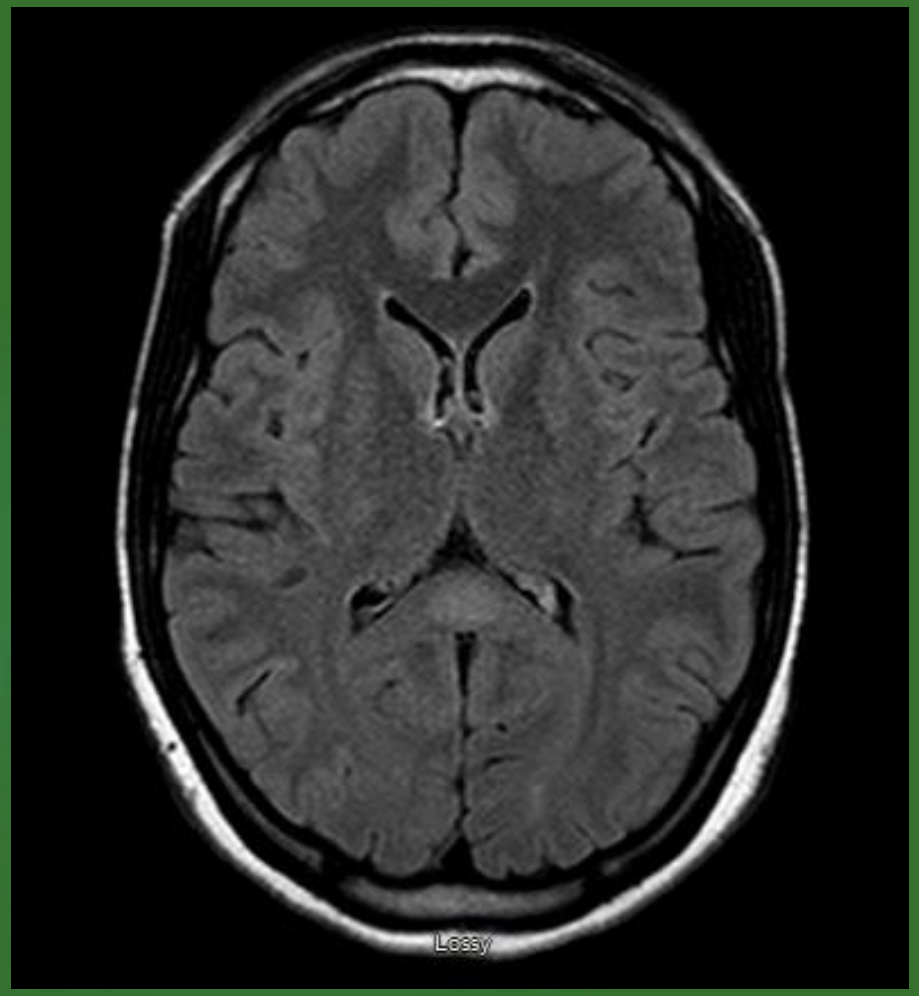


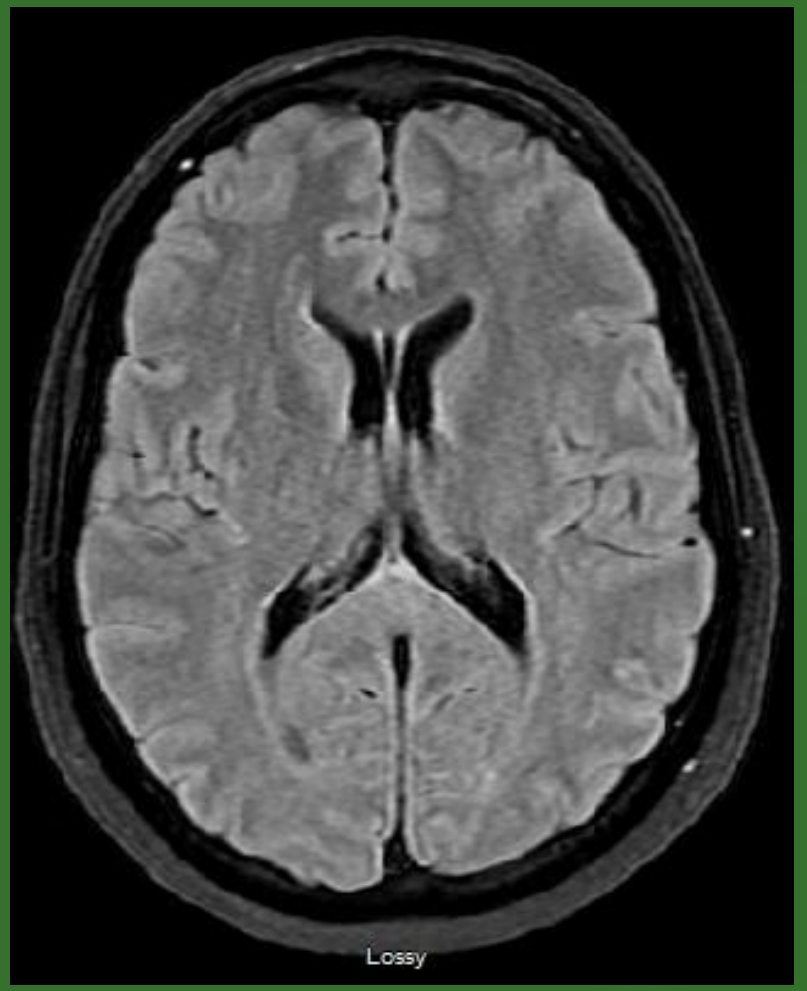
T2



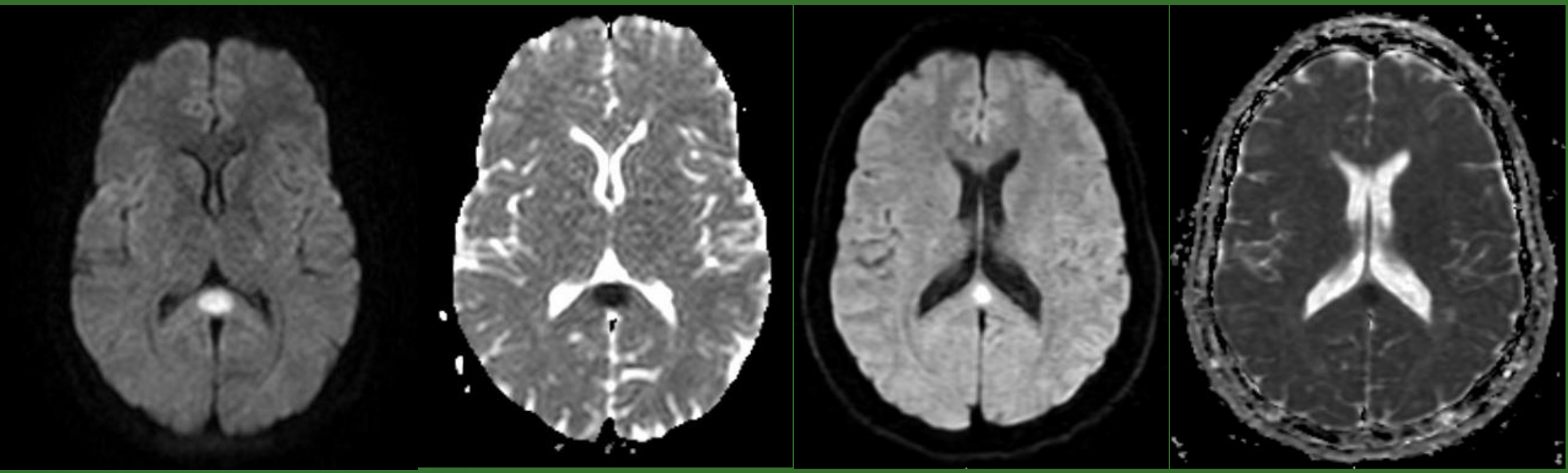


FLAIR



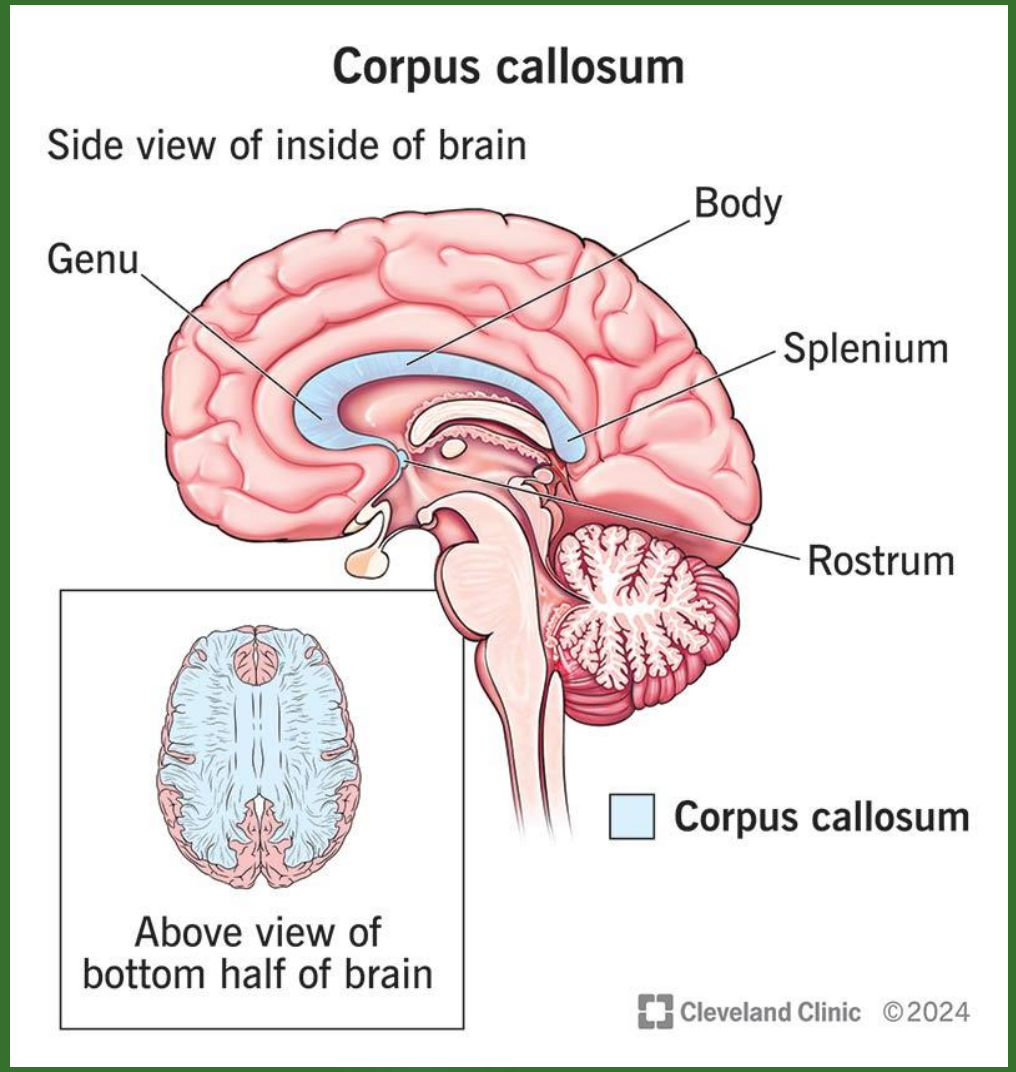


DWI and ADC

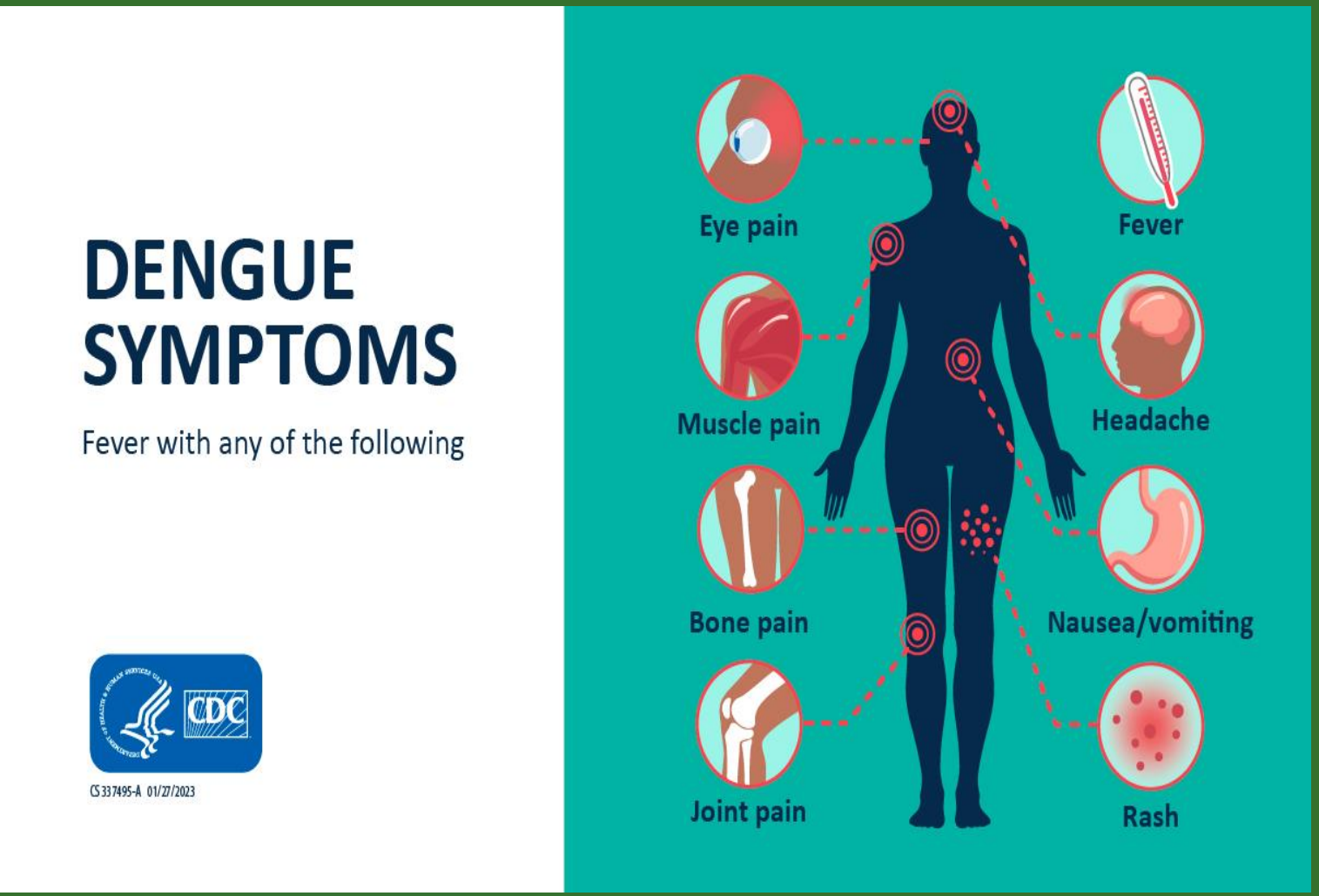


Imaging characteristics

- Cytotoxic lesions in the corpus callosum most often affect the splenium and have a characteristic homogeneous MRI appearance:
  - T1w hypointense
  - T2w(-FLAIR) hyperintense
  - Diffusion restricting
  - Non-enhancing



Background



- Dengue fever is now the world's most common arthropod-borne arboviral illness which has multiple clinical and radiologic neurologic manifestations including cytotoxic lesions in the corpus callosum.
- Due to the neurotropism of the dengue virus, it can result in a large variety of clinical manifestations including encephalitis, meningitis, hemorrhagic/ischemic stroke, Guillain-Barré syndrome, ADEM, optic neuritis, and neuromyelitis optica.
- Lesions of the corpus callosum are not specific to infectious causes such as dengue virus, but also are associated with toxins/drugs, vascular and metabolic causes, trauma, and neoplastic.

Management and Outcome

- Management involves treatment of the large variety of underlying causes including drug-induced, infectious, vascular, metabolic, traumatic, and neoplastic.
- Most commonly, cytotoxic lesions of the corpus callosum regress spontaneously within a few weeks.
- There is a generally positive prognosis depending on the cause.



Preventing Dengue in Your Community

How Dengue Spreads:

1. A person travels to an area of the world where dengue is common.
2. An infected mosquito bites this person when they are traveling.
3. This person who got bit by the mosquito travels back home.
4. This person shows symptoms within 2 weeks after being bitten by the infected mosquito.
5. A new mosquito becomes infected after biting the person who is sick with the virus.
6. This new mosquito can then spread the virus to other people through bites.

Signs and Symptoms:



Fever with any of the following...



Aches and pains



Rash



Nausea/vomiting

Please contact your medical provider if you are experiencing any of these symptoms. If you do not have a medical provider, please call 2-1-1.

Protect Yourself:



Use insect repellent.



Wear loose-fitting, long sleeve shirts and pants.



Install or repair and use window and door screens.

Protect Your Community:



Remove standing water in and around your home.



Mosquito treatment may be scheduled for your area by the Vector Control Program.

COUNTY OF SAN DIEGO HEALTH AND HUMAN SERVICES AGENCY

LIVE WELL SAN DIEGO

SCAN THE QR CODE TO LEARN MORE ABOUT DENGUE.

SCAN THE QR CODE TO LEARN ABOUT THE VECTOR CONTROL PROGRAM.

PHAB Advancing Public Health Performance

6/13/2025

Take Home Points

- Cytotoxic lesions in the corpus callosum can be seen with a large variety of clinical causes but demonstrate similar MRI signal characteristics regardless of cause.
- They most commonly affect the splenium of the corpus callosum and MRI characteristics are T1w hypointense, T2w(-FLAIR) hyperintense, diffusion restricting, and non-enhancing.
- Dengue fever is now the world's most common arthropod-borne arboviral illness which has multiple clinical and radiologic neurologic manifestations including cytotoxic lesions in the corpus callosum.
- Management involves treatment of the large variety of underlying causes including drug-induced, infectious, vascular, metabolic, traumatic, and neoplastic. Lesions often regress spontaneously within a few weeks with a generally positive prognosis depending on cause.

References

- Gaillard F, Melhem M, DAVOUT G, et al. Cytotoxic lesions of the corpus callosum (CLOCCs). Reference article, Radiopaedia.org (Accessed on 27 Aug 2026) https://doi.org/10.53347/rID-26390
- Moors S, Nakhostin D, Ilchenko D, Kulcsar Z, Starkey J, Winklhofer S, Ineichen BV. Cytotoxic lesions of the corpus callosum: a systematic review. Eur Radiol. 2024 Jul;34(7):4628-4637. doi: 10.1007/s00330-023-10524-3. Epub 2023 Dec 26. PMID: 38147170; PMCID: PMC11213749.
- Rangankar V, Kumar D, Kuber R, Kalekar T. Imaging of the neurological manifestations of dengue: A case series. SA J Radiol. 2022 Nov 29;26(1):2528. doi: 10.4102/sajr.v26i1.2528. PMID: 36483671; PMCID: PMC9724064.