Viral Encephalitis Presenting as Slurring of Speech in a Five-Year-Old Child
Prepared by: Carina O. Aguilar, MD
St. Luke's Medical Center – Global City

General Data

This is a case of R.O.C., five-year-old, male, Filipino, Roman Catholic, from Taguig, Metro Manila. The patient was admitted last December 15, 2022 to January 5, 2023 admitted for the first time in our institution. Patient's mother is the informant and assessed to have good reliability.

Chief Complaint

Fever

History of Present Illness

One week prior, patient was noted to have frequent squinting while reading hence patient was brought to ophthalmologist. Patient was diagnosed with astigmatism and was given corrective lenses. However, patient reportedly has not been using glasses because he started complaining of frontal headache, uncharacterized, since using the lenses.

Three days prior to admission, the patient was noted to have colds and nasal congestion, with recurrence of frontal headache, uncharacterized, intermittent. Patient was also noted to be weak-looking described by parents as being less playful and active than his usual activity. Patient has no fever, cough, vomiting, nor loose stool. No head trauma noted.

Two days prior (12/14), still with colds and intermittent headache, the patient was now noted to have intermittent febrile episodes (Tmax: 38C) temporarily resolved by Paracetamol at 10mkdose. No associated symptoms such as cough, vomiting, or loose stools.

One day prior (12/15), still with colds and fever, patient now complains of retro-orbital pain, uncharacterized, decreased appetite, and one episode of post-prandial vomiting, non bilious, non projectile, amounting to approximately half cup, prompting ER consult.

REVIEW OF SYSTEMS:

General: (-) significant weight loss or weight gain
Skin: (-) rash, (-) jaundice (-) pruritus (-) pigmentation
HEENT: (-) hearing loss (reacts to loud sounds), (-) nasal discharge, (-) epistaxis
Cardiovascular: (-) cyanosis, (-) easy fatigability
Respiratory: (-) cough, (-) colds, (-) difficulty of breathing
Gastrointestinal: (-) vomiting, (-) diarrhea
Genitourinary: (-) hematuria, (-) dysuria, (-) discharge, (-) edema of hands and feet
Endocrine: (-) polyuria, (-) polydipsia, (-) polyphagia (-) heat or cold intolerance
Nervous/Behavioral: (-) tremors, (-) sleep problems, (-) seizures (-) loss of bowel or bladder control
Musculoskeletal: (-) back pain

PAST MEDICAL HISTORY:

Three weeks prior (Nov 26, 2022), patient's father was noted to be COVID RAT positive. Patient also developed cough and colds after being exposed to his father. Teleconsult with Pediatrician done and he was given Acetylcysteine and Cetirizine which he completed for 7 days. The patient did not undergo any testing and was assumed to be COVID positive due to the symptoms. Everyone in the household was also symptomatic to which they completed home isolation together. Symptoms resolved after 4 days of isolation.

FAMILY HISTORY:

No same illness or symptoms noted within family members. Patient's dad is known to be pre-diabetic. No other known illnesses in the family such as hypertension, asthma, cardiac problems or kidney problems.

MATERNAL/BIRTH HISTORY:

Patient was born to a then 33 y/o G2P1 (1001) 38 weeks AOG via Normal Spontaneous Delivery at The Medical City. No noted fetomaternal complications. Newborn screening was allegedly normal.

NUTRITIONAL HISTORY:

Patient was exclusively breastfed until six months of age. Solids were started at six months of age. Currently, the patient is not a picky eater. Patient eats 3x a day with snacks in between. He consumes fresh milk twice a day.

IMMUNIZATION HISTORY:

Patient's immunization is up to date given by the attending pediatrician. Patient is fully vaccinated with COVID vaccine (Pfizer brand) given last April and May 2022, this was also the latest vaccine the patient received. No adverse effects noted.

PERSONAL/SOCIAL HISTORY:

He currently resides in Taguig City with seven other household members (parents, two siblings, two househelpers, and one all around helper). All adults are fully vaccinated with COVID vaccine (Dad received 2 doses of Pfizer and 2 doses of Moderna; Mom received 2 doses of Sinovac and 2 doses of Modern booster, 9 year old sibling is fully vaccinated with 2 doses of Pfizer) No sick contacts, no recent travel history. Patient currently attends face to face classes 4x a week and online classes once a week.

DEVELOPMENTAL HISTORY:

Social/Emotional Milestones

- ☑ Follows rules or takes turns when playing games with other children
- ☑ Sings, dances, or acts for you
- ☑ Does simple chores at home, like matching socks or clearing the table after eating

Language/Communication Milestones

- ☑ Tells a story she heard or made up with at least two events
- ☑ Answers simple questions about a book or story after you read or tell it to him
- ☑ Keeps a conversation going with more than three back-and-forth exchanges
- ☑ Uses or recognizes simple rhymes (bat-cat, ball-tall)

Cognitive Milestones (learning, thinking, problem-solving)

- ☑ Counts to 10
- ☑ Names some numbers between 1 and 5 when you point to them
- ☑ Uses words about time, like "yesterday," "tomorrow," "morning," or "night"
- ☑ Pays attention for 5 to 10 minutes during activities
- ☑ Writes some letters in her name
- ☑ Names some letters when you point to them

Movement/Physical Development Milestones

- ☑ Buttons some buttons
- ☑ Hops on one foot

PHYSICAL EXAMINATION AT THE EMERGENCY ROOM:

Patient was seen awake, conscious, coherent, not in cardiorespiratory distress, **in pain (temporal headache, uncharacterized, VAS 3-4/10**
Vitals Signs: BP 100/60mmHg, RR 20cpm, HR 100bpm, **Temp 37.8 C**, Oxygen saturation 100% at room air
Anthropometrics: Weight 19.1kg (z score < 0, Normal) Height: 118cm (z score > 0, Normal), BMI: 13.7 kg/m2 (z-score <-1, Normal)
No pallor, jaundice, rashes, masses, scars, plaques, nor nevi; skin not flushed, warm skin with good turgor
No gross head deformities
Non-sunken eyeballs, pink palpebral conjunctiva, anicteric sclerae, no subconjunctival hemorrhage, no eye

discharge, pupils 3 mm, equally brisk and reactive to light, intact EOMs
No tragal tenderness, no ear discharge, non-hyperemic external auditory canals, bilateral, Intact tympanic membrane, bilateral
No alar flaring, No nasal discharge
Slightly dry pink lips, pink oral mucosa, no dental carries, non-hyperemic posterior pharyngeal wall, non hypertrophic tonsils, no exudates, no oral sores
Supple neck, no cervical lymphadenopathy, nondistended neck veins
No lesions, masses, retractions, or audible grunting, symmetric chest wall expansion, good air entry, clear and equal breath sounds in all lung fields, no rales, wheezes, or rhonchi
No deformities/scars, chest symmetrical, Adynamic precordium, Normal cardiac rate, regular rhythm, Apex beat at 4th-5th ICS, left MCL, no heaves and thrills, No murmurs
Flat abdomen, non-distended, no scars/striae, umbilicus not inverted, midline, normoactive bowel sounds, soft, non tender, no palpable mass, tympanitic in all four quadrants
Grossly male genitalia, bilaterally descended testes, no visible masses, deformities, nor discharge
No bipedal edema, warm, full & equal pulses on all extremities, CRT <2 seconds

Neurologic Examination:
Awake, conversant, GCS 15 (E4V5M6)
Cranial Nerves:

- CN I – not assessed
- CN II – pupils 2-3 mm equally reactive to light; (+) ROR, bilateral, (-) papilledema
- CN III, IV, VI – EOMs intact, no nystagmus
- CN V – no jaw deviation
- CN VII – no facial asymmetry
- CN VIII – gross hearing intact
- CN IX, X – uvula midline, able to swallow without difficulty, (+) gag reflex
- CN XI – no shoulder asymmetry, turns head side to side
- CN XII – tongue midline

Cerebellar: no dysmetria noted when reaching for objects, no intention tremor noted as the extremity reaches the target object
Motor: no atrophy, manual muscle test 5/5 on all extremities
Sensory: no sensory deficit, tries to withdraw extremities from painful stimulus (i.e. during blood extraction)
Reflexes: ++ on all extremities, (-) Babinski
Meningeal: (-) nuchal rigidity, (-) Kernig's, (-) Brudzinski
Coordination and gait: normal gait, able to throw ball, use scissor

Course in the Emergency Room

Upon arrival at the Emergency room, the patient was seen with the above mentioned vital signs and physical exam findings. The following laboratories were done and results showed CBC: Hemoglobin 12.1 Hematocrit 36.9 **WBC 33,030** N91 L6 M3 Platelet 485,000; **Dengue NS1 negative**; Urinalysis: yellow/clear/specific gravity 1.024/pH 7.0/Protein trace/ WBC1/(-)Nitrites/(-)Blood/(-)Leukocytes/(-)RBC/ Epithelial cells0/Bacteria0/(-)Glucose; Sodium 137.1 Potassium 3.9; **COVID RT-PCR: POSITIVE; COVID IgM negative IgG POSITIVE**. Patient was hooked to D5LR 66 (maintenance rate + 10%); Paracetamol IV 10 mkdose PRN was started for the fever. Patient was transferred to the wards without Infectious clearance since the patient's COVID IgM showed negative.

<u>Admitting Impression:</u> Acute Viral Illness

Course in the Wards

Upon arrival at the wards, the patient was noted to have frontal headache, uncharacterized, intermittent febrile episodes (Tmax 38.0C), and nasal congestion. No other associated symptoms such as cough, colds, vomiting, loose stools, nor rashes. On Physical Examination: Temp 37.2 C Heart rate 120 bpm Respiratory rate 24cpm, awake, **dry lips**, no lymphadenopathies, non hyperemic conjunctiva and sclera, no discharge, no alar flaring no retractions, good air entry, clear breath sounds, adynamic precordium, normal heart rate, regular rhythm, no murmurs, abdomen

soft, non distended, nontender, full pulses, warm extremities, CRT <2 seconds with an unremarkable neurologic examination. Hydration with D5LR (maintenance rate +10%) and Paracetamol were continued. (Input: 2535, Output: 1660, FB: 875, UO: 3.6 cc/kg/hr in 24 hours.)

On the first hospital day, due to persistence of febrile episodes (Tmax 38.6C), the following laboratories were done such as repeat CBC: Hemoglobin 11.5 Hematocrit 35.2 **WBC 23,600 N93** L4 M3 **Platelet 517000**, **CRP: Less than 6, Procalcitinon 0.28**, Chest X-ray which showed **no acute focal lung opacities** or consolidation. Patient complained of abdominal bloatedness and upon physical examination of the abdomen noted to be tympanitic on percussion hence abdominal Xray was done which revealed. Non-obstructive bowel gas pattern. **Assessment: Acute Viral Illness t/c Superimposed Bacteremia.** Patient was started on **Cefuroxime** 105mkD IV every 6 hours. (Input: 1821 Output: 1430 FB: 391 UO: 3.1 cc/kg/hr in 24 hours).

On the second hospital day, still with febrile episodes (Tmax 38.3C), and nasal congestion. No vomiting noted, no recurrence of headache and now with improving appetite. On physical exam Stable vital signs, slightly dry lips, clear breath sounds, distinct heart sounds, normoactive bowel sounds, abdomen soft non-tender, warm extremities, full pulses, CRT <2. No laboratories done. IV hydration continued. Cefuroxime 105mkD IV every 6 hours was continued. (Input: 2094 Output: 1700 FB: 394 UO 3.7 cc/kg/hr in 24 hours).

On the third hospital day, patient had one episode of **postprandial vomiting,** nonbilious, amounting to approximately 1 cup. Three hours later, the mother noticed that while she was giving food to the patient, the patient was **unresponsive to her questions and noted drooling** of the offered food. Upon assessment, patient was seen sitting down (Mom transferred the patient to the chair), with pillow on his back, **weak-looking, lethargic, unresponsive to questions. Vital signs:** BP100/60 HR61 RR20 T37.1C, **pale palpebral conjunctiva, cold extremities, CRT 4s**. No cranial nerve deficits. IV line re-inserted, Serum Sodium, Potassium, Cl, and CBC extracted, **HGT noted to be at 155mg/dl**. Fast drip PNSS 10cc/kg x 30 mins done. Patient was hooked to oxygen support at 5LPM via face mask. Patient was then referred to Pedia Infectious Disease Specialist. Labs taken: CRP <6, Procal 0.08, **ESR 65 (NV 0-10)**, D-dimer: 180 (NV 0-246), Fibrinogen 393 (NV 200-400). Blood C/S 3 days no growth (Final report on 12/24). **Consideration this time was MIS-C.** Patient was referred to Pedia Cardio and 2D echocardiogram with Doppler studies revealed small pericardial effusion. ECG showed sinus arrhythmia. Additional laboratories done: Trop I : <4.9 (NV <25), CPKMB: 22 (NV 7-25), **NTProBNP: 1648.9 (NV 0-125).**

After a few hours, upon reassessment, patient was noted to have **slurred speech and asymmetrical face**. On neurologic exam, MSE: **GCS 14 (E4 V4 M6)** awake, conversant but with **slurring of speech**; Cranial Nerves: I: not tested, II & III: Pupils 2-3mm EBRTL, III, IV, VI: EOMS intact, V: not tested, **VII: With facial asymmetry, Shallow nasolabial fold on the left,** VIII: Gross hearing intact, IX, X: uvula and palate midline, intact gag reflex , XI: not tested, XII: not tested; Motor: No atrophy, fasciculations and tremors noted; MMT able to move all extremities; Sensory: moves upon pain stimulus; Deep Tendon Reflexes: +2 (Normal); Cerebellar: No nystagmus, with slurred speech ; No drooling at the time of examination. Patient was referred to a Pediatric Neurologist and was transferred to Pediatric Intensive Care Unit for closer monitoring.

Course in the PICU

Upon arrival at the PICU, no recurrence of fever episodes. patient seen awake, not oriented to person and place, confused, and slow to respond. On physical examination with the ff VS: BP 102/69 HR 87 RR 17-19bpm T36.8, SpO2 100% on room air. **Neurologic Exam:** MSE: GCS 14 (E4M4V6), intact cranial nerves (No gross facial asymmetry), the rest of the neurological and physical examination were unremarkable. CT scan with contrast facilitated which showed **no evidence for acute territorial infarct, intracranial hemorrhage, focal mass lesion,** or abnormal enhancement; adenoid hypertrophy. Two hour Video EEG showed **abnormal generalized delta-theta slowing of the background activity and focal delta slowing over the frontal and temporal regions.** This suggests **mild to moderate generalized cerebral dysfunction** of nonspecific etiology. There is additional finding on nonspecific localized cerebral dysfunction over the bilateral frontal and temporal regions. No focal epileptiform discharges were seen. **Assessment: Viral vs. Bacterial Encephalitis.** Cefuroxime was shifted to Ceftriaxone 100mg/kg/day every 12 hours and patient as started on Acyclovir 30mg/kg/day every 8 hours. Patient was subsequently noted to have longer interval of febrile episodes, with isolated fever Tmax 38.3C for the next 3 days.

On the sixth hospital day, patient underwent lumbar puncture**,** results were: **CSF Protein 55.4 (8-32) CSF Glucose 72.0 (60-80)** CBG 138, CSF Total Cell Count: 76 cells/uL, **WBC Count: 56 cells/uL - ALL Lymphocytes,** RBC Count: 20 cells/uL, CSF GS No microorganism, Cryptococcal Latex Agglutination: Negative, Neisseria Meningitidis W135: Negative, E.coli: Negative, Strep pneumoniae: Negative, Hib Type B Antigen: Negative, Strep Group B: Antigen Negative, CSF MTB PCR: Negative, Japanese Encephalitis NEGATIVE, Meningoencephalitis panel, TB PCR, and SARS Cov antigen were all NEGATIVE. Ceftriaxone continued and Acyclovir was discontinued.

On the seventh hospital day, patient was awake and active, responding to questions appropriately but slowly GCS 15. Mother reports that patient wakes up for meals and when awake, patient seems lively and is conversant though reports has some lapses in terms of recalling names (sometimes forgets own name/mother's name). Patient was transferred out to the regular room.

On the eighth hospital day (from initial admission to the PICU), patient woke up with a **severe vague headache** associated with decrease in appetite. No loss of consciousness, no diplopia, no vomiting noted. On examination, patient inconsistently follow commands, verbalized he has a headache, was able to take sips of water when asked to but refused when given food. Patient was GCS 9 E2V3M4 eyes shut tightly when asked to open, does not respond to questions but shouts with incomprehensible sound to pain, withdraws to pain. Neuro AMD updated. Patient was started with Mannitol at 2.5cc/kg/dose every 6 hour and for PICU readmission for closer monitoring. Upon readmission at the PICU, patient was seen to be grimacing, complains of pain, verbalizes pain. On neurologic exam, MSE: GCS 12 (E4 V4 M4). Cranial Nerves: I: not tested, II & III: Pupils 2-3mm EBRTL, III, IV, VI: EOMS intact, V: not tested, VII: With facial asymmetry, Left side of the face shallow, VIII: Gross hearing intact, IX, X: uvula and palate midline, intact gag reflex , XI: not tested, XII: not tested; Motor: No atrophy, fasciculations and tremors noted; MMT able to move all extremities; Sensory: moves upon pain stimulus; Deep Tendon Reflexes: +2 (Normal); Cerebellar: No nystagmus, with slurred speech ; No drooling at the time of examination. Patient was scheduled for MRI with contrast. Final result showed: Non-enhancing T2W\FLAIR hyperintensities scattered in cortical-subcortical regions of bilateral cerebral hemispheres (more in the left), right side of the midbrain and bilateral cerebellar hemispheres. Primary radiologic impression is still encephalitis, probably viral, although other etiologies of non-specific inflammatory process is not ruled out. Normal-sized ventricles with no evidence of hydrocephalus or periventricular edema. Mannitol continued, with no note of any hypotensive episodes.

On the ninth hospital day, E4 V4 M5 (GCS 13), still with increased sleeping time; no oral intake; still cannot recognize mother.

On the tenth hospital day, still noted to be sleeping most of the day, however now able to eat; still cannot recognize mother, refers to her as “aunt”. Ordered Mannitol to be given for 5 days. Continued Diazepam as needed for frank seizure. Sent out for sample for **CSF oligoclonal panel (result 12/27) and anti-NMDA receptor test** (sent out to HighPrecision, will send to France; result after 1 month).

On the eleventh hospital day, patient was still with febrile episodes (Tmax 38.7C). GCS15 with sustained wakefulness, appropriate response to questions, oriented to place and time however still with episodes of irritability/shouting when touched (change of diapers, giving of meds); no recurrence of headache; Maintained on Mannitol 2.5mkdose every 6 hours. Ceftriaxone was discontinued, to observe fever pattern off antibiotics. Patient then underwent a Naproxen test (½ tab every 12 hours for 3 days).

On the twelfth hospital day, GCS 15, patient is noted to be less irritable, answers to questions appropriately. Mannitol was completed in 5 days. Still awaiting CSF Japanese Encephalitis test (due 12/31); Oligoclonal panel (due 12/29); anti NMDA receptor test (1/2023). Naproxen test discontinued, patient was started on Ibuprofen round the clock for 2 days.

On the thirteenth hospital day, GCS 15, coherent. Noted oligoclonal panel test: NEGATIVE. Medical and Family conference was held. Based on the clinical signs and symptoms, CSF results, the impression of Neurology service is more of **Viral encephalitis rather than Acute disseminated encephalomyelitis (ADEM) at this time**. To complete the work up for ADEM, a spinal MRI was requested.

On the fourteenth hospital day, the patient was 48 hours afebrile. Patient remained GCS 15, with appropriate response to questions and less irritability.

On the fifteenth hospital day, patient was noted to have no fever recurrence and is clinically stable. Patient responds appropriately to questions, oriented with no confusion. Patient was then subsequently transferred to the wards.

Course in the Wards

On the sixteenth hospital day, patient was noted to have some irritability but was much less than the previous days as described by mother. However, patient was still noted to have occasional unsustained cognition and official result of spinal MRI revealed **overall interval progression of the non-enhancing T2W/FLAIR hyperintensities** scattered in the **bilateral cerebral hemispheres, right midbrain, and bilateral cerebellar hemispheres**, previously ascribed to **encephalitis of possible viral etiology**. **MRI of cervical, thoracic, and lumbosacral area were unremarkable.** Ibuprofen was then discontinued. Methylprednisolone at 20mkdose was started for 3 days.

On the seventeenth hospital day, the patient was noted to have better disposition, tolerating full diet, awake, GCS15, and responding appropriately to questions, oriented with no confusion.

On the eighteenth hospital day, patient was referred to ophthalmology service and assessed to have no definitive signs of optic neuropathy at the time of examination. Patient was also referred to physical therapy for rehabilitation. Patient was assessed to be able to sit with support, wobbly in standing, can communicate but sometimes prefers to do more of hand gestures. Physical therapy advised upon discharge.

On the ninteenth hospital day, patient was then discharged stable.

Final Diagnosis:
VIRAL ENCEPHALITIS

LABORATORIES

LABORATORY FLOW SHEET

HEMATOLOGIC

CBC	Dec 16, 2022	Dec 17, 2022	Dec 19, 2022	Dec 20, 2022
Hemoglobin	12.1	11.5	11.8	11.3
Hematocrit	36.9	35.2	35.3	33.6
WBC	**33,030**	**23,600**	**19,920**	10,400
Neutrophils	91	93	87	65
Lymphocytes	6	4	9	25
Eosinophils	0			1
Monocytes	3	3	4	9
Platelet Count	485,000	517,000	672,000	388,000

INFECTIOUS

Dengue NS1 (December 16, 2022)	Negative
Dengue IgG/IgM (December 19, 2022)	Negative

	Dec 17, 2022	Dec 19, 2022	Dec 20, 2022	Dec 26, 2022	Dec 30, 2022
CRP Qualitative	<6	<6			
Procalcitonin	0.28	0.08		0.08	
IL-6			10.6		
ESR		65			
Blood CS		5 days no growth			5 days no growth

CSF Analysis (December 21, 2022)	
CSF Protein	**55.4 (8-32)**
CSF Glucose	**72.0 (60-80)**
CSF Gross Exam & Cell Count	
Total Cell Count:	76 cells/uL
WBC Count:	**56 cells/uL - ALL Lymphocytes**
RBC Count:	20 cells/uL
CSF GS	**No microorganism**
CSF CS	**3 Days No Growth**
Cryptococcal Latex Agglutination	Negative
Neisseria Meningitidis W135	Negative
E.coli	Negative
Strep pneumoniae	Negative
Hib Type B Antigen	Negative
Strep Group B Antigen	Negative
CSF Meningitis/Encephalitis Panel Cytomegalovirus (CMV)	Not Detected

Enterovirus	Not Detected
Herpes Simplex Virus 1 (HSV-1)	Not Detected
Herpes Simplex Virus 2 (HSV-2)	Not Detected
Human Herpesvirus 6 (HHV-6)	Not Detected
Human Parechovirus	Not Detected
Varicella Zoster Virus (VZV)	Not Detected
Escherichia coli K1	Not Detected
Haemophilus iInfluenzae	Not Detected
Listeria monocytogenes	Not Detected
Neisseria meningitidis	Not Detected
Streptococcus agalactiae	Not Detected
Streptococcus pneumoniae	Not Detected
Cryptococcus neoformans/gattii	Not Detected
Jap B IgM, MTB PCR, COVID	Negative

12/28 Oligoclonal Panel	Negative
12/26 Anti-NMDA	Negative

Urinalysis	December 16, 2022	December 28, 2022
Color	Yellow	Yellow
Transparency	Clear	Clear
Specific Gravity	1.024	1.019
pH	7.0	7.5
Glucose/Bile/Nitrites/Blood/ Leukocytes	Negative	Negative
Protein	trace	Negative
WBC	1	0
RBC	0	0
Epithelial Cells	0	0
Bacteria	0	1

METABOLIC

	Dec 16, 2022	Dec 19, 2022	Dec 20, 2022	Dec 23, 2022	Dec 25, 2022
Sodium	137.1	131	143	136	140

Potassium	3.9	4.0		4.1	4.5
Chloride		94			
Magnesium		2.2			
Ionized Calcium		1.20			

	Dec 19, 2022	Dec 21, 2022	Dec 23, 2022	Dec 25, 2022
BUN				9
Crea	0.31			0.39
ALT	13			
CBG		138	118	

CARDIAC

2D Echo December 19, 2022	nmm Small pericardial effusion, EF 82% LCA 3.01mm, LAD2.65mm, RCA1.81mm,LCX2.21mm
ECG January 1, 2023	Sinus arrythmia

IMAGING STUDIES:

December 17, 2022	
Chest Xray	No acute focal lung opacities or consolidation
Abdominal Xray	Non-obstructive bowel gas pattern
December 19, 2022	
Cranial CT Scan with contrast	No evidence for acute territorial infarct, intracranial hemorrhage, focal mass lesion or abnormal enhancement. Adenoid hypertrophy
December 24, 2022	
Cranial MRI with contrast	Cranial Non-enhancing T2W\FLAIR hyperintensities scattered in **cortical-subcortical regions of bilateral cerebral hemispheres (more in the left), right side of the midbrain and bilateral cerebellar hemispheres**. **Primary radiologic impression is still encephalitis, probably viral, although other etiologies of non-specific inflammatory process is not ruled out**. Normal-sized ventricles with no evidence of hydrocephalus or periventricular edema. No abnormal parenchymal or meningeal enhancement

December 31, 2022	
Brain MRI	Overall interval **progression of the non-enhancing T2W\FLAIR hyperintensities scattered in the bilateral cerebral hemispheres, right midbrain, and bilateral cerebellar hemispheres**, previously ascribed to encephalitis of possible viral etiology, although other non-specific inflammatory processes cannot be ruled out. Normal-sized ventricles with no evidence of hydrocephalus or periventricular edema. No abnormal parenchymal or meningeal enhancement
Cervical	Unremarkable MRI study of the cervical spine. No abnormal intradural or extradural enhancement appreciated
Lumbosacral	Unremarkable MRI study of the lumbosacral spine. No evident abnormal extradural or intradural enhancement. Left renal cyst
Thoracic spine	Unremarkable study of the thoracic spine. No evidence of abnormal extradural or intradural enhancement.

ELECTROENCEPHALOGRAM

2 hour VEEG December 20, 2022	This interictal EEG is abnormal showing generalized delta-theta slowing of the background activity and focal delta slowing over the frontal and temporal regions. This suggests mild to moderate generalized cerebral dysfunction of nonspecific etiology. There is additional finding on nonspecific localized cerebral dysfunction over the bilateral frontal and temporal regions. No focal epileptiform discharges were seen. This 2-hour video EEG did not document any clinical and electrographic seizures. Correlation with clinical history is suggested
8 hour VEEG December 13, 2022	This interictal EEG is abnormal showing generalized delta-theta slowing of the background activity and focal delta slowing over the frontal and temporal regions. This suggests mild-moderate generalized cerebral dysfunction of nonspecific etiology. There is additional finding on nonspecific localized cerebral dysfunction over the bilateral frontal and temporal regions. No focal epileptiform discharges were seen. This 8-hour video EEG did not document any clinical and electrographic seizures. Correlation with clinical history is suggested. A previous 2 hour video EEG done last December 15, 2022 was reported abnormal with the same findings.