Reversible Splenial Lesion Syndrome

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Introduction

- Reversible splenial lesion syndrome (RESLES) is a clinical radiological syndrome characterized by the presence of a reversible lesion involving the splenium of the corpus callosum (SCC).
- First described in 1999, by Kim et al.

Etiology: Epilepsy & AED related

- Epilepsy related:

  Seizures (type and frequency are irrelevant)
  AED (Carbamazepine, phenytoin, Lamotrigine)
  Withdrawal (Most Relevant)

- AED related: when used as mood stabilizer, migraine prophylactic, neuropathic pain

Etiology: Infections

- Clinical picture; encephalopathy, and encephalitic features. Rarely: Visual hallucinations.
- Viral infections were the most common: Influenzas virus, EBV, and HSV.
- 50% encephalopathy with normal CSF composition.
- MRI normalized after 1-2 weeks, with no clear coloration with clinical recovery.
- Few patients with Viral encephalopathy reported extra corpus callosum lesions, which is associated with less favorable clinical outcomes

Etiology: Metabolic conditions

- Clinical features consisted of abnormal sensorium and focal neurologic deficits.
- Causes: Hypoglycemia, hyperglycemia, and hypernatremia.
- Clinical outcomes:
  Hypernatremia + seizures + AED led to vegetative state
  Hypoglycemia led to hemiparesis; MRI shows bilateral extension of the CC lesion to the corona radiata.
- Clinical outcomes; favorable unless presence of poor prognostic indicators.

Etiology: Medications\Toxins

- Methyl bromide.
- Chemotherapy: cisplatinum and carboplatin.
- Combination of escitalopram, and olanzapine.
- Clinical outcomes; favorable with cessation of the offending agent.
- No MRI follow up, Diagnosis can not be fully established.

Etiology: Miscellaneous Conditions

- Anorexia nervosa.
- Malnutrition.
- Vitamin B12 deficiency.
- Charcot Marie-Tooth disease.
- High-altitude cerebral edema.
- Systemic lupus erythematosus.
- Eclampsia.
- Rabies and Mumps Vaccine
- Follow up MRI: Recovery within 1-4 months

Pathophysiology

- Why the SCC? Lack of adrenergic tone, more prone to hypoxic vasodilation and autoregulation failure with resultant overperfusion.
- The brief and reversible failures of cellular fluid regulation that occur in convulsions.
- Antiepileptic drug level fluctuations and changes in electrolytes hemostasis led to myelin sheath edema.
- Hypoglycemia led to reduction of cell membrane ionic pump activity and a consecutive shift of cerebral water from extracellular to intracellular space.

Clinical picture

- RESLES is an asymptomatic disorder
- The clinical manifestation is related to the underlying pathology.
- It may or may not includes encephalopathy.

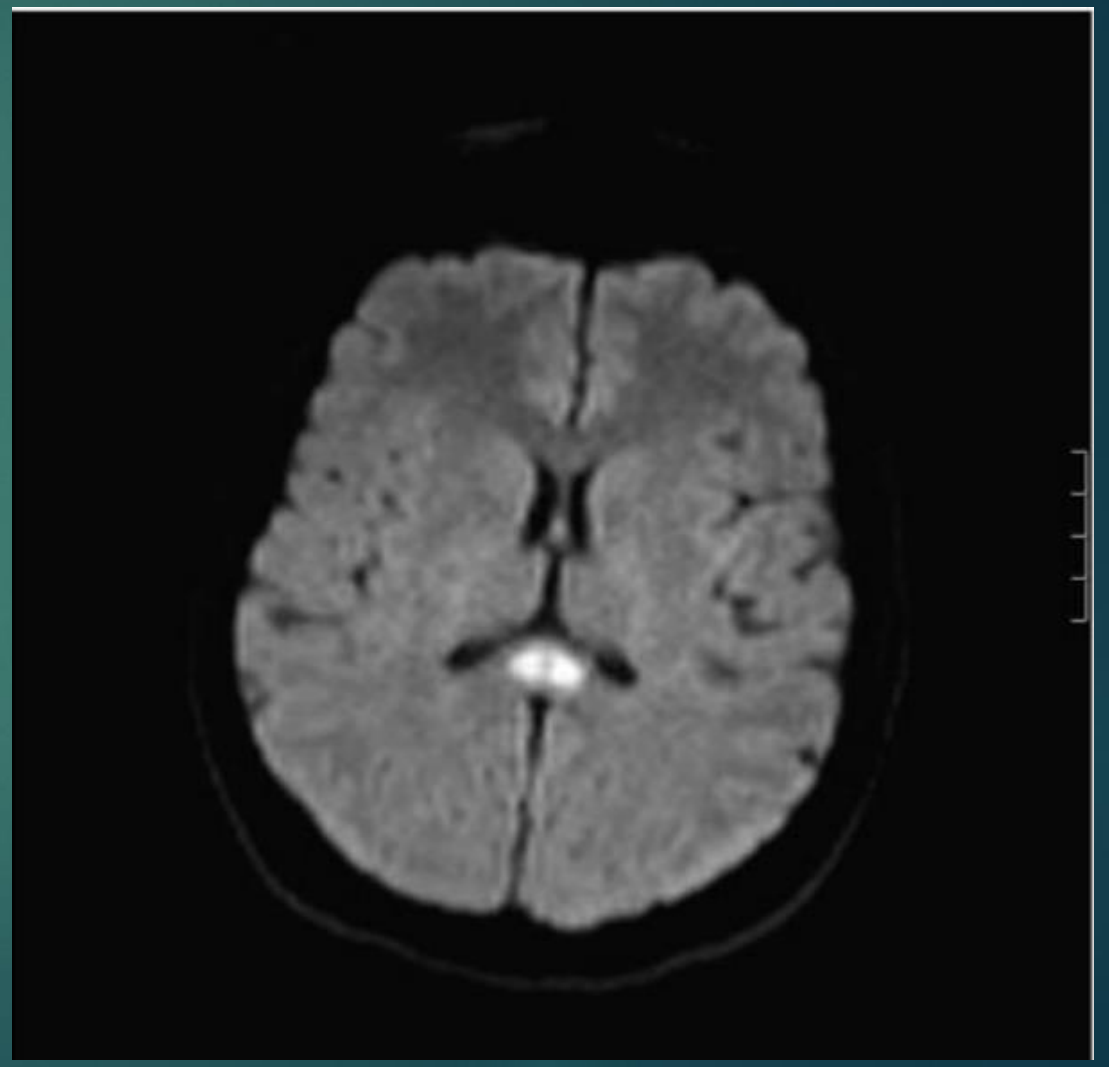
Diagnosis

Revised inclusion criteria of Garcia-Monco et al. (2011)

1. Lesions must involve the SCC as shown by MRI
2. Lesion must be symmetrical and oval shape
3. Lesion must disappear on follow up MRI
4. The main lesion must be centered on the SCC.
5. The absence of disseminated encephalopathy
6. Absence of concurrent demyelinating disorders.

MRI Findings

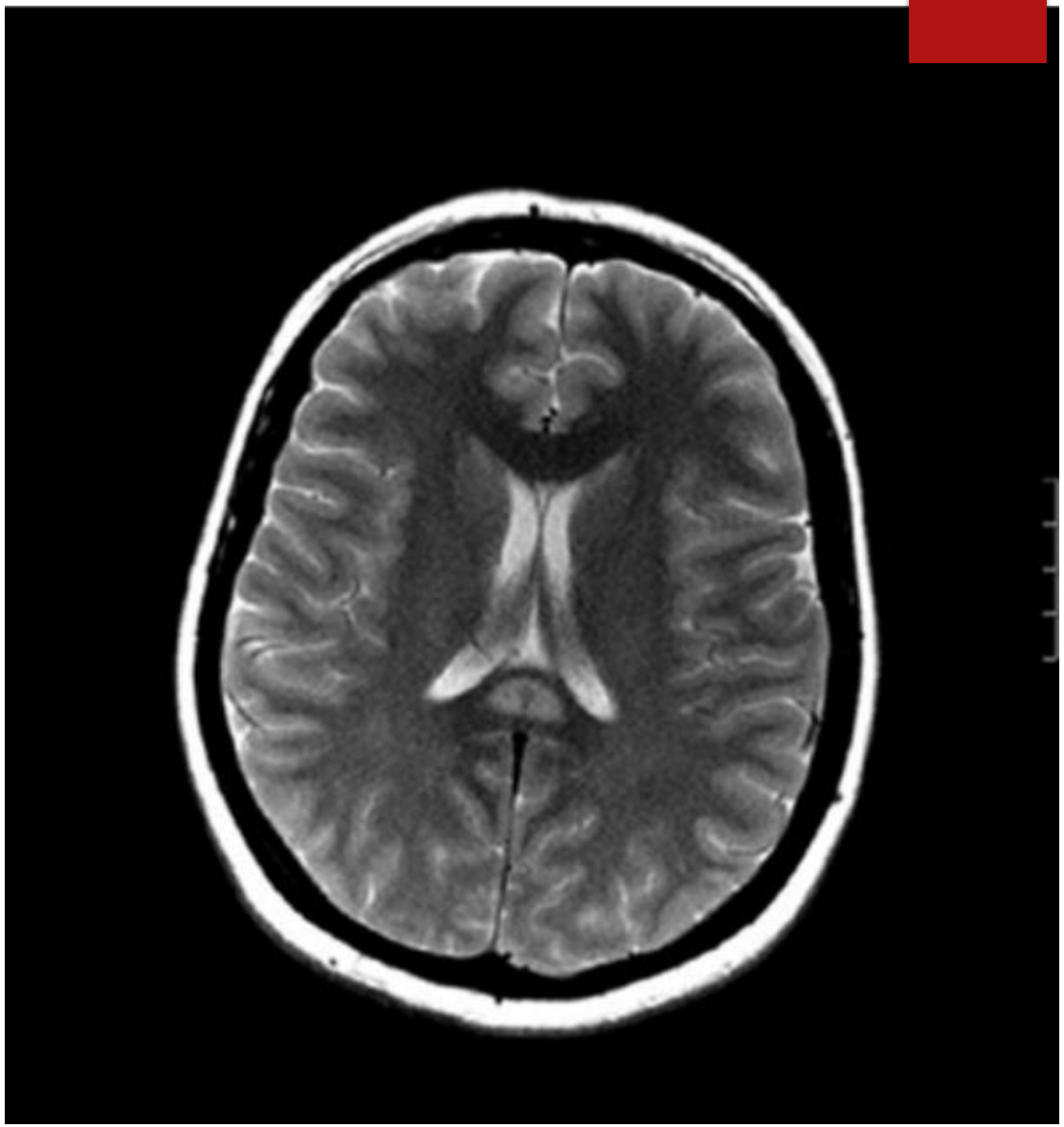
DW1
round lesions
Earliest sign



MRI Findings

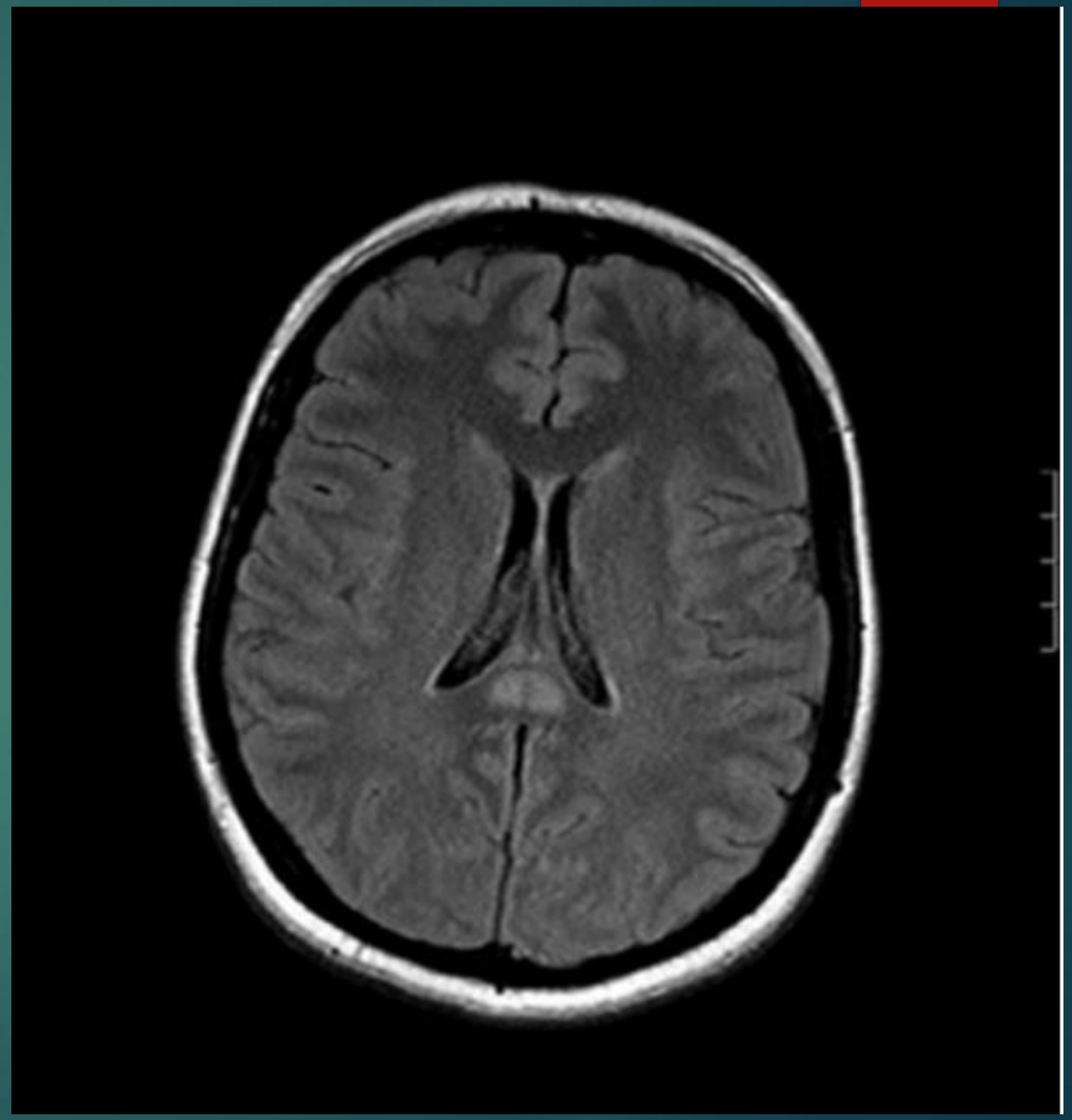
T2-weighted

round lesions



MRI Findings

FLAIR
round lesions



Potential Biomarker

- Urinary β2-macroglobulin reported to be elevated in few patients with RESLES.

Prognosis

- Full and quick recovery in majority of cases.

- Poor prognosis indicators are:
  1- Severe disturbances in consciousness at the onset of the disease
  2- Diffuse slow waves on electroencephalogram (EEG) findings
  3- Extracallosal lesions

Questions?