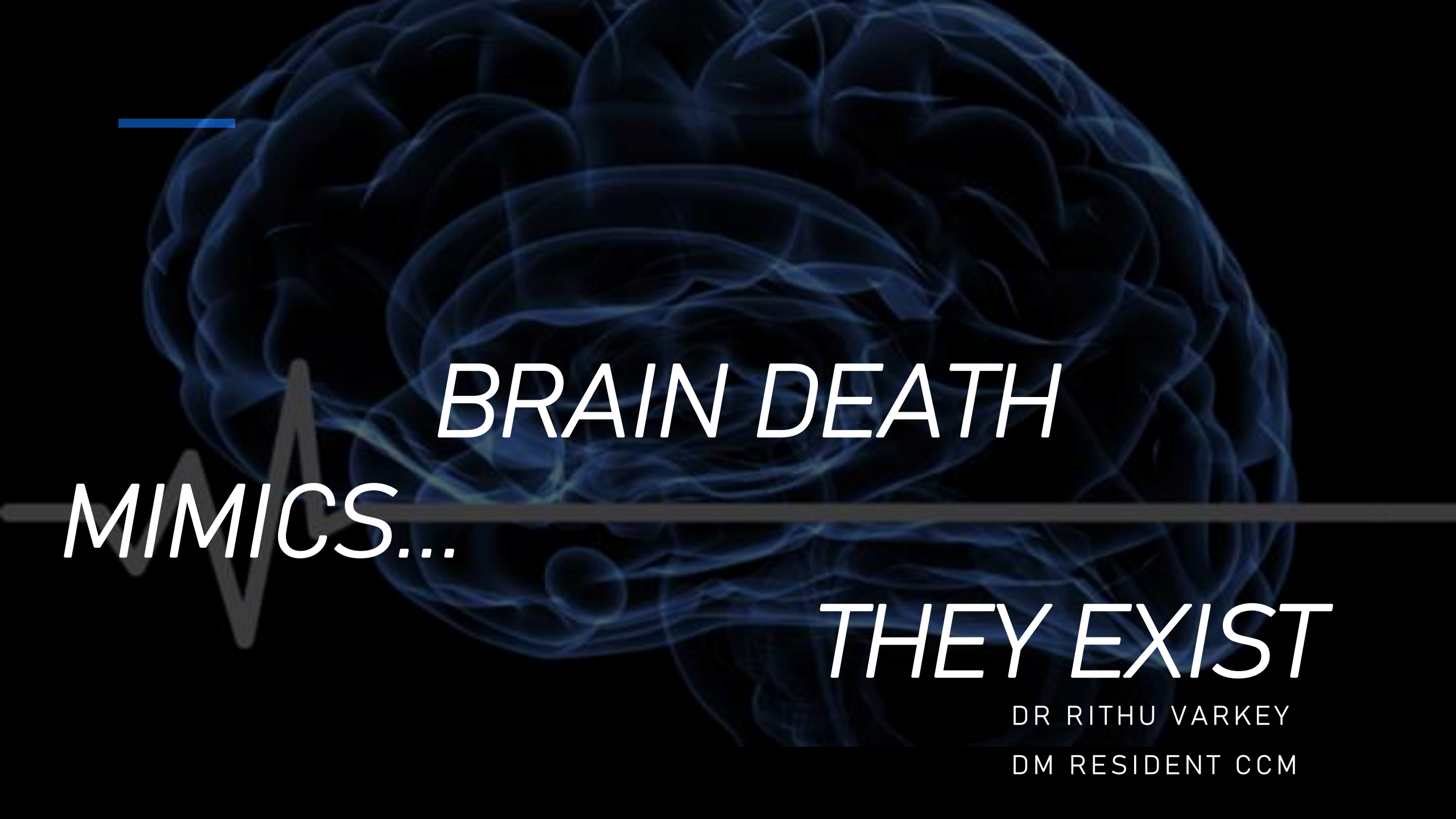


BRAIN DEATH MIMICS...

THEY EXIST

DR RITHU VARKEY

DM RESIDENT CCM

47 year old, Male, Farmer

- Presented with c/o weakness of all 4 extremities after waking up from sleep, Lower limb> upper limb
- Followed by Shortness of breath after 2-3hours
- H/o fever, vomiting, diarrhoea 6 days prior to the onset of weakness
- No h/o trauma, exposure to toxins or drugs / unknown bites

- K/c/o HTN on Telmisartan 40mg OD X 3yrs
- H/o Right MCA infarct ,2022 –no residual weakness ,

  on Ecosprin AV 75/10 OD

GENERAL & CNS EXAMINATION

On arrival to ICU

Conscious, oriented

TEMP: 98.6F

PR 82/min

BP 130/80mm hg

SPO2 95% ,NRBM 15L O2/min

RR 34b/min

RBS 127mg/dl

No bite marks

GCS :E4V5M1
Pupils B/L reactive
B/L Facial nerve LMN palsy +
Neck rigidity absent
No spinal tenderness

SENSORY:
Light touch ,Pain ,Temperature ,Vibration , Proprioception
- **ABSENT BELOW T10**

CNS EXAMINATION- MOTOR SYSTEM

TONE : FLACCID

POWER		
	RIGHT	LEFT
LOWER LIMB: Ankle	0/5	0/5
Knee	0/5	0/5
Hip	0/5	0/5
Upper limb: SHOULDER	2/5	2/5
ELBOW	2/5	2/5
WRIST	2/5	2/5

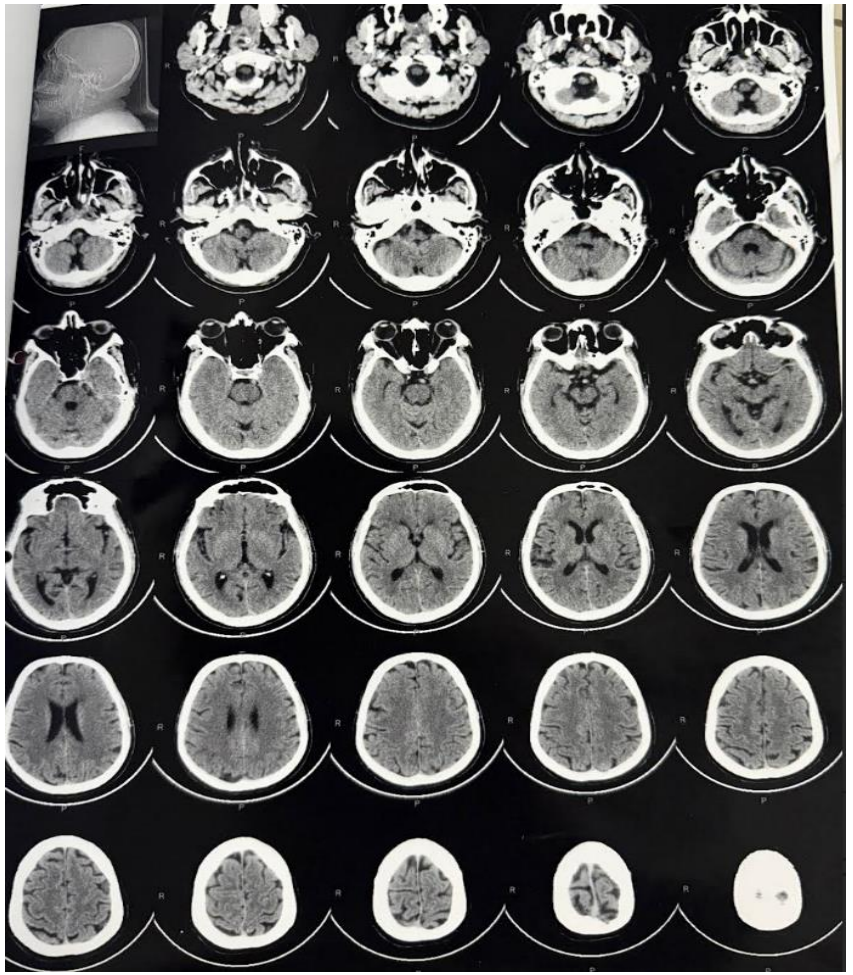
REFLEXES		
	RIGHT	LEFT
ABDOMINAL, CREMASTERIC	0	
PLANTAR	MUTE	MUTE
BICEPS, TRICEPS	+1	+1
KNEE	0	0
ANKLE	0	0

INVESTIGATIONS

- HB 12
- TC 12600 ⇧
- PLATELETS 250000
- CRP 18 ⇧
- Na/ K 136/3.6/ Cl 108
- Ca 8.6/Mg 2.5/ P04 3
- CREATININE 0.8
- LFT –WNL
- ABG : PH 7.31/PCO2 34/PO2 60/HCO3 17/ lac 0

– COMPENSATED NORMAL ANION GAP METABOLIC ACIDOSIS

- ECG: NSR



CT BRAIN : Chronic ischemic changes.

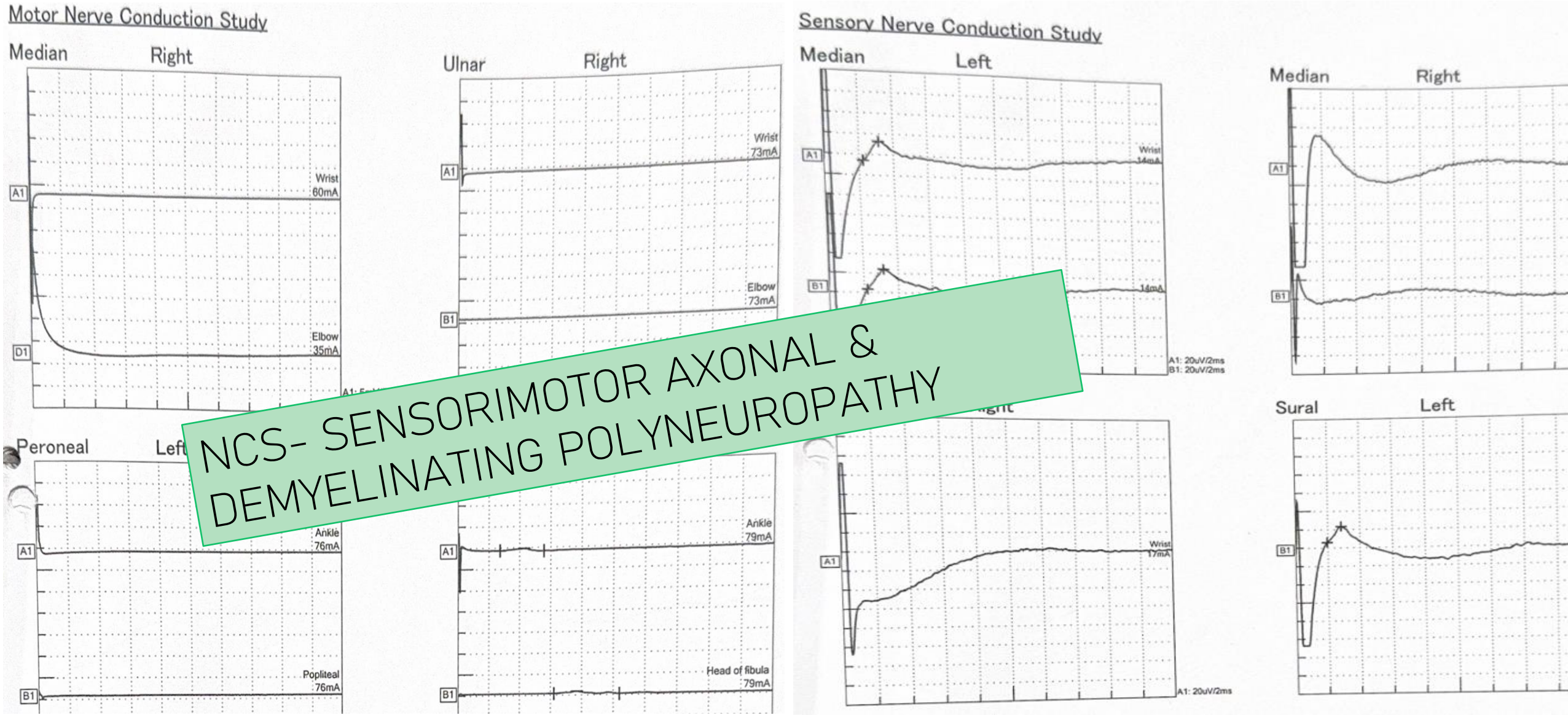
- ✓Guillain-Barre Syndrome
- ✓OP Poisoning
- ✓Snake envenomation
- ✓Drug Intoxication
- ✓Periodic Paralysis Syndrome

IN ICU...

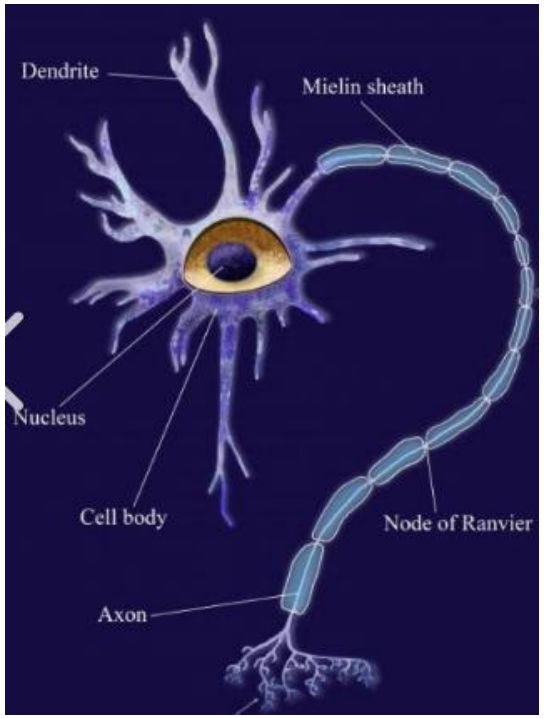
- Electively intubated I/v/o worsening Muscle weakness & Type II Resp failure
- On Volume Control mode : FIO2 60%/ PEEP 6/ RR 18/ TV 400
- MRI BRAIN with Whole Spine Screening : WNL
- CSF Analysis : raised protein (65) with TLC 14, Lymphocyte 90%
- ANA , Acetylcholine esterase, urine for porphyrins and toxicology screen- send.
- 2D ECHO: EF 60%, NO RWMA, MILD PAH

MRI BRAIN : Chronic ischemic changes. Age related cortical atrophy.

NERVE CONDUCTION STUDY



NCS- SENSORIMOTOR AXONAL & DEMYELINATING POLYNEUROPATHY



DIAGNOSIS: AMSAN GBS

IN ICU....

PLASMAPHERESIS – initiated

Empirical Abx, DVT prophylaxis, RT Feeds ,ICU Bundle care

After 3 cycles of PLEX,

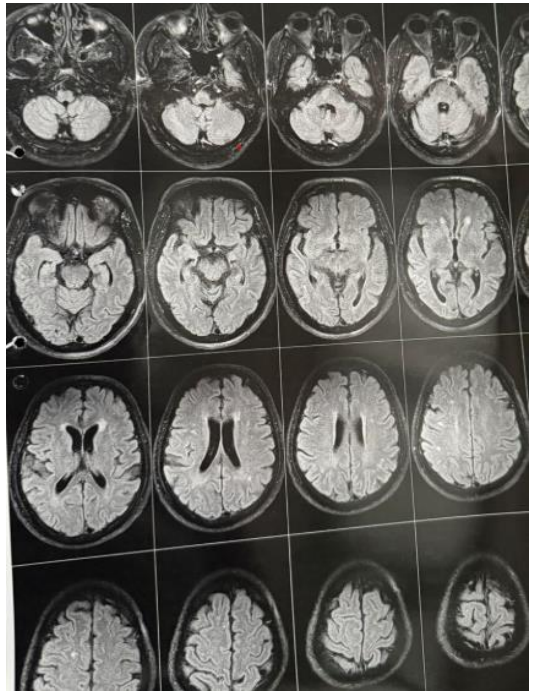
GCS deteriorated E1VTM1,

Pupils dilated, fixed

Brainstem reflexes -

Spontaneous respiratory trigger - , Cough reflex -

???? BRAIN DEATH



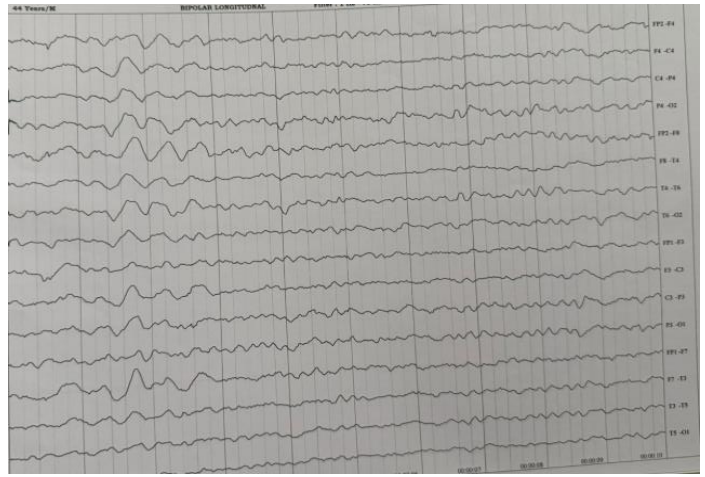
RPT CSF STUDY-
Proteins 389, TLC 2,
L 100%

BRAIN DEATH

URINE TOXICOLOGY,
PORPHYRINS,
ANA,VASULITIS
PANEL -NEGATIVE

RPT MRI- C/C
ISCHEMIC
CHANGES

EEG-
Generalised
slowing

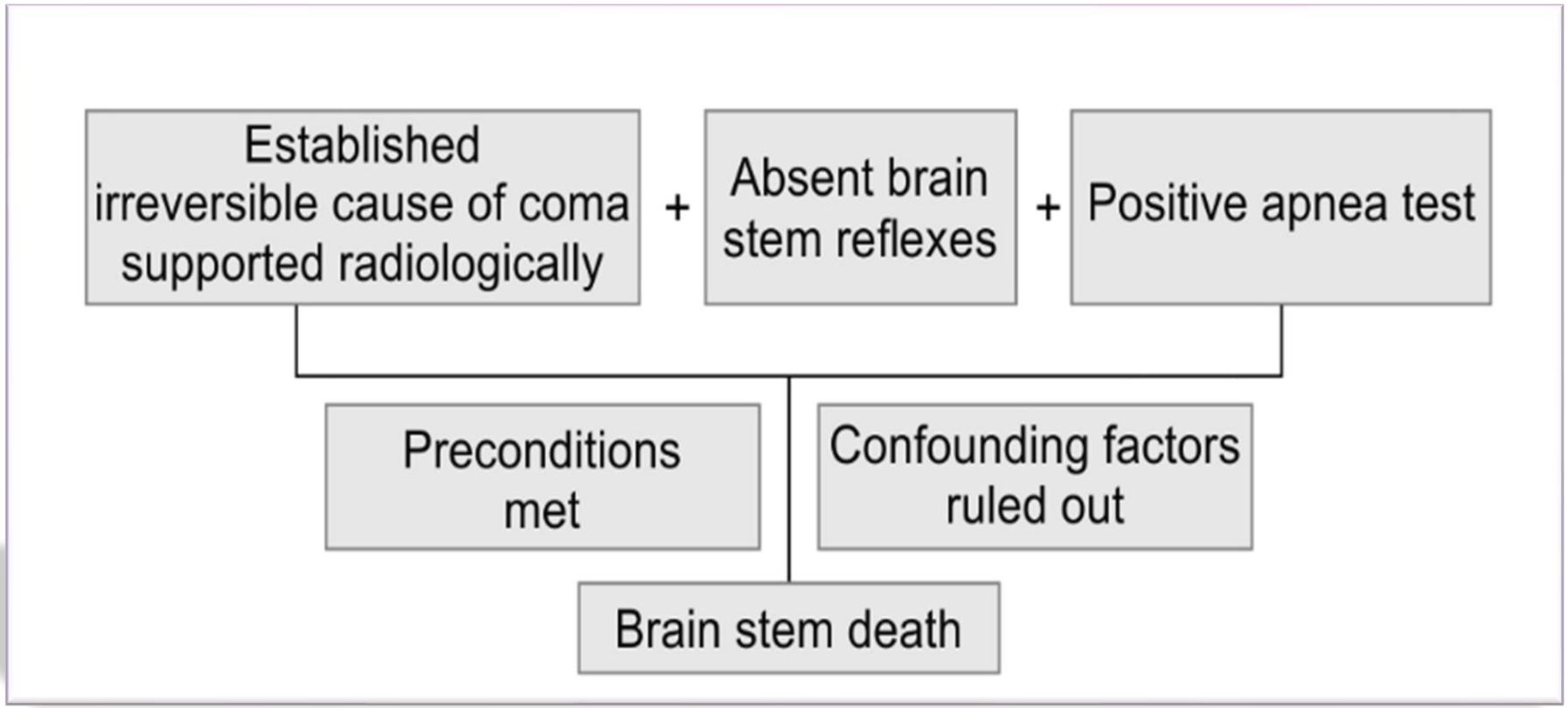


24-OCT-25

BRAIN DEATH CRITERIA

Cerebral Hemorrhage

Cerebral Anoxia



Ref :UK guidelines For Brain Death, Code of Practice by Academy of Medical Royal Colleges, updated 1 January

CONFOUNDING FACTORS

Shock/hypotension

Hypothermia temperature <32°C (core temperature)

Neurotoxic snake envenomation

Brain stem encephalitis

Guillain–Barre' syndrome

Encephalopathy

Severe hypophosphatemia

Drugs known to alter neurologic, neuromuscular function, and electroencephalographic testing, such as anesthetic agents, neuro-paralytic drugs

Hypoglycemia

- Drug Intoxication
- Sedative overdose
- Hypothermia <32–34°C
- Myxedema coma (severe hypothyroidism)
- Locked-In Syndrome
- Guillain-Barré Syndrome
- Bickerstaff Encephalitis
- Snake envenomation

BRAIN DEATH MIMICS

Brain Death Mimics – Drugs/ Toxins

CNS Depressants

- Barbiturates :Phenobarbitol, thiopental
- Benzodiazepines :Diazepam, Midazolam
- Opioids :morphine, fentanyl

Anesthetic Agents

- Propofol, Ketamine
- Inhalational agents

Neuromuscular Blocking Agents

- Vecuronium, Rocuronium, Pancuronium, Succinylcholine

Tricyclic Antidepressants (TCAs)

- Amitriptyline, nortriptyline

Others

- Baclofen
- Lithium (toxicity)

Toxins

- Organophosphates
- Tetrodotoxin poisoning (from certain fish

Case continuation....

Continued with PLEX, P/C Tracheostomy done, ICU bundle care ,DVT prophylaxis,

After 5 cycles PLEX-

pupils reactive, cough reflex + E1Vt M1

After 7cycles PLEX- involuntary mvts of head+,E1VtM1, arreflexia

9cycles PLEX-E4VtM1, obeying simple commands, Spontaneous trigger+

PEG Inserted

Total PLEX 11 cycles

Multiple weaning trial given- failed

IVIG 0.4 gm/kg X 5 days

Case continuation…

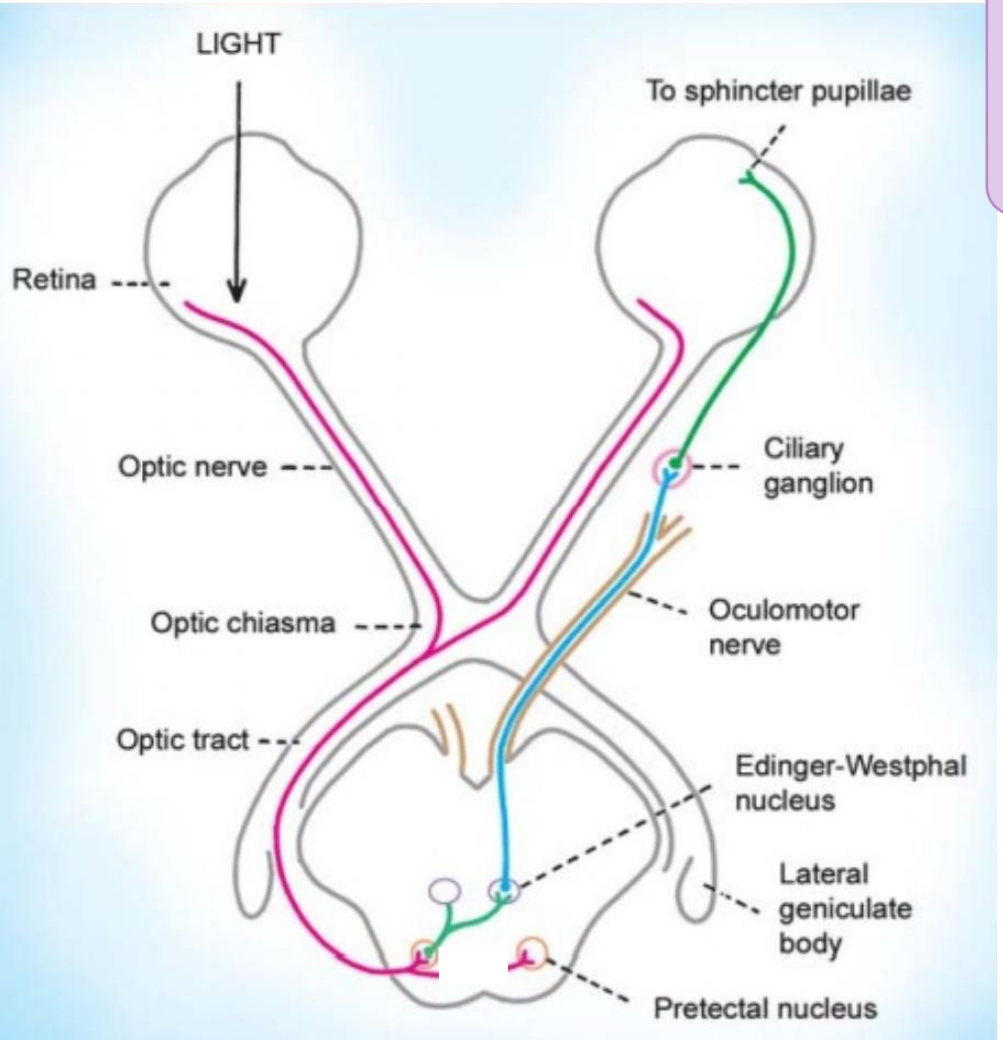
E4VtM1,Obeying simple commands, arreflexia, Plantar mute, Mechanical ventilation continued, TT care, PEG feed, Physiotherapy

Gradually Weaning done, PSV-->BIPAP--> TV 5L O2,

Duration of MV: 93days
Duration of ICU stay: 102days

Maintaining saturation on TV off O2, Shifted to Ward, Physiotherapy, 24-OCT-25 Enteral feeding

Why pupillary reflex is absent ?



Autoimmune targeting of peripheral autonomic fibers
Autoantibodies that targets peripheral somatic nerves can *"spill over"* and include **autonomic fibers**

Parasympathetic efferent fibers to the pupil, especially **postganglionic fibers (ciliary nerves), are peripheral in nature and potentially vulnerable**

Demyelination/ axonal damage leads to **Conduction block or loss of signal transmission** , leading to **failure of pupil constriction** (Areflexia)

DISCUSSION

- GBS mimicking brain death is an **extremely rare occurrence**, with only ~20-30 cases documented in literature so far

- Fulminant GBS — axonal pathology, rapi
failure, cranial nerve involvement, autono

A case of fulminant Guillain-Barré syndrome presenting as brain death

Brain death as a presentation of fulminant Guillain Barré syndrome is rare with only twenty cases reported in the literature. This condition should be treated immediately despite high mortality as survivors recover with early

Case Report J Med Cases. 2015;6(7):320-321

Fulminant Guillain-Barre Syndrome Mimicking Clinical Brain Death: A Rare Condition With Bad Outcomes

GBS mimicking clinical brain death is rare occurrence and about 20 cases have been reported in the literature. This condition has a poor recovery rate and a high mortality, particularly, related to dysautonomia [1]. Outcomes of this subset of

Review > Intensive Care Med. 2000 May;26(5):623-7. doi: 10.1007/s001340051213.

Fulminant Guillain–Barré syndrome mimicking cerebral death: case report and literature review

patients have been described by Vargas et al in the largest case series of 13 patients in 2000. Of the three deaths, two died from cardiac arrest due to dysautonomia and one died due to large anterior wall MI. Only two patients recovered with mi-

CONCLUSION

- Brain death is a **clinical diagnosis** that requires **strict criteria** and **exclusion of mimics**.
- **Prerequisites must be met** to ensure the cause is irreversible and not due to confounders.
- Ruling out **brain death mimics** is not optional — it is **essential** to prevent **catastrophic errors**.
- **Saving Lives :** Precise clinical assessment, timely **diagnosis,** Targeted management**, vigilant monitoring, structured multidisciplinary Team work.**

In critical care, every decision counts, every second matters and every LIFE IS PRECIOUS

- EMERGENCY MEDICINE
- NEUROMEDICINE
- CARDIOLOGY
- NEPHROLOGY
- TRANSFUSION MEDICINE
- RESPIRATORY THERAPIST
- PHYSIOTHERAPIST
- MICROBIOLOGISTS
- INFECTION CONTROL
- NURSING STAFF