KREP

2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

Case Presentation

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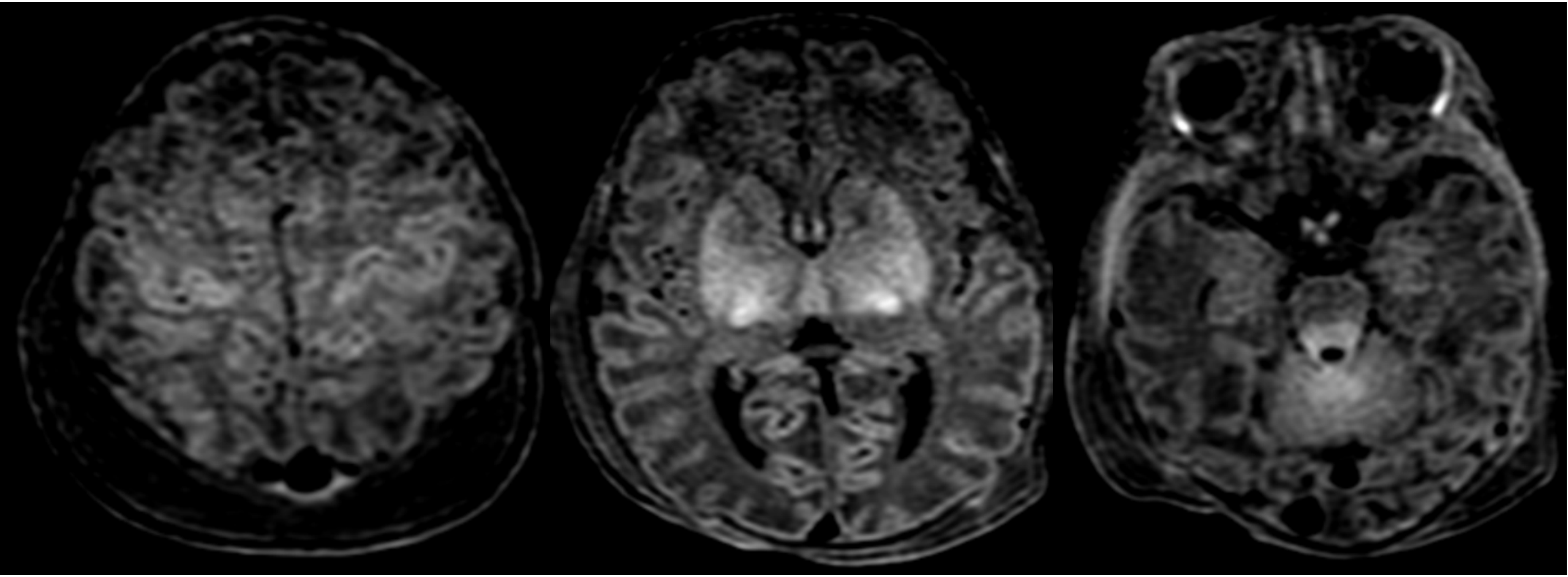
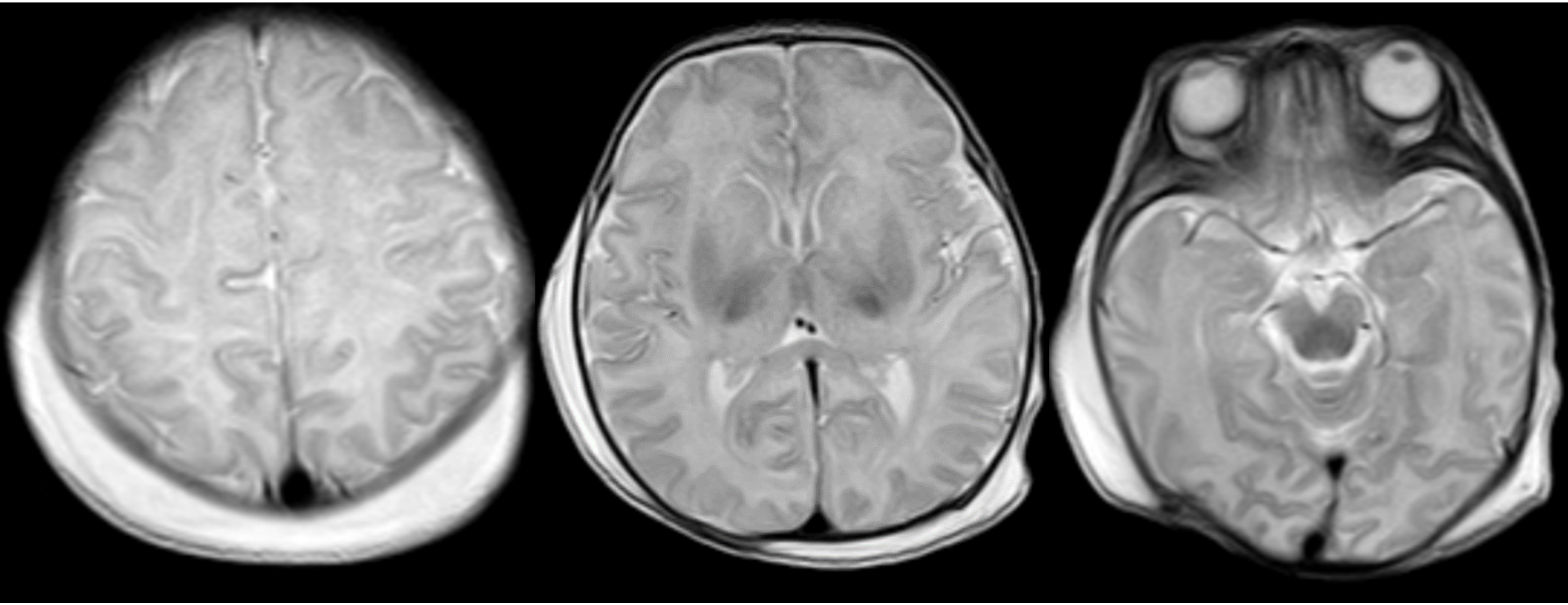
Case:1

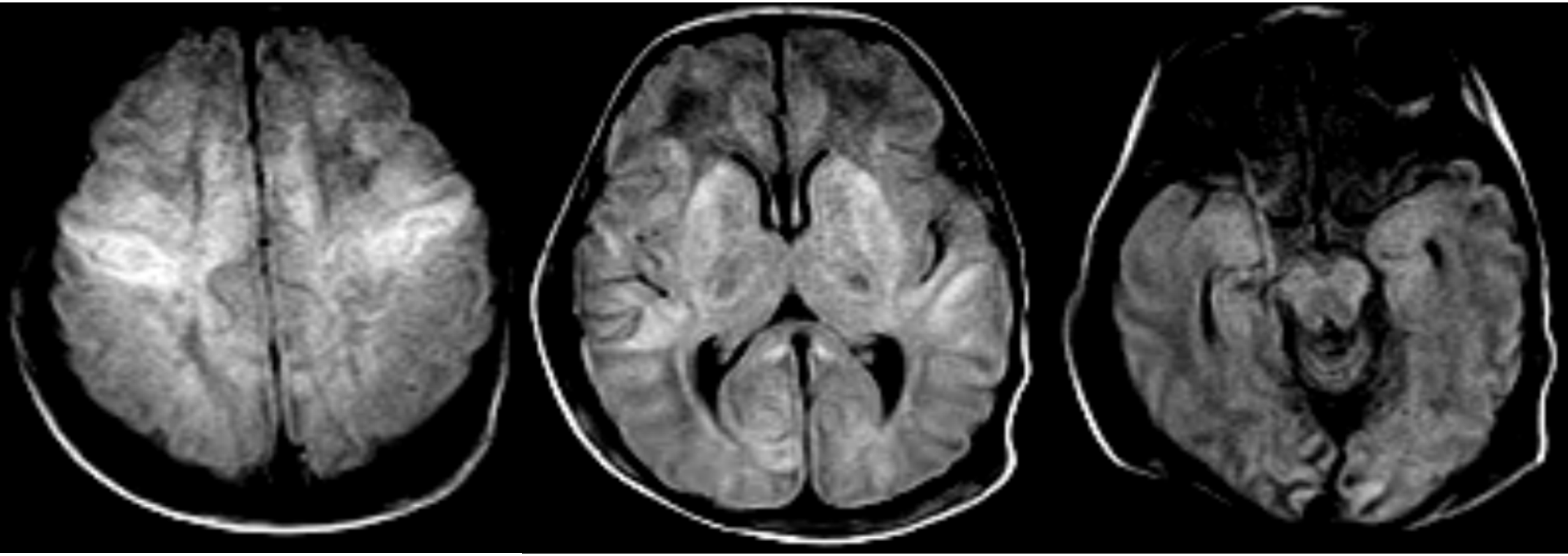
- 5days/Male
- Term/LSCS due to fetal distress and bradycardia
- Birth weight :2.8kg
- H/O Birth asphyxia, HIE –III
- Admitted in NICU :On mechanical ventilation
- Antenatal history : Normal
- CNS Examination :
  - Pupils –dilated and fixed
  - No activity
  - Absent cry
  - Hypotonic
  - Twitching /grinding /lip smacking +



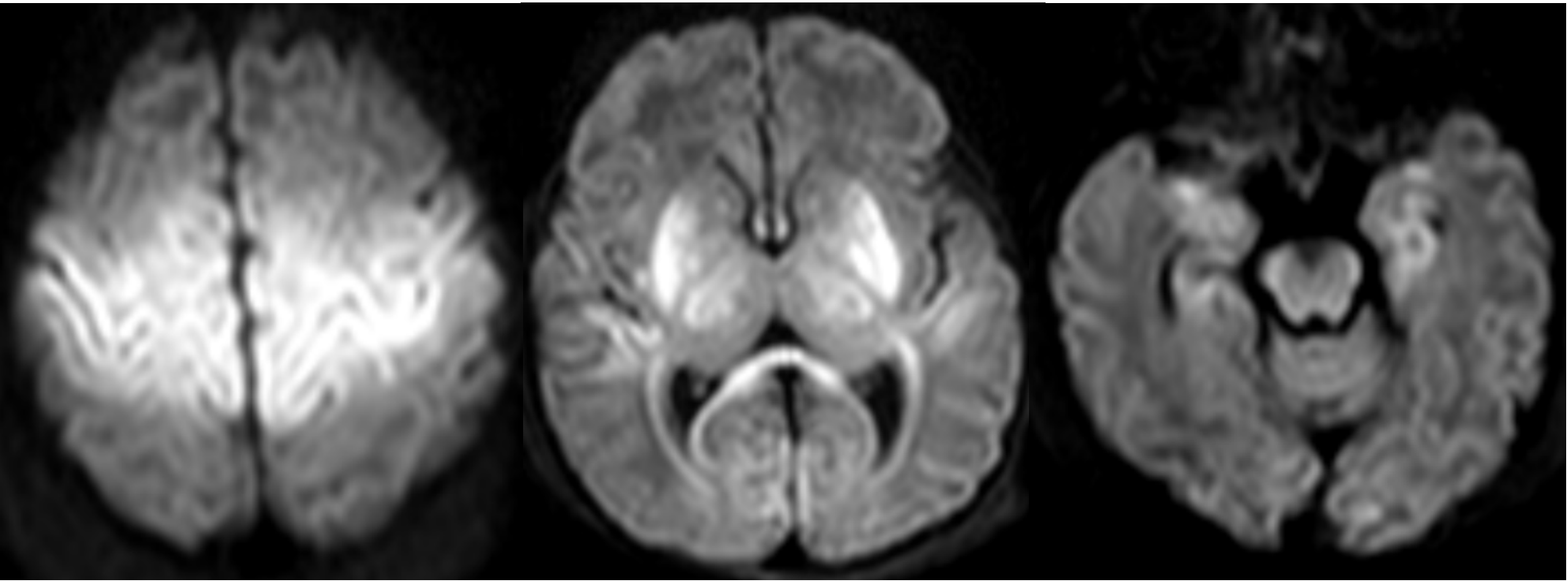
T1 AXIAL



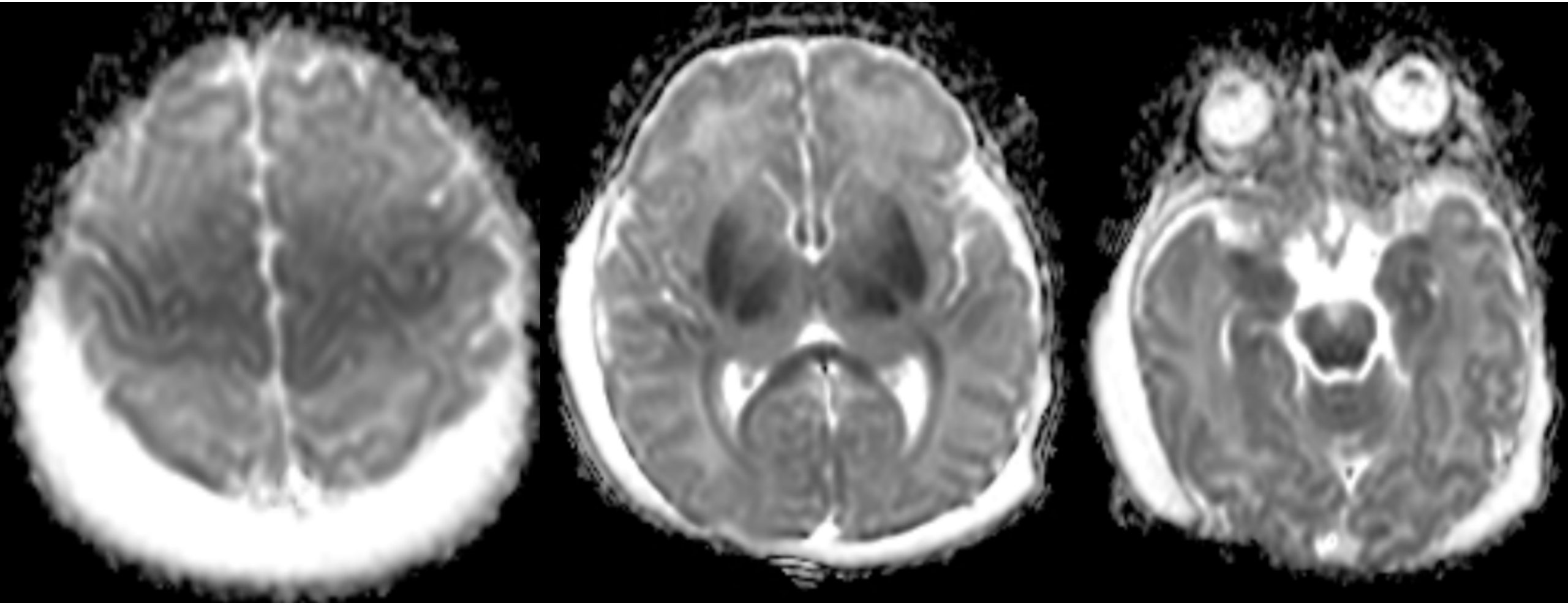
T2 AXIAL



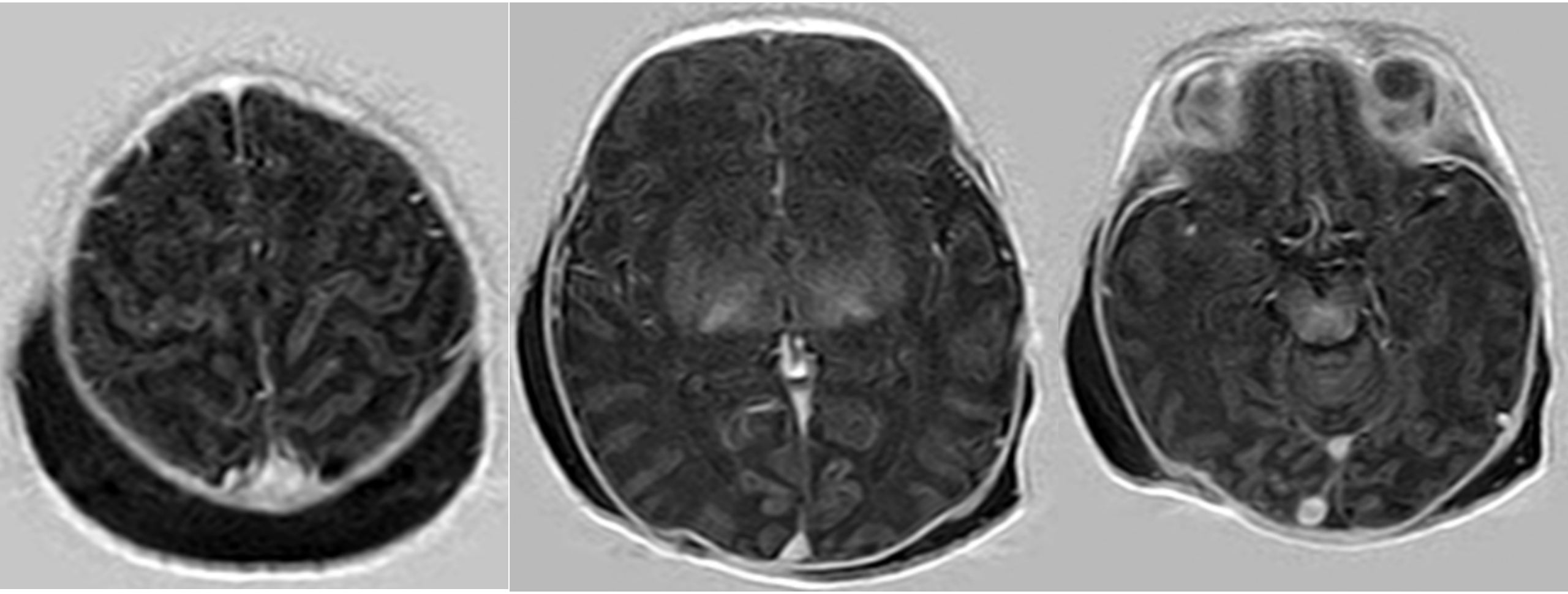
FLAIR AXIAL



DWI



ADC



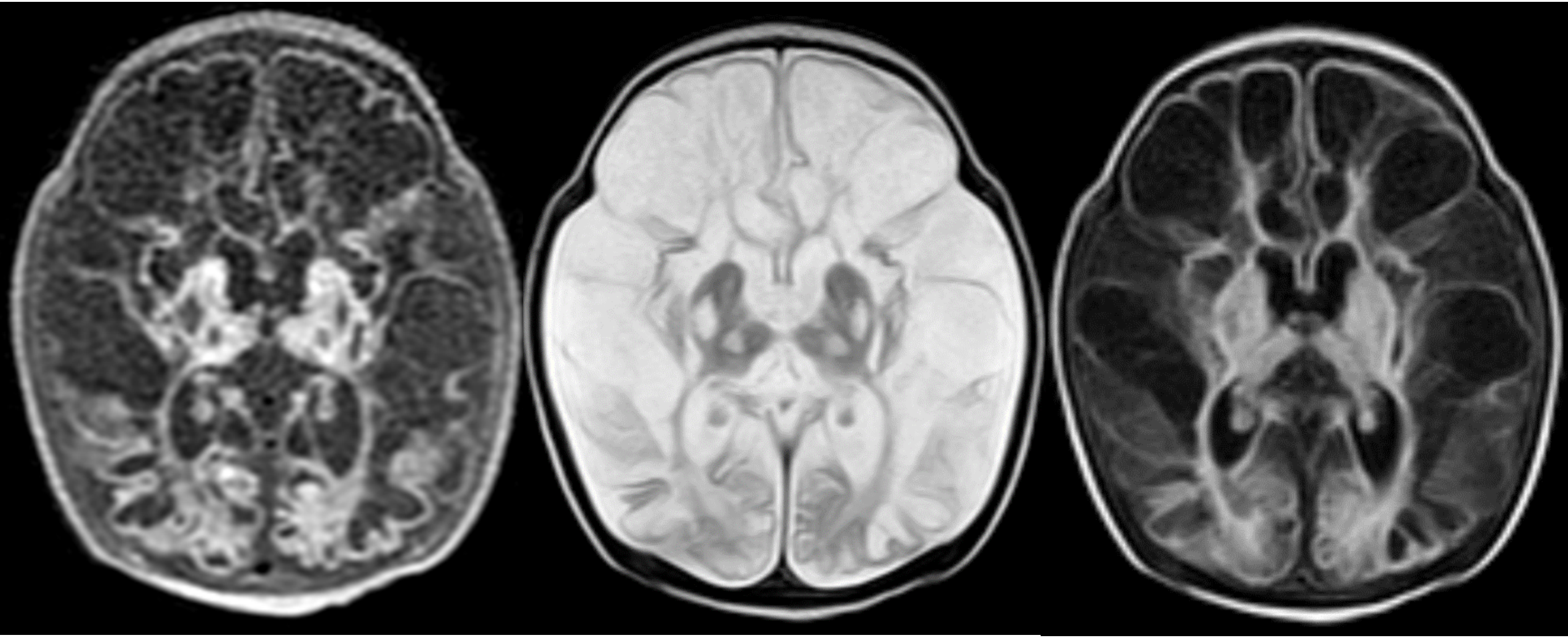
T1 IR

Findings:

- Symmetric diffuse areas of FLAIR hyperintensities showing true diffusion restriction in bilateral basal ganglia, external capsule, peri-rolandic gyri, splenium of corpus callosum, hippocampi and mesial temporal lobes → ***Severe hypoxic ischemic injury***
- Degree of myelination adequate for age
- Soft tissue swelling in subcutaneous plane of bilateral parietal regions crossing the suture lines, T2 hyperintense and T2 hypointense with suppression on FLAIR→ ***Caput succedaneum***

Case:2

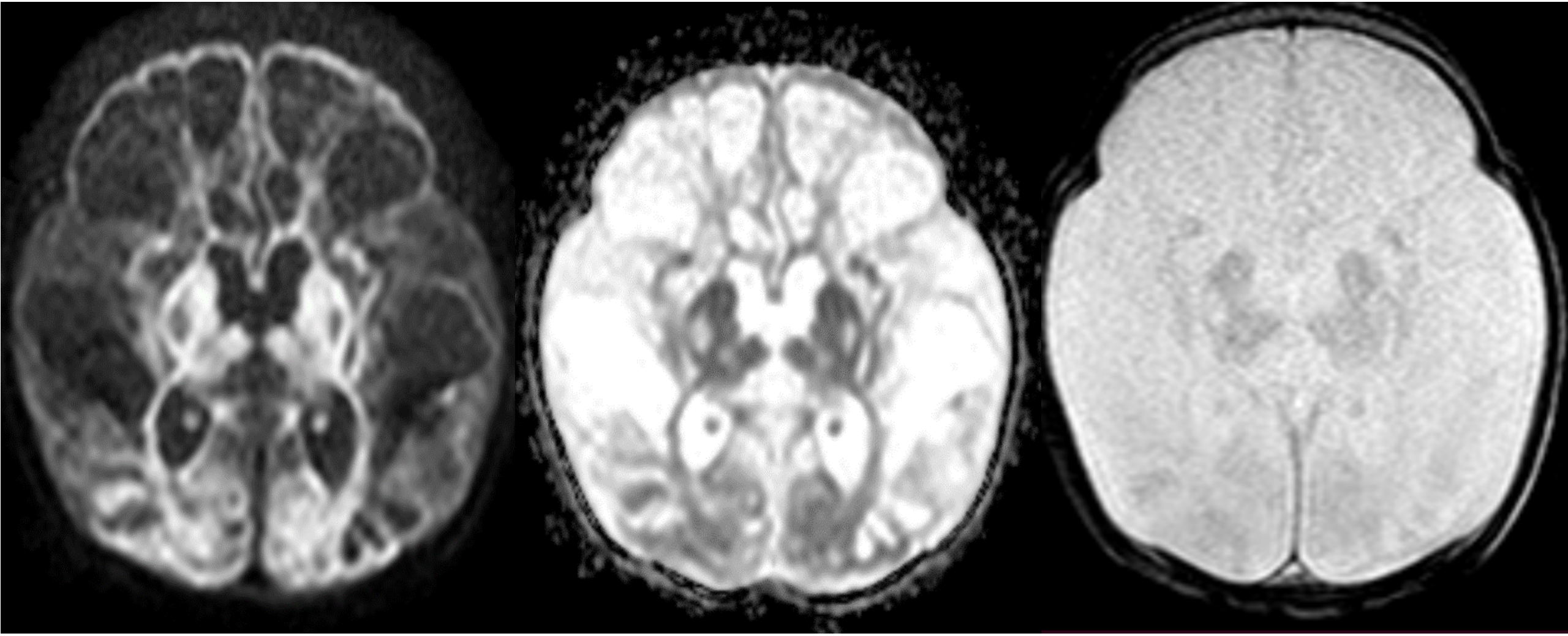
- 3Months / Male child
- S/L/Term/ NVD/ Birth weight :3.5kg
- Second degree consanguineous marriage
- H/O birth asphyxia, HIE stage-II
- H/O NICU admission +



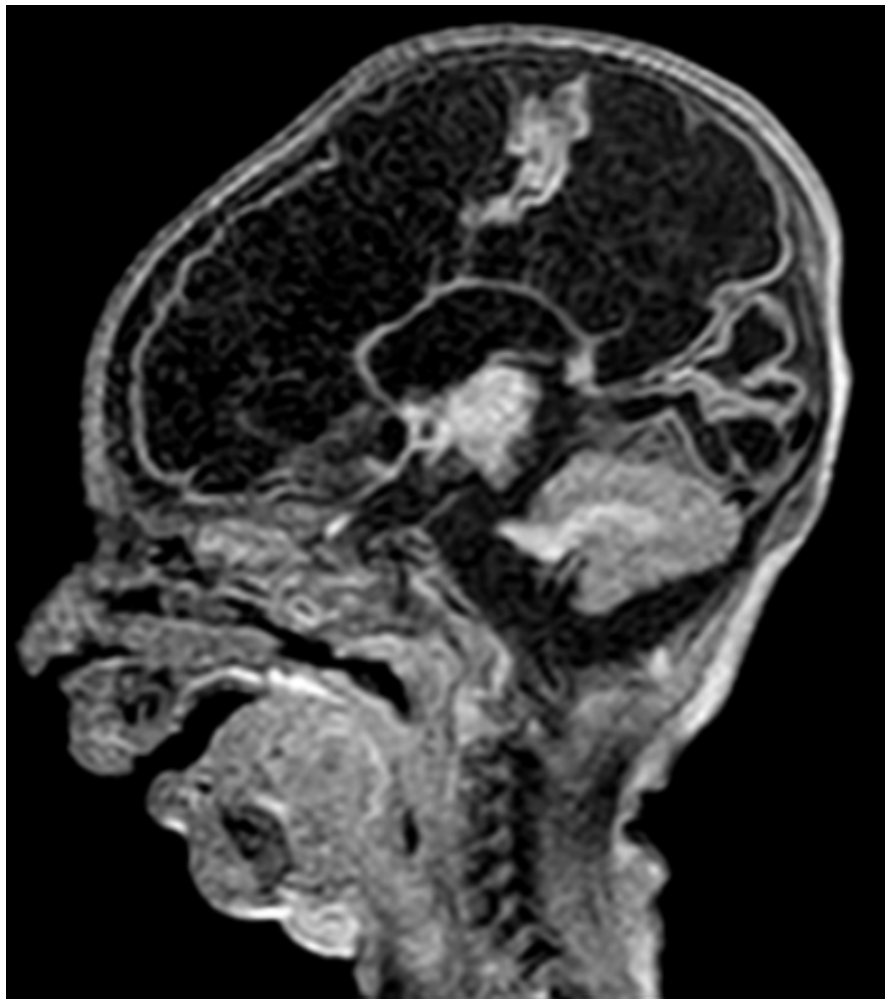
T1 AXIAL

T2 AXIAL

FLAIR AXIAL



DWI ADC GRE



T1 SAGITTAL

Findings:

- Multiple cysts of varying sizes and shapes diffusely involving the bilateral cerebral hemispheres and basal ganglia with thinning of cerebral cortex and relative sparing of cerebellum, midbrain, pons and medulla.
- Bilateral lateral, third and fourth ventricle and subarachnoid spaces appear prominent

→Multicystic encephalomalacia- Sequele of chronic hypoxic ischemic encephalopathy

Hypoxia-ischemia

Depletion of intracellular ATP

Membrane pump failure → **Massive intracellular influx of Na^+-ions**

Massive depolarization and **release of excitatory neurotransmitter glutamate**

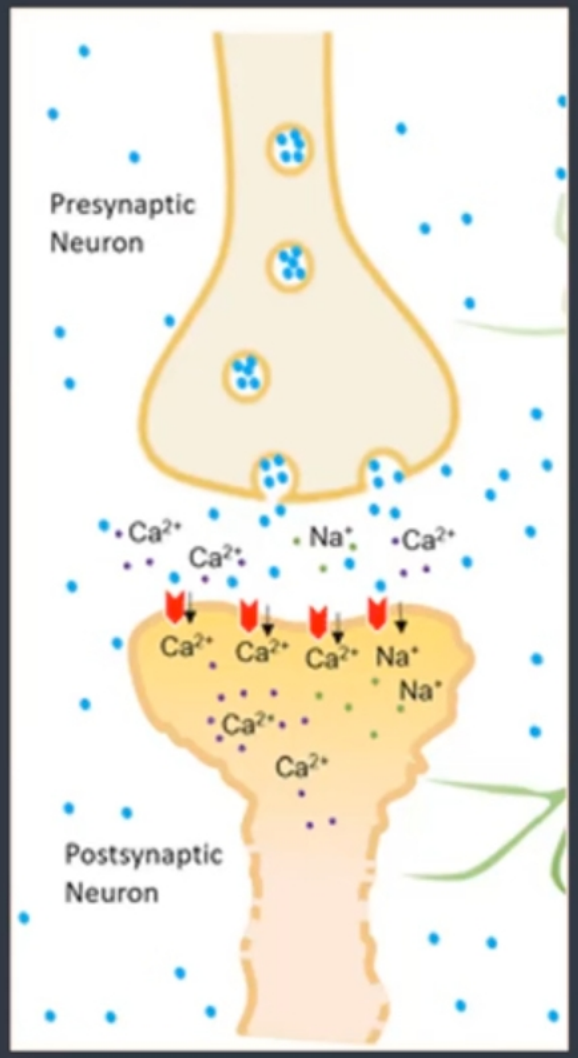
Massive intracellular influx of Ca^{2+}-ions in postsynaptic neurons

Activation of cytoxic cell processes

Intracellular influx of watermolecules → cell swelling

~Cytotoxic edema on MRI

Necrotic cell death



Perinatal Hypoxic-ischemic injury :

❖ **Global:**

✓ **Term newborn**

- Profound/ central pattern
- Watershed infarction
- Diffuse/ total pattern

✓ **Preterm**

- Profound/ central pattern
- PWMD-Periventricular leucomalacia
- Germinal matrix-intraventricular haemorrhage
- Periventricular haemorrhagic infarction
- Cerebral injury

❖ **Focal:** **Perinatal stroke: arterial -Solitary**
-Multifocal
Perinatal stroke: venous -Superficial
-Deep

Thank you