

# Approach to the diagnosis and classification of epilepsy

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Approach to seizures and seizure semiology

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# Seizures and Epilepsy



**Seizure:** Clinical phenomena that arises due to abnormal, increased and hypersynchronous firing of neurons in the cerebral cortex

**Epilepsy:** The tendency to have recurrent and unprovoked seizures

**Not everyone who has a seizure has epilepsy!!**

# History taking - seizures

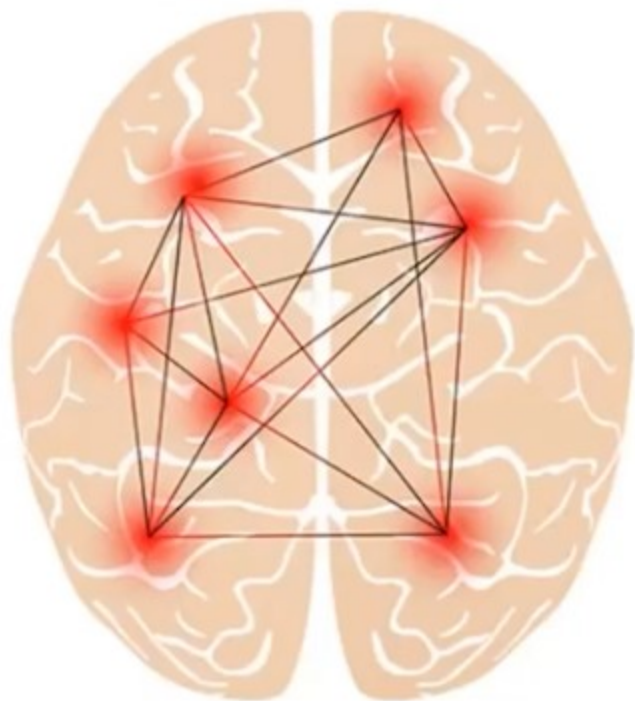
- From patient AND family/witness
- The sequence of events that occur during a seizure = semiology
- We can divide the seizure into 3 phases – pre-ictal, ictal and post-ictal
- **Pre-ictal:**
  - Prodrome
  - Environment of occurrence
  - Association with sleep/time of the day
  - Any exposure to precipitating factors
- **Ictal**
  - Aura
  - Awareness
  - Features that can predict lateralization/localization
  - Detail the sequence of events
  - Duration of event
- **Post-ictal**
  - Aphasia
  - Confusion/altered behavior
  - Weakness/other deficits

# Describing a seizure – some terms

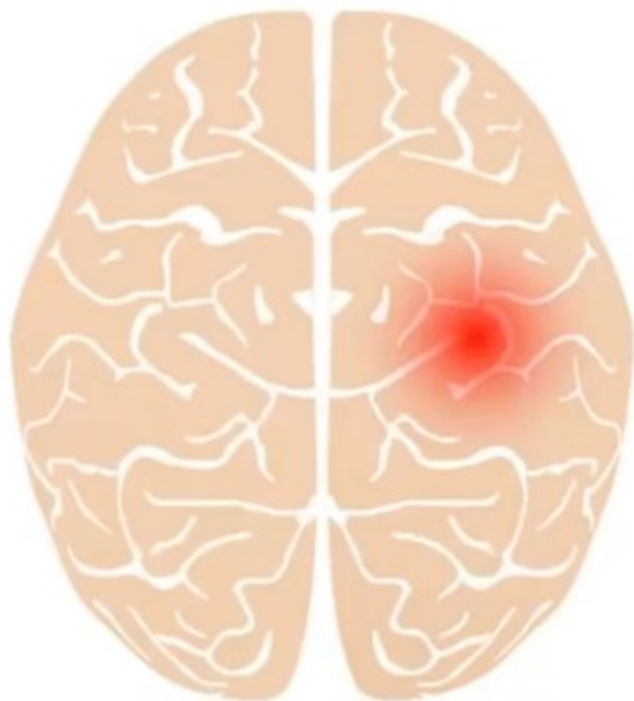
OLD TERM	NEW TERM
Unconscious (still used)	Impaired awareness (surrogate)
Partial	Focal
Simple partial	Focal aware
Complex partial	Focal impaired awareness
Dyscognitive (word discontinued)	Focal impaired awareness
Psychic	Cognitive
Secondarily generalized tonic-clonic	Focal to bilateral tonic-clonic
Arrest, freeze, pause, interruption	Behavior arrest

# Describing a seizure – more terms!

- Onset: Decide whether seizure onset is focal or generalized. Classify a focal seizure by its first prominent sign or symptom. Do not count transient behavior arrest.
- Aura: A subjective sensation that heralds the onset of a seizure. Note: The aura by itself is a focal seizure.
- Awareness: When the seizure begins, the patient is aware of what is happening (e.g. aware of jerking movements of right upper limb)
- Impaired awareness at any point: A focal seizure is a *focal impaired awareness seizure* if awareness is impaired at any point during the seizure
- Behavior arrest: A *focal behavior arrest seizure* shows arrest of behavior as the prominent feature of the entire seizure.
- Motor/Non-motor: A *focal aware or impaired awareness seizure* maybe further sub-classified by motor or non-motor characteristics

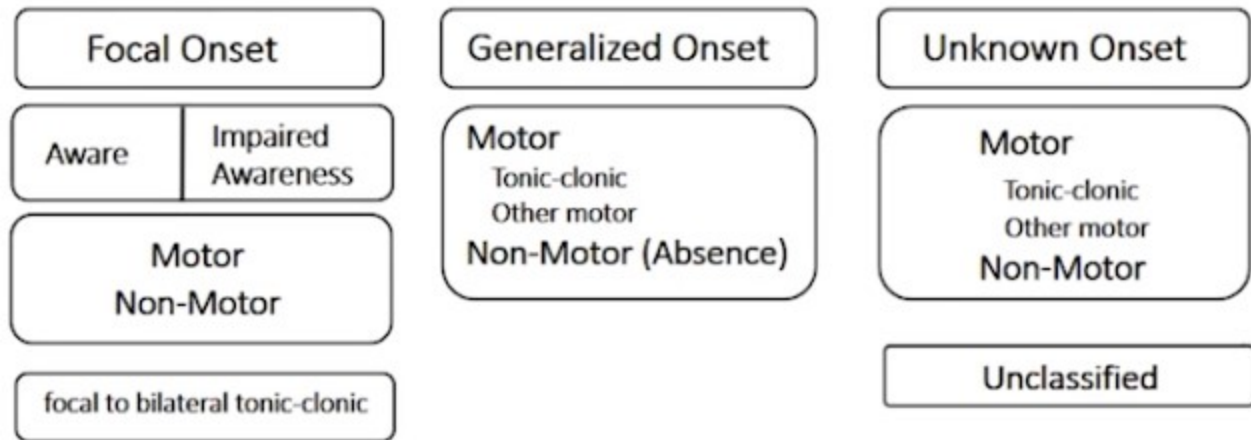


**Generalized Seizure**



**Focal Seizure**

# Classification – simple form





# Some features of focal seizures

## Pre-frontal/mesial frontal

Hypermotor

Asymmetric posturing

Chapeau de Gendarme

## Orbitofrontal

Screaming/swearing

Rage/fear/anxiety/wandering behavior

## Mesial temporal

Aura of fear/abdominal  
discomfort

Hypomotor seizures

Oro-alimentary automatisms

## Neocortical temporal/insula

Auditory hallucinations/Vertigo like aura

Choking/hypersalivation (insula)

Facial clonic movements (operculum)

Can mimic frontal lobe/mesial temporal  
seizures



## Posterior frontal/Peri-rolandic

Early Clonic Jerking of  
extremities

+/- sensory phenomena

Post ictal weakness.

## Occipital

Visual aura

Prominent blinking, prolonged  
hypomotor state

Nystagmus +/- (not specific)

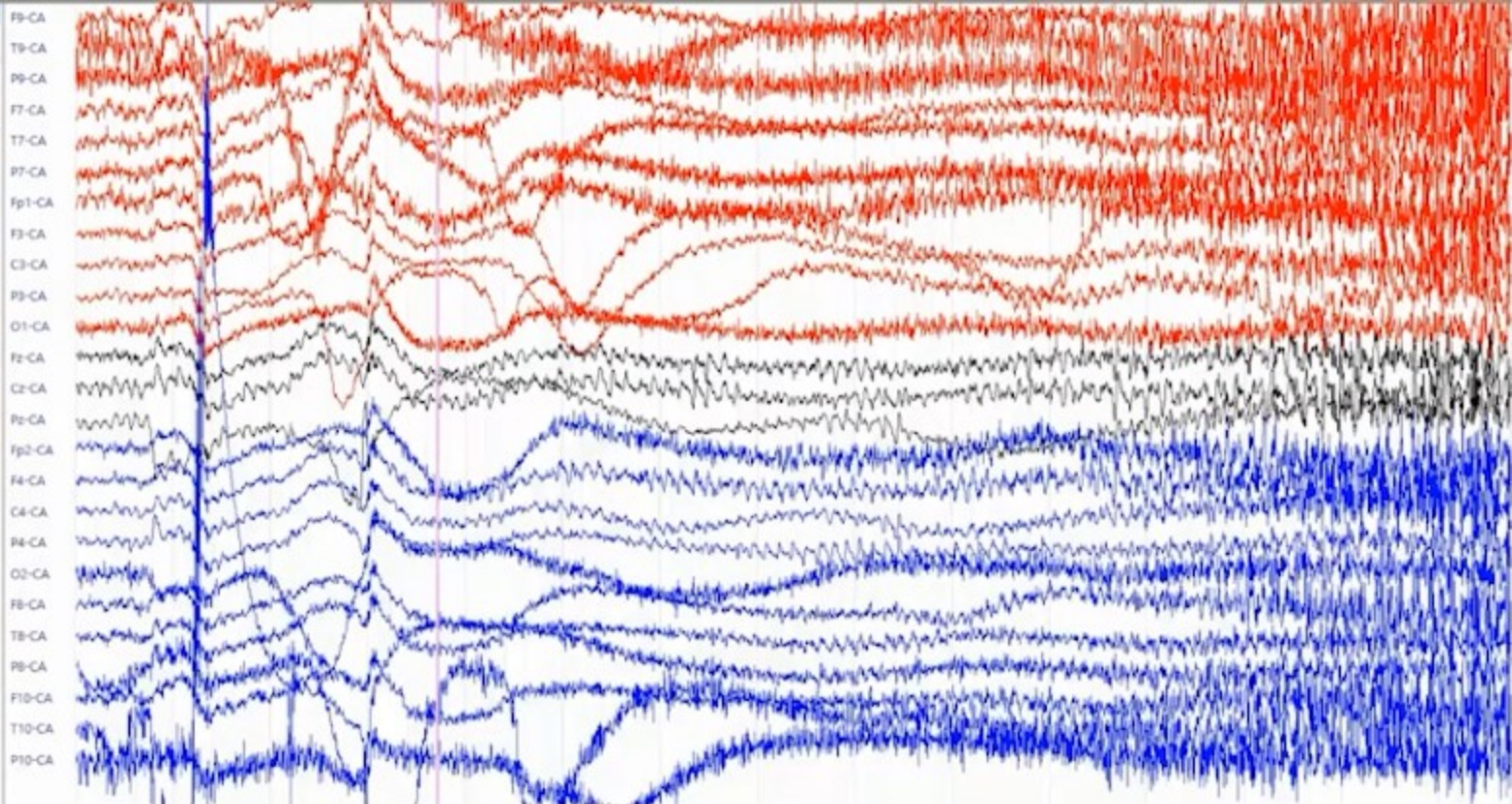
## Parietal lobe

Sensory symptoms – can have a march

Can mimic seizures coming from other areas  
(especially from the precuneus/posterior  
cingulate!!)

What the mind does not know, the eyes cannot see...

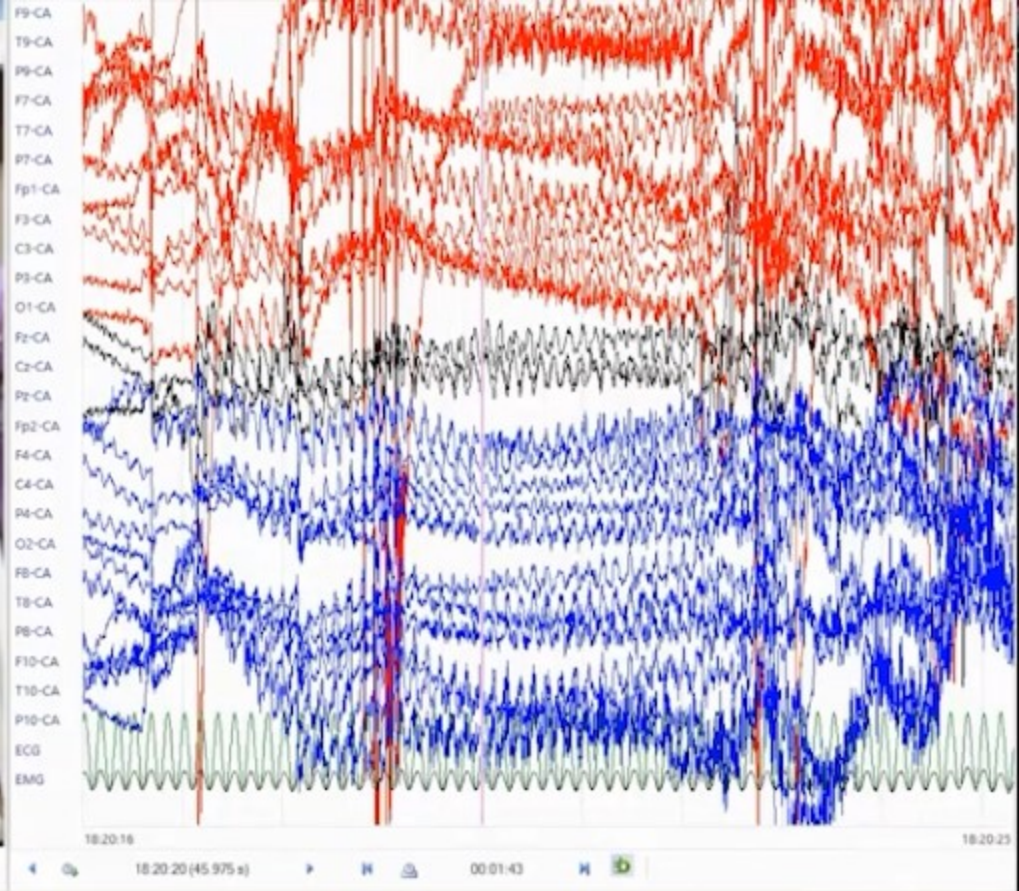




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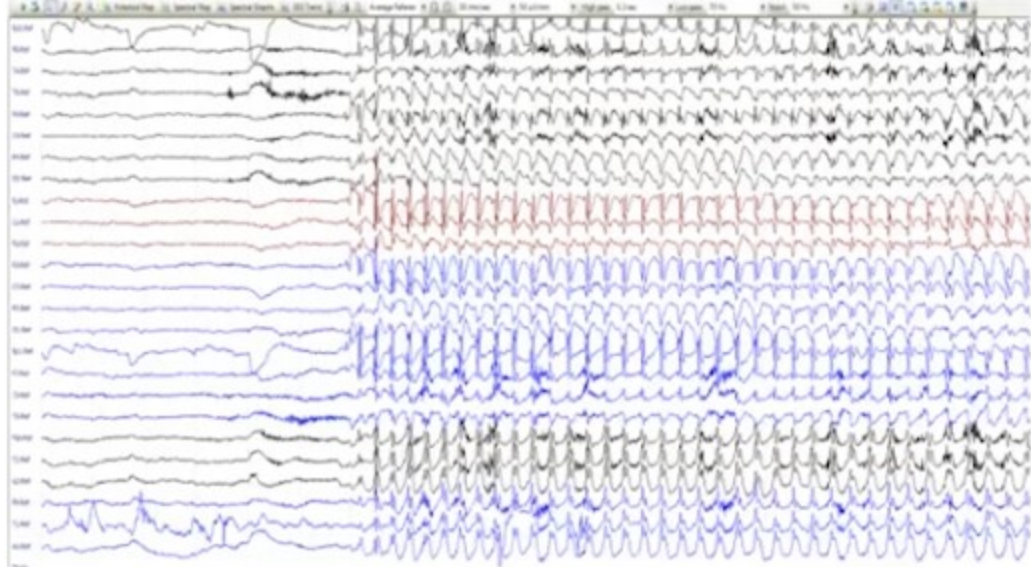






Case: Staring in school

- 7 year old girl
- Teacher has observed she is day dreaming and does not answer promptly when questioned
- Child does not recollect these episodes
- No developmental delay/neurological deficits



**Features of an absence seizures:**

**Most commonly seen between 5-8 years of age**

**Multiple per day**

**Abrupt onset and offset**

**Loss of posture usually does NOT happen**

**Developmentally normal. No associated regression**

**At bedside – precipitated by hypertension**

**EEG: Generalized 3Hz spike wave discharge**





Case: Recurrent episodes of unresponsiveness and seizures

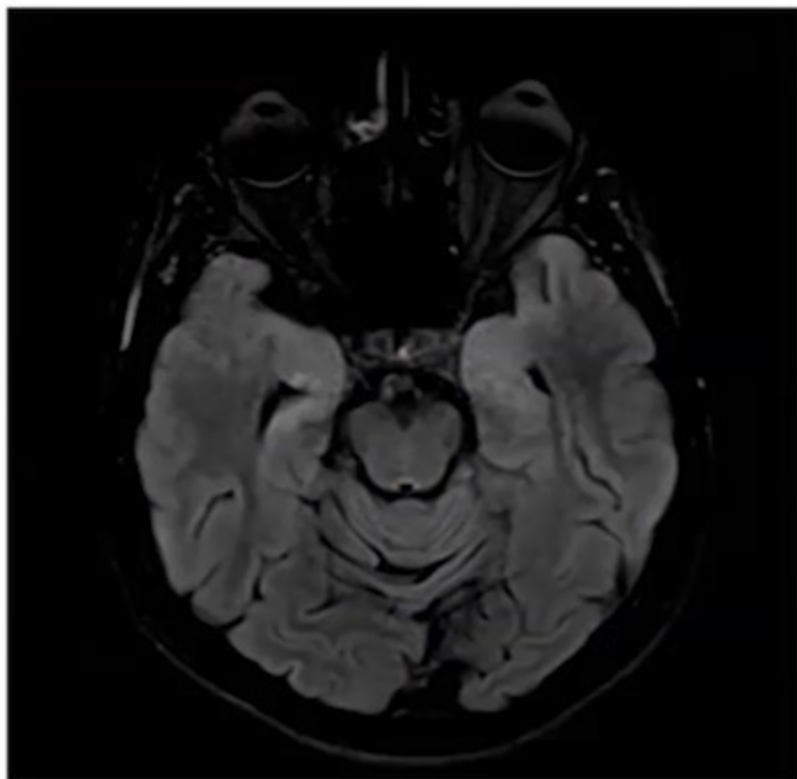
40-year-old lady

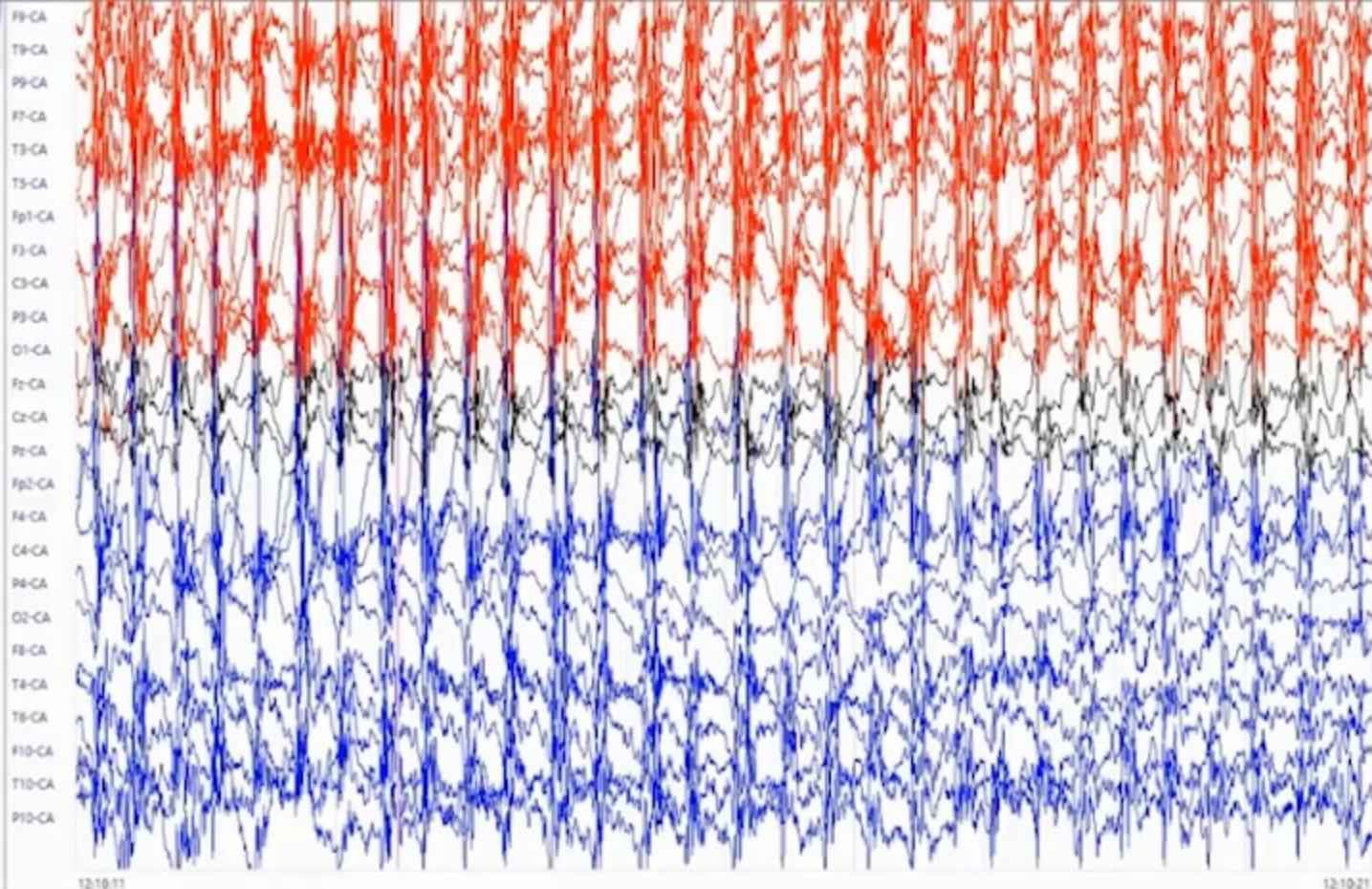
Seizures from 20 years of age

Starts with an initial hypomotor state followed by posturing of the left upper limb, head turn to the left side, jerking of the left side of the face and tonic clonic movements of both upper limbs and lower limbs

MRI – Right hippocampal sclerosis

Interictal EEG – Right temporal spikes





# Post ictal palsy

< Left facial weakness – post ictal phase



v paucity of left sided limbs – post ictal phase





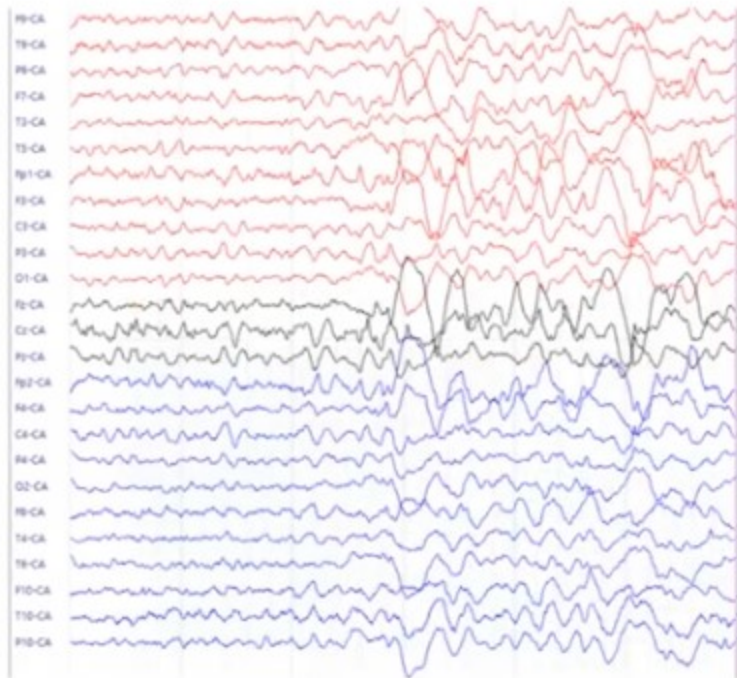
Case: Limb jerking followed by weakness

32-year-old lady

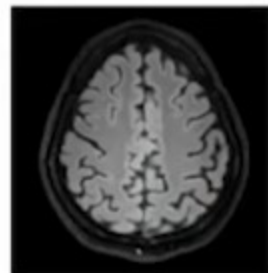
Seizures since 27 years of age

Characterized by sensory symptoms over the left upper limb followed by clonic jerking of the left upper limb and face. Has weakness of left upper limb after the seizure

MRI – mild diffuse cerebral atrophy. No other abnormalities were detected



Interictal EEG:  
Bifrontal spike wave  
discharges



## Case: Violent nocturnal seizures

40-year-old gentleman

Seizures since 20 years of age

Most episodes are in sleep

Characterized by thrashing in bed and screaming for less than 30-40 seconds

Not aware during the event

No family history of epilepsy

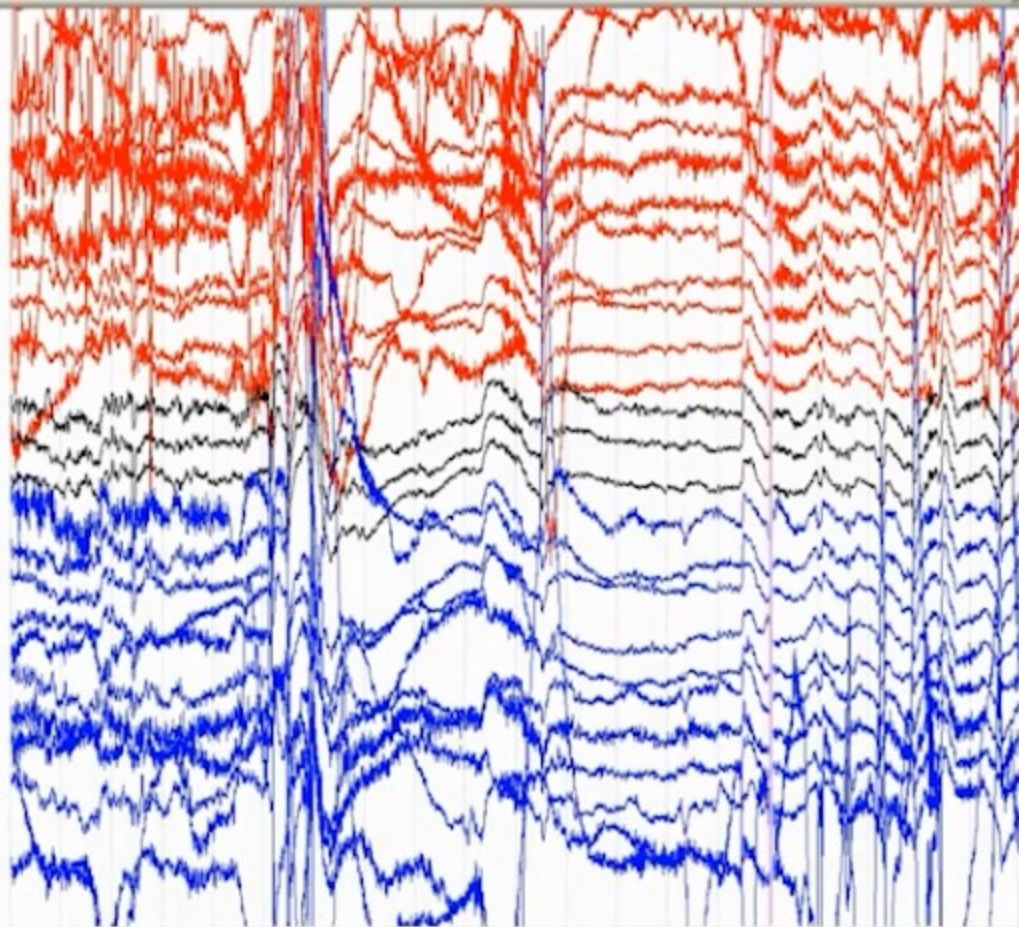
MRI normal

Interictal EEG normal





F9-CA  
T9-CA  
P9-CA  
F7-CA  
T3-CA  
T5-CA  
FP1-CA  
F3-CA  
C3-CA  
P3-CA  
O1-CA  
F1-CA  
C2-CA  
P2-CA  
FP2-CA  
F4-CA  
C4-CA  
P4-CA  
O2-CA  
F8-CA  
T4-CA  
T6-CA  
F10-CA  
T10-CA  
P10-CA





**Case: Laughter and restlessness during sleep**

**31-year-old gentleman**

**Seizures since 10 years of age**

**Most episodes are in sleep**

**Characterized by rolling in bed and laughing. Daily events**

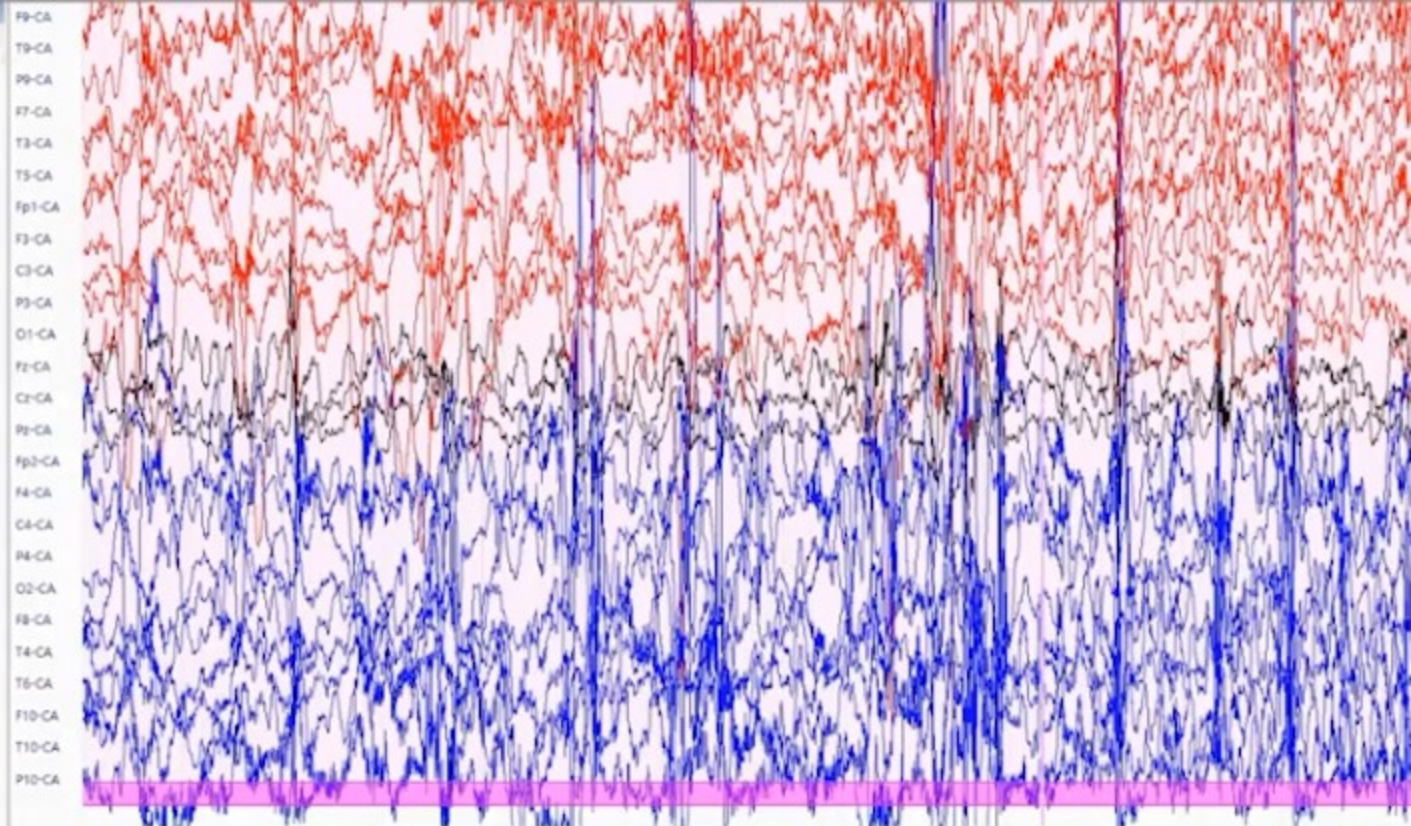
**Not aware during the ictus**

**No family history of epilepsy**

**MRI normal**

**Interictal EEG normal**





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14:12:28

Case: Non-dominant TLE

36 years old gentleman

Seizures from 20 years of age

Aura of abdominal discomfort  
and epigastric rising sensation

Hypomotor state with lip  
smacking. Retains awareness  
during the episode

Uncontrolled epilepsy – on 3  
anti-seizure medication

MRI – right MTS

