A Gift From Next Door

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ID fellowship, Bakersfield

IDAC 11/5/22

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No disclosures

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CC: Right arm weakness

- 26-year-old male
  - Homeless living in a vehicle with mother
- Two-week history
  - Headache Relieved with ibuprofen
- 1 history
  - Right arm weakness (Waxing and waning)
  - Dizziness for 1 day
    - Not related to position, movement
    - Legs feel “unbalanced”
- Associated subjective fever, night sweats, weight loss 20lbs
  - Mother noted mild personality changes (grouchy, meaner)

History

- No medical history
- No surgical history
- No allergies
- Ibuprofen OTC PRN
- No family history of chronic disease
- Childhood unremarkable

Social History

- Tobacco: Former 5 packyear smoker
- ETOH: Occasional
- Drugs: THC
- Homelessness: Lives in a truck with mother
- Jail: Denies
- Travel: Born in Bakersfield. Visited Las Vegas 8 months prior.
- Animal: Dead cats around his truck
- Sex: Last sexual encounter 3 months ago
- Denies STI

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Presenting exam

- T 39.4C, HR 120, BP 111/75, RR 18, O2 98% room air
- General: alert, no apparent distress, oriented to date and hospital, well nourished, well developed young man
- Eyes: rotatory nystagmus when looking right
- Neck: stiff
- Extremities: right arm cannot lift off bed (1/5), right bicep (4/5), bilateral feet clonus 3 beats

Initial Labs

- CBC: 3.0/11.1/32.4/182
  - ANC 1800, ALC 700
- BMP: 134/3.7/104/24/15/1.06/88
- LFT: 0.9/ /17/29/49/ /8.2/3.1
- UA: protein 30
- Urine toxicology: THC positive
- TSH 1.306
- CRP <0.30
- ESR >100
- Ferritin 732
  - (Fe/TIBC 32/180)
- Hep B surf ag negative
- Hep C ab negative
- Syphilis ab EIA positive
- HIV ab/ag screening positive
- Urine GC/Chl NAAT negative

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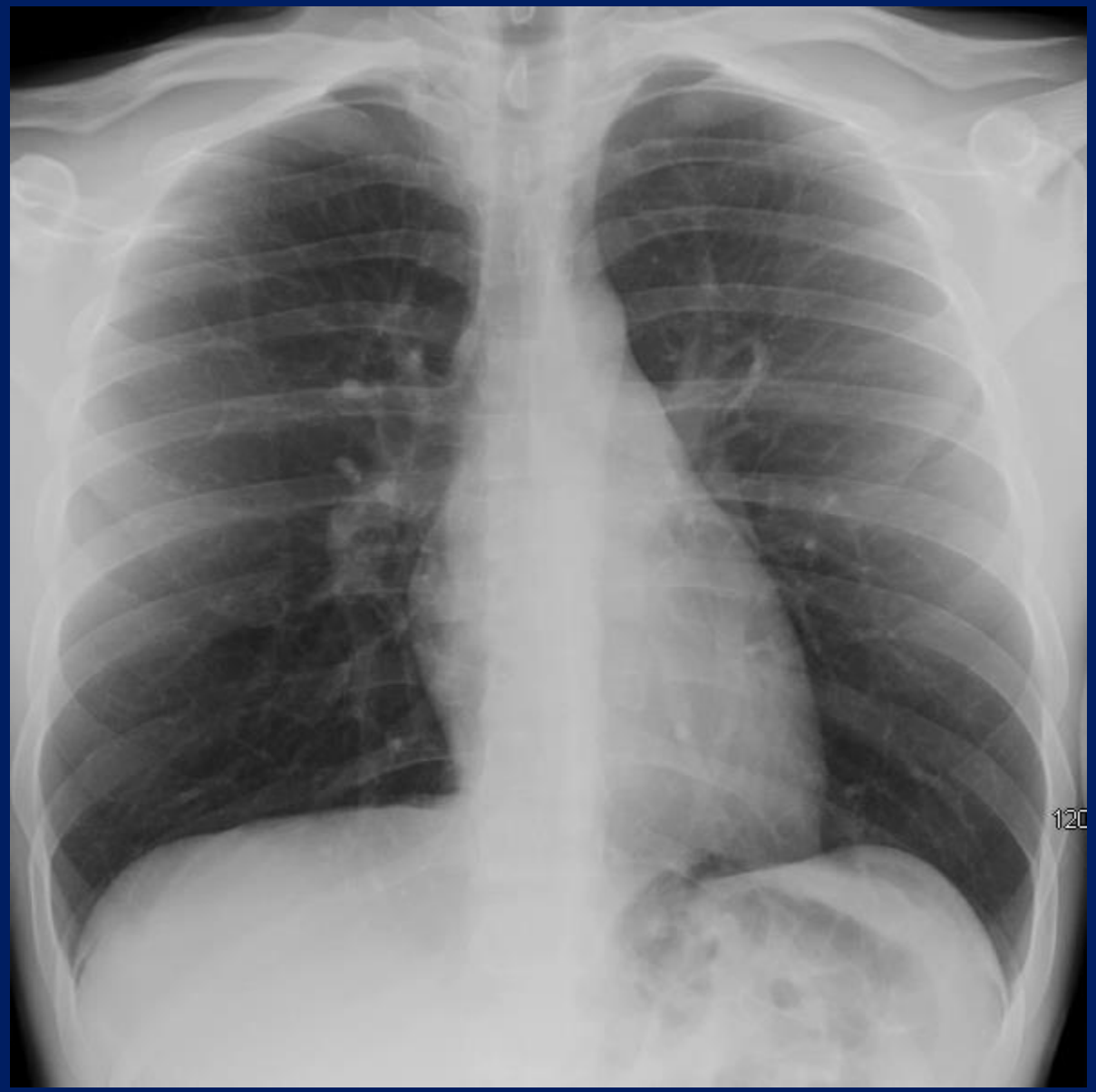

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Neuro work up

- MRI brain w/wo contrast: No evidence of infarction, bleed or mass.
- MRI cervical spine w/wo contrast: normal
- LP: OP 150 mmH2O, WBC 320, RBC 3, 10% Neutrophils, 85% Lymphocytes, Glucose 51, Protein 109
  - CrAg negative
- 3 hour EEG: normal awake and drowsy

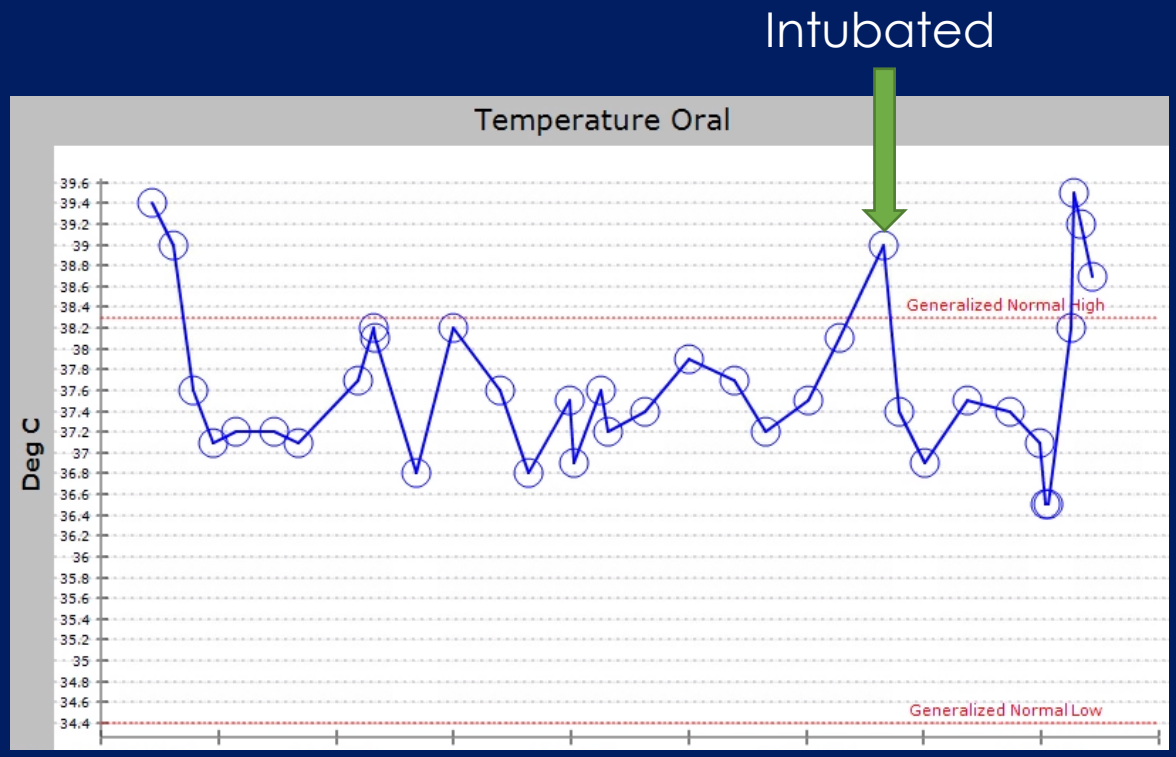
- Vancomycin, ceftriaxone, acyclovir started
- ID consulted

Initial management

- Aqueous penicillin G 4 million units IV q4h
- Acyclovir IV until CSF HSV PCR returned
- Discontinued vancomycin, ceftriaxone
- Serum
  - HIV RNA PCR
  - CD4/CD8
  - Genotype/Integrase
  - RPR, FTA-ABS
  - Cocci serology
  - Cryptococcal ag screen
  - TB Quantiferon
  - West Nile IgM
- CSF
  - HSV 1/2 PCR
  - VDRL
  - Cocci serology
  - West Nile IgM
  - Meningitis/Encephalitis PCR Panel
- MRI thoracic and lumbar w/wo contrast for tabes dorsalis evaluation

Hospital course

- Hospital day 3
  - Shaking diffusely, agitated, slurring words
- Hospital day 4
  - Became unresponsive overnight
  - Body shaking
  - Eyes open
  - Intubated



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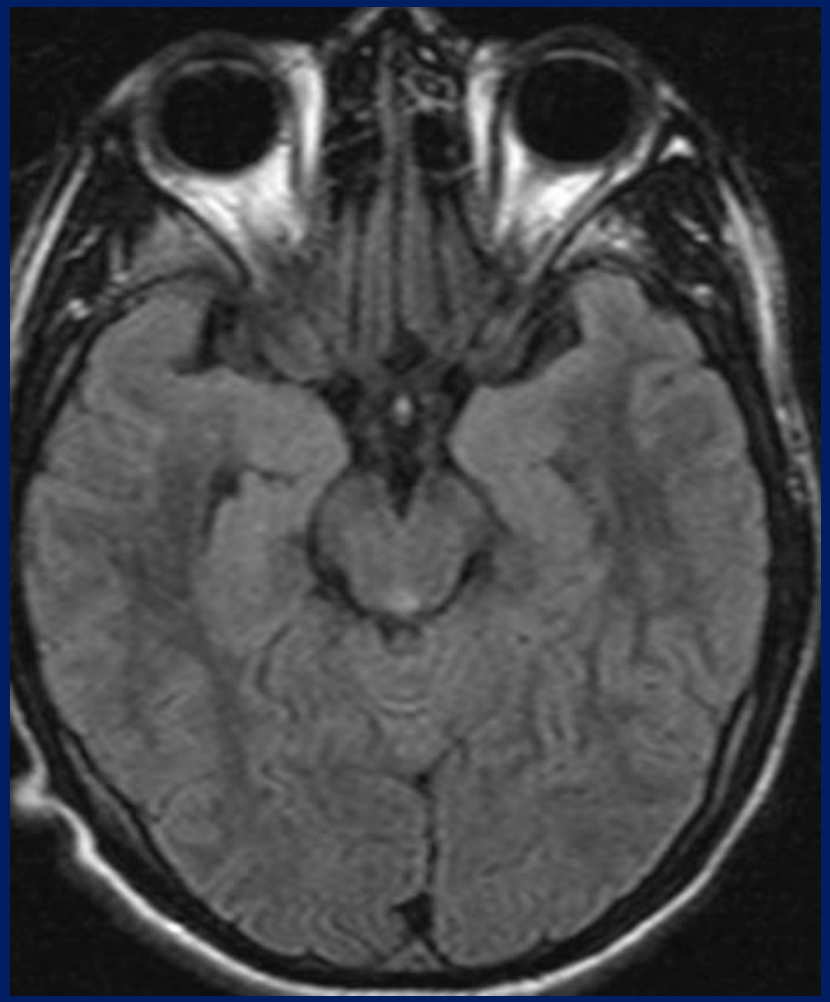
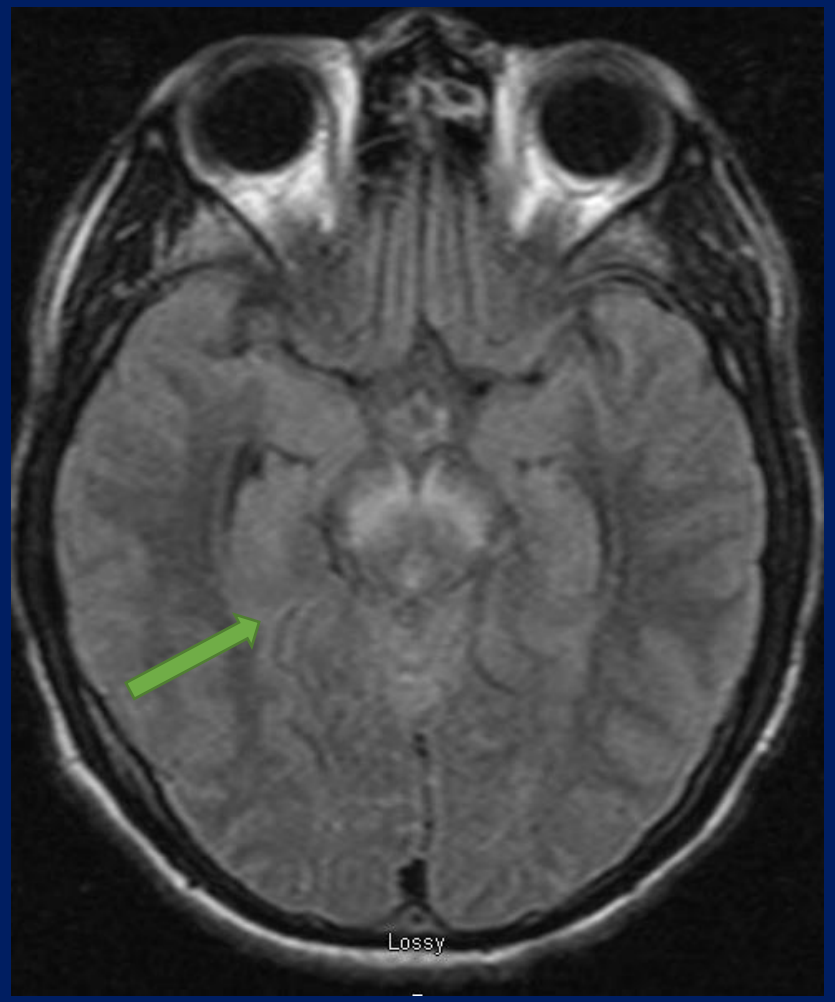
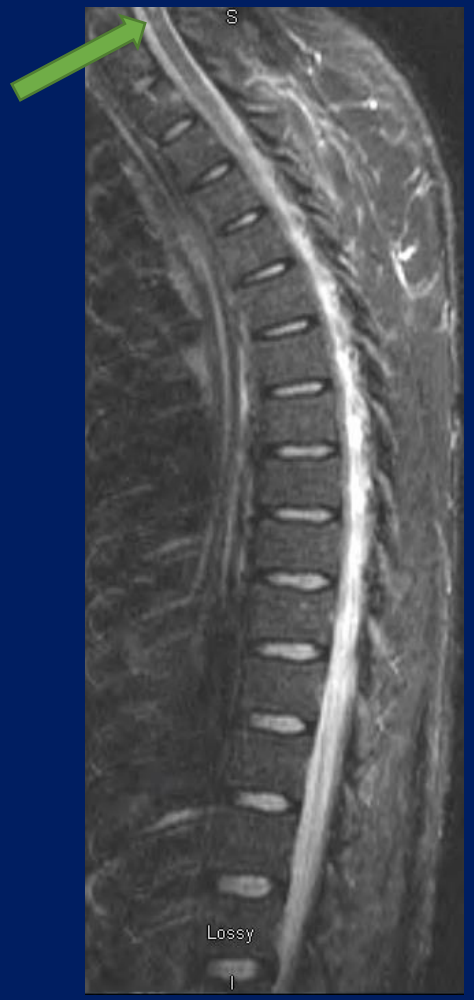
MRI Brain

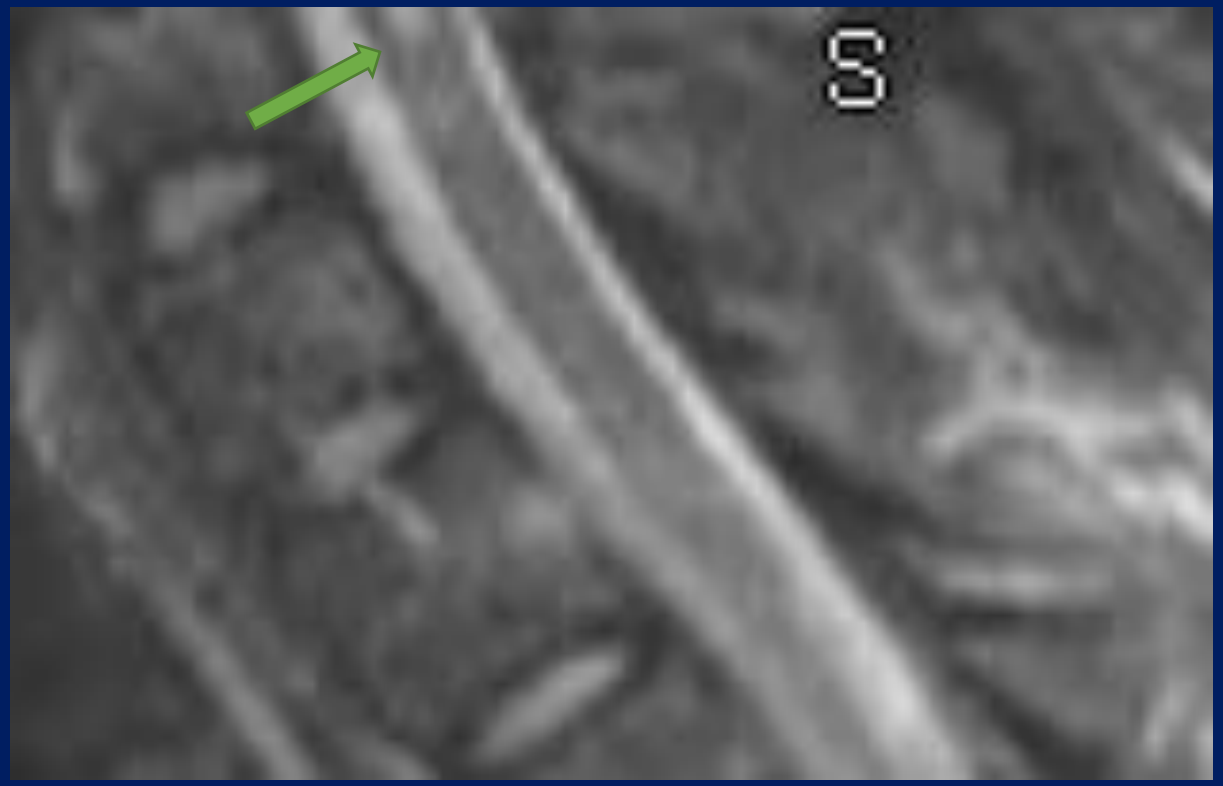


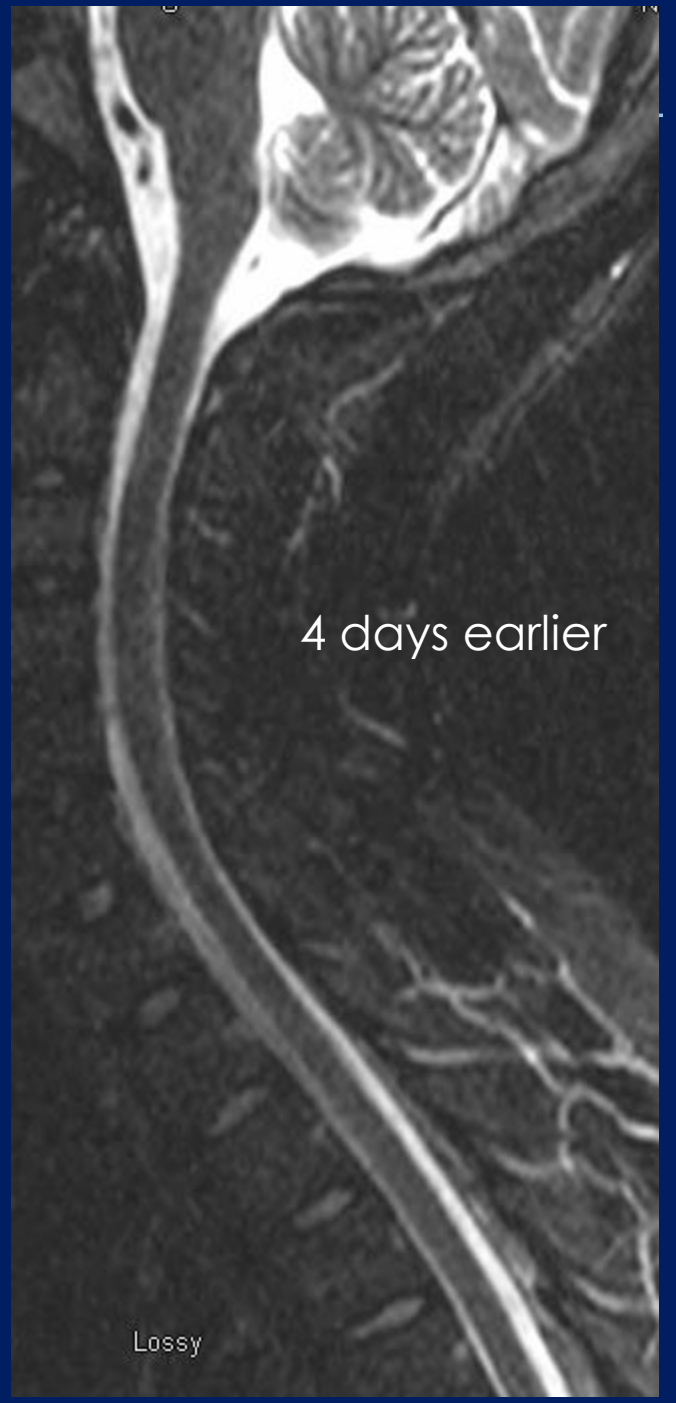
4 days earlier



MRI Thoracic







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Pause

Tests results HD 7

- CD4 44 cells
- RPR 1:16 FTA-ABS reactive
- CSF VDRL 1:1 reactive
- CSF Cocci serology negative
- CSF HSV 1/2 PCR negative
- TB Quantiferon negative (0.02, >10.0, 0.0, 0.0)
- Serum West Nile IgM and IgG negative
- CSF West Nile IgM and IgG negative

Acute Rhomboencephalitis

- Listeria monocytogenes (#1)
- Enterovirus 71 (#2)
- HSV 1 and 2 (#3)
- Tuberculosis
- CMV
- EBV
- HHV6
- West Nile Virus
- Japanese encephalitis virus
- *Rickettsia*
- *Borrelia burgdoferi*
- *Salmonella typhi*
- *Legionella bozemanii*
- *Mycoplasma pneumonia*
- Noninfectious
  - Behcet disease, MS, SLE
  - Paraneoplasmic
  - Lymphoma

Jubelt, B., Mihai, C., Li, T.M. *et al.* Rhombencephalitis / Brainstem Encephalitis. *Curr Neurol Neurosci Rep* **11**, 543 (2011).
Moragas, Mireia MD; Martínez-Yélamos, Sergio MD; Majós, Carles MD; Fernández-Viladrich, Pedro MD; Rubio, Francisco MD; Arbizu, Txomin MD. Rhombencephalitis: A Series of 97 Patients. Medicine: July 2011 - Volume 90 - Issue 4 - p 256-261

Repeat LP

- OP 150 mmH2O, WBC 118, RBC 7, 97% lymphocytes, Glucose 48, Protein 69
- **New workup:**
- CSF meningitis/encephalitis panel
  - Listeria monocytogenes
  - CMV
  - Enterovirus
  - HSV 1 and 2
  - HHV6
- CSF West Nile PCR
- CSF MTB/RIF PCR
- Serum CMV IgG and PCR
- Serum Lyme ab screen
- Stool enterovirus RNA PCR

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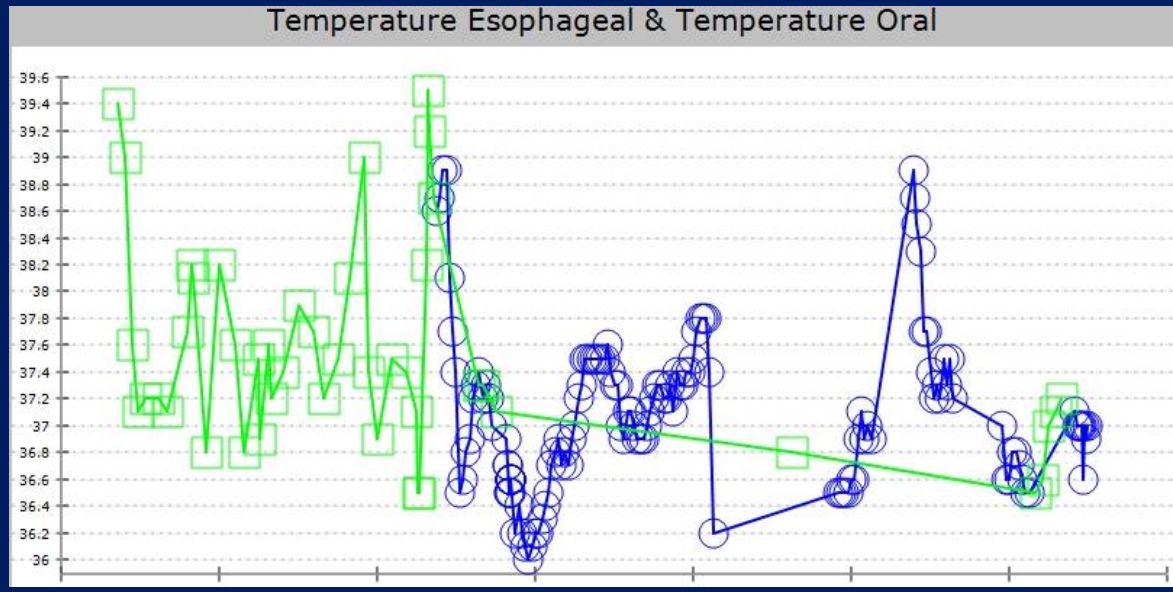
Hospital course through HD 14

- INH, RIF, PZA, ETH
- Ganciclovir IV
- TMP/SMX PJP ppx



- Waxing and waning mentation
- Left eye deviated upwards
- Right eye deviated up and out
- Later, eyes normal, tracked with head rotation
- Hyperreflexia

Management HD 14

- CSF meningitis/encephalitis panel negative (Listeria, CMV, Enterovirus, HSV 1 and 2, HHV6)
- Serum CMV PCR <200, detected
- CMV IgG reactive
- Toxo IgG negative
- Lyme ab negative
- Stool enterovirus RNA PCR negative
- Serum cocci serology negative
- HIV-1 RNA PCR 190000

- TDF/FTC and DTG started
- Ganciclovir stopped
- INH, RIF, ETH, and PZA continued

- EEG: focal left frontotemporal status epilepticus
  - Levetiracetam, lacosamide, phenytoin, phenobarbital, propofol

Test results HD 20

- CSF West Nile RNA RT-PCR detected
- Serum West Nile RNA RT-PCR detected

- West Nile Rhomboencephalitis in a patient with AIDS

Outcome

- Completed 14 days of penicillin G IV
- Empiric MTB treatment stopped
- Failed Dexamethasone 20mg IV daily x 7 days
- Failed IVIG 20g daily x 5 days
- Tracheostomy and percutaneous gastrostomy
- Weak gag, +corneal reflexes, opens eyes spontaneously
  - Does not withdraw to pain
- LTAC facility

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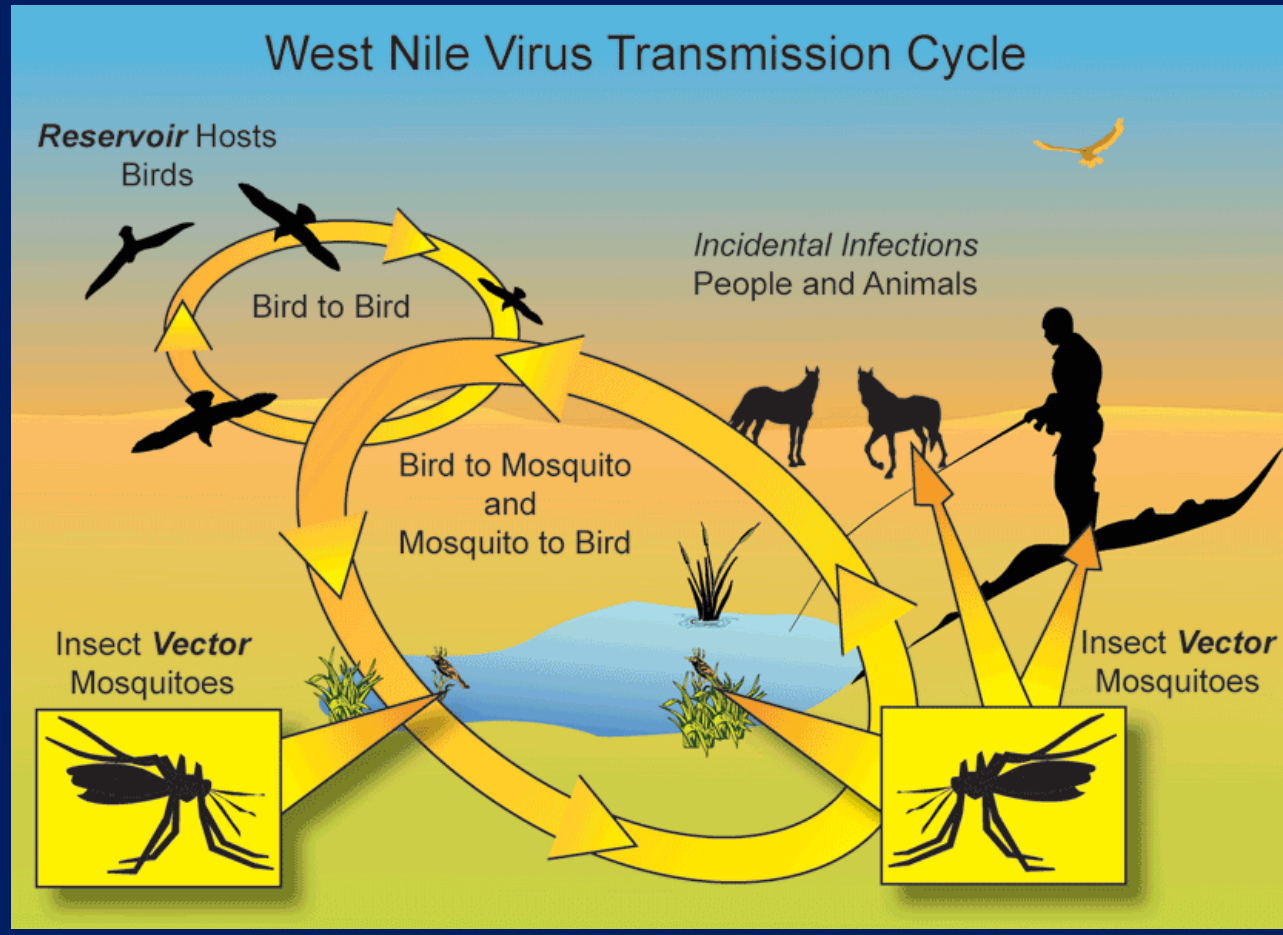
Diagnostic Criteria 2003 AMA

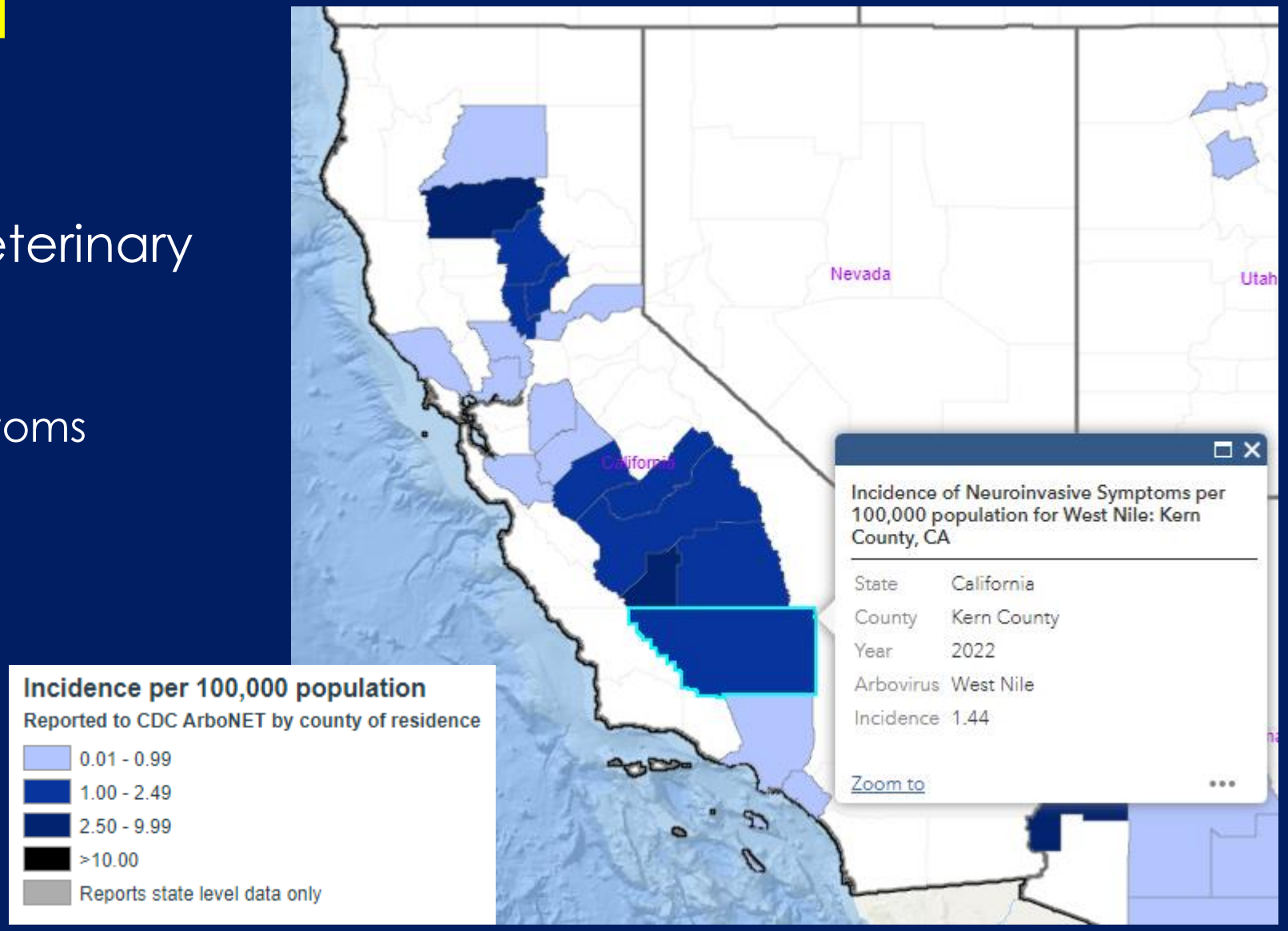
- WNV Encephalitis
  - Encephalopathy >24 hours
  - Two or more:
    - Fever/hypothermia
    - CSF WBC >5
    - ALC >10,000
    - Neuroimaging with acute inflammation or acute demyelination
    - Focal neurological deficit
    - Menigismus
    - EEG with encephalitis
    - Seizure



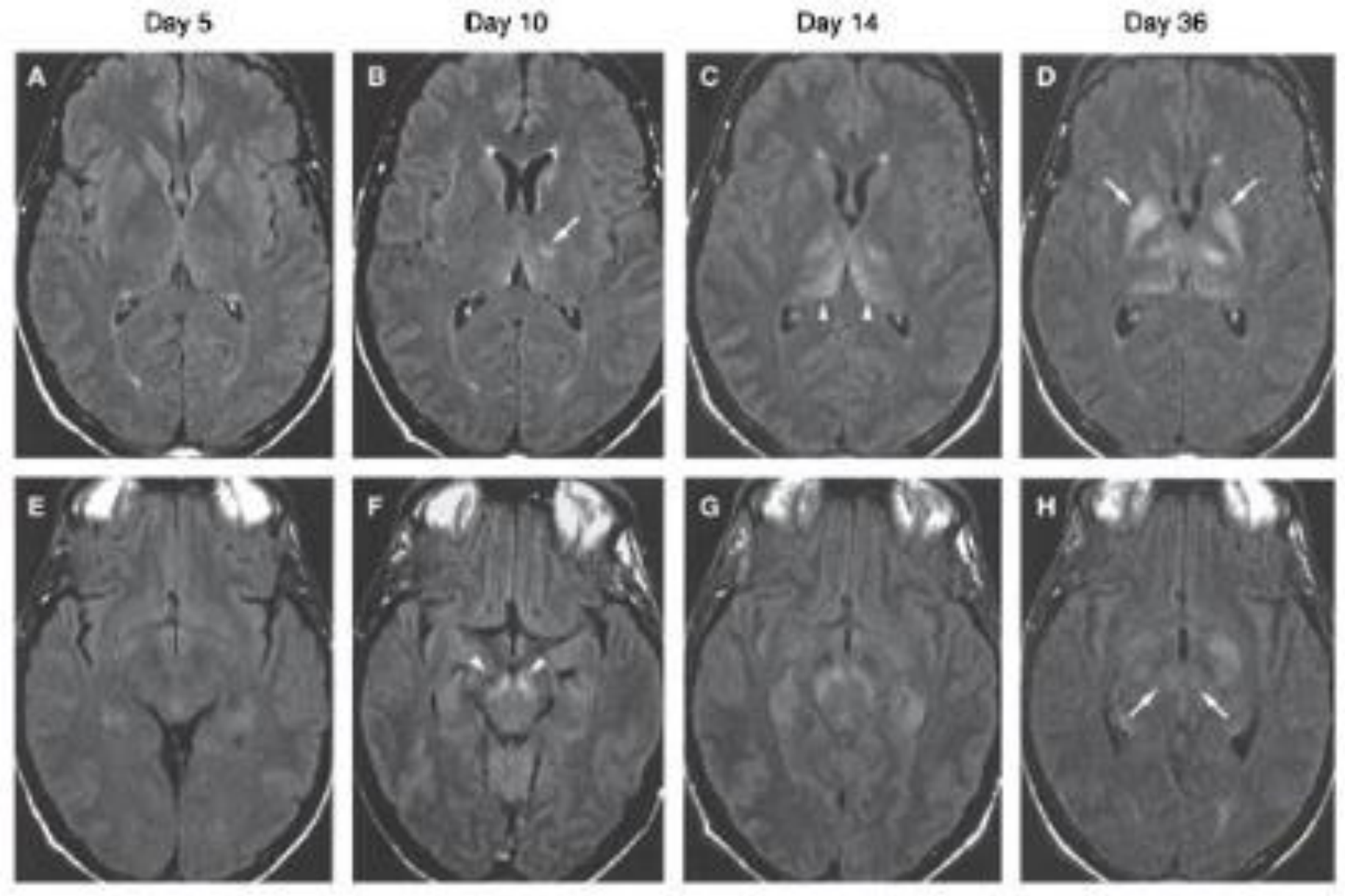
DeBiasi, R., Tyler, K. West Nile virus meningoencephalitis. *Nat Rev Neurol* **2**, 264–275 (2006).
Sejvar JJ *et al*. (2003) Neurologic manifestations and outcome of West Nile virus infection. *JAMA* **290**: 511–515

CDC ArboNET

- OneHealth Initiative
  - Unite human and veterinary medicine
  - Human cases 2022
    - Neuroinvasive symptoms



Accessed 11/1/2022



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Lab diagnostics

- IgM
  - 95% have IgM within 7 days
  - Diagnostic in CSF (does not cross BBB)
  - CSF earlier than serum
  - Confirm EIA with plaque reduction neutralization assay
  - 6 to 16 months
- PCR
  - CSF sensitivity 57%
  - Serum sensitivity 14%
  - More sensitive if immunocompromised
    - Lack antibody response, prolonged viremia
    - B-cell depletion

DeBiasi, R., Tyler, K. West Nile virus meningoencephalitis. *Nat Rev Neurol* **2**, 264–275 (2006).

Seronegative WNV

- If meets diagnostic criteria for CNS WNV
  - Adjudicate net immunosuppression
    - B-cell depletion
    - CD4 decrease
  - Determine reliability of serology testing
  - Pursue PCR testing of serum and CSF

Prognosis

- Neuroinvasive disease
  - Overall case fatality 10%
  - Higher in patients with WNV encephalitis and poliomyelitis
  - Neurodeficits can persist for month, years, lifelong
  - Younger age only significant predictor of recovery
  - MRI FLAIR and T2 abnormalities had worse outcomes than MRI DW abnormalities
- No licensed antivirals or treatment

- One of ten WNV cases this summer at Kern Medical
  - June to September

DeBiasi, R., Tyler, K. West Nile virus meningoencephalitis. *Nat Rev Neurol* **2**, 264–275 (2006).
Ali M *et al*. (2005) West Nile virus infection: MR imaging findings in the nervous system. *AJNR Am J Neuroradiol* **26**: 289–297

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Thank you