

PRESENTED BY:

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## *Seizure ??*

## *Epilepsy??*

A *seizure* is a paroxysmal event characterized by abnormal, excessive, hypersynchronous discharge of cortical neuron activity.

**Epilepsy** can be defined as a chronic seizure disorder or group of disorders characterized by seizures that usually recur unpredictably in the absence of a consistent provoking factor.

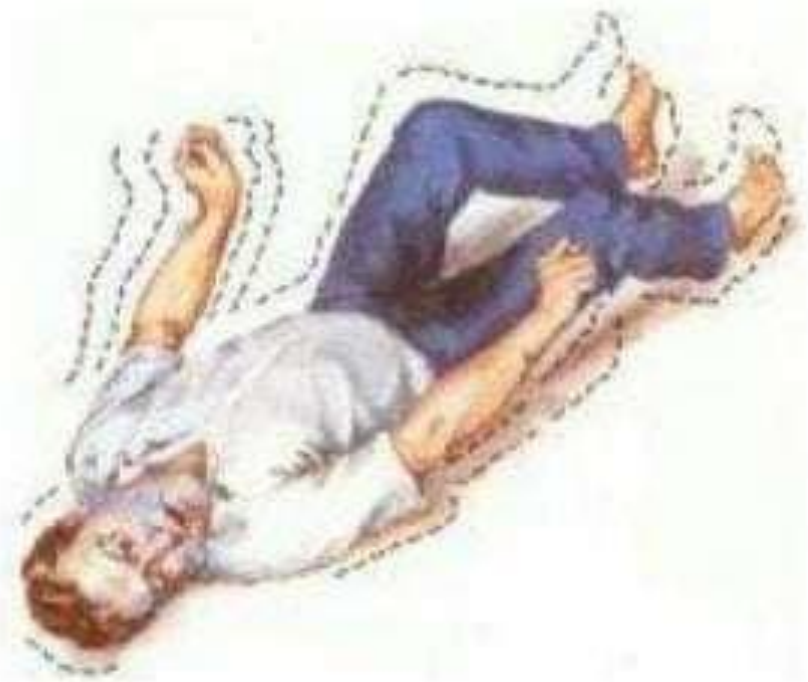
**Epilepsy is not contagious**

**it is not a mental illness**

**or a cognitive disability.**

**The neurological dysfunction seen in epilepsy can :**

- ✓ begin at birth
- ✓ childhood
- ✓ adolescence or
- ✓ even in adulthood



# **CLASSIFICATION**

## ***I. Partial seizures***

### **A. Simple seizures**

(without impairment of consciousness)

1. With motor symptoms
2. With special sensory or somatosensory symptoms
3. With psychic symptoms

### **B. Complex seizures**

(with impairment of consciousness)

1. Simple partial onset followed by impairment of consciousness
2. Impaired consciousness at onset

### **C. Secondarily generalized**

(partial onset evolving to generalized tonic-clonic seizures)

## *II. Generalized seizures*

- A. Absence
- B. Myoclonic
- C. Clonic
- D. Tonic
- E. Tonic-clonic
- F. Atonic
- G. Infantile spasms

## *III. Unclassified seizures*

## *IV. Status epilepticus*

## PARTIAL SEIZURES:

**Common**, 80% patients

© simple partial seizures:  
do not cause loss of consciousness

### Signs & symptoms:

- ◆ motor – convulsive jerking, chewing motions, lip smacking
- ◆ Sensory & somatosensory – paresthesias, auras
- ◆ Automatic – sweating, flushing, pupil dilation
- ◆ Behavioural – hallucinations, dysphasia, impaired consciousness (rare).

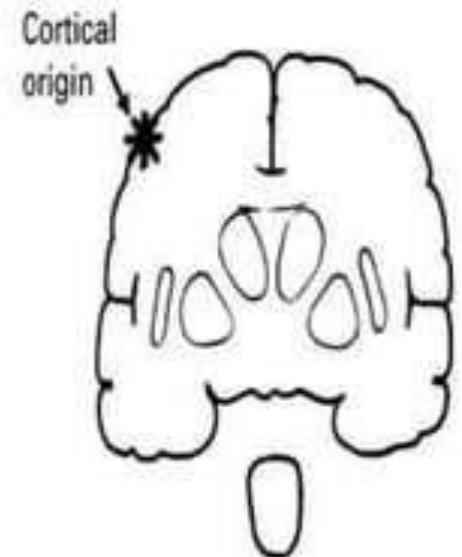
Partial seizure



Before the seizure.



Jerking of the right half of the face. The patient is fully conscious.



## ⓐ complex partial seizures:

- impairment of consciousness
- purposeless behaviour is common
- affected person may wander about aimlessly
- aggressive behaviour (violence)
- automatism (eg: picking at clothes)
- visual, auditory, or olfactory hallucinations

## GENERALIZED SEIZURES:

- *Affecting both hemispheres*
- *Diffuse*

### 3 types:

#### 1) Idiopathic epilepsies

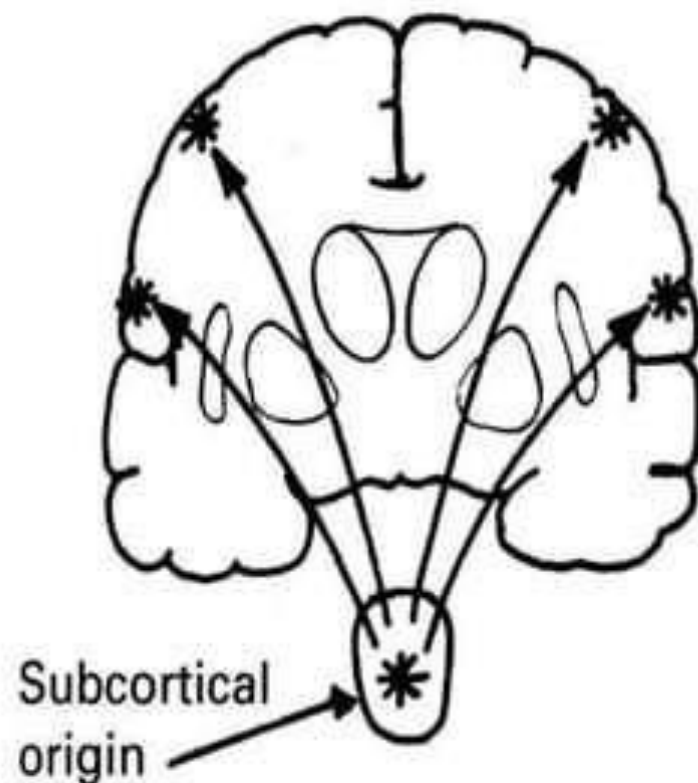
- *Age related*
- *Genetic origin*

#### 2) Symptomatic epilepsies

- *A consequence of a known/suspected underlying disorder of CNS*

#### 3) Cryptogenic epilepsies

- *Disorder of a hidden course*
- *Age related*





## ABSENCE SEIZURES (petit mal)

- ❖ Alterations of consciousness (absence) lasting 10–30sec
- ❖ Staring (with occ. eye blinking) & loss in postural tone
- ❖ 100 or more daily
- ❖ Onset occurs from 3–16yrs, disappear by 40yrs.

## MYOCLONIC:

- ❖ sudden, Involuntary jerking of facial, limb or trunk muscles, in rhythmic manner

## CLONIC:

- ❖ Sustained muscle contractions alternating with relaxations

## TONIC:

- ❖ Sustained muscle stiffening

**TONIC-CLONIC (grand mal) :**  
**Sudden loss of consciousness**

**Tonic phase:**

- ↓ Pt become rigid & falls to the ground
- ↓ Respiration are interrupted
- ↓ Back arches
- ↓ Lasts about 1min

**Clonic phase:**

- ↓ Rapid muscle jerking
- ↓ Muscle flaccidity
- ↓ Incontinence, tongue biting, tachy cardia, heavy salivation

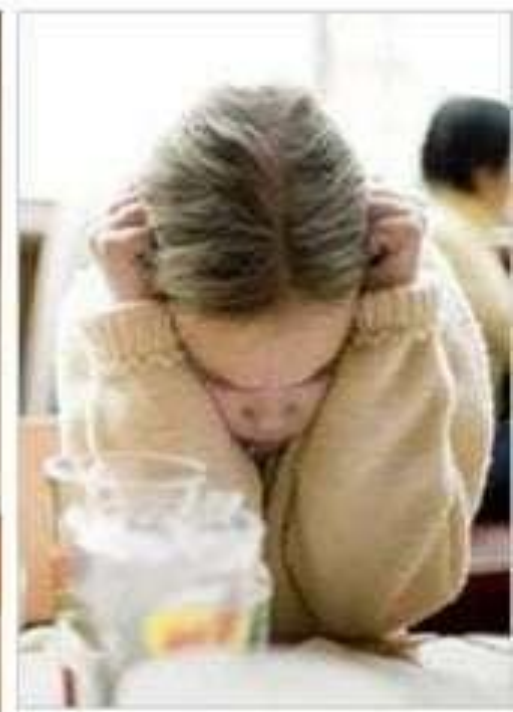


During **postictal phase**:

- ⚡ Head ache, confusion, nausea, drowsiness, disorientation
- ⚡ May last for hours

**ATONIC (drop attacks):**

- ⚡ Sudden loss of postural tone, pt falls to the ground
- ⚡ Occur primarily in **children**



# UNCLASSIFIED SEIZURES

## NEONATAL



## STATUS EPILEPTICUS:

Seizure occur repeatedly with **no** recovery of consciousness b/w attacks

# CAUSES

- High fever, especially in infants
- Drug use, alcohol withdrawal
- Near-drowning or lack of oxygen from another cause
- Metabolic disturbances
- Head trauma
- Brain tumor, infection, stroke
- Complication of diabetes or pregnancy

## Causes of epilepsy

- Stroke
- Brain tumor
- Brain infection
- Past head injury
- Drug use, alcohol withdrawal
- Metabolic problems
- Other neurological conditions
- High fever, especially in infants
- Genetic factors

## Epilepsy may occur with

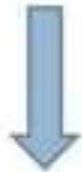
- Developmental disabilities
- Autism
- Cognitive impairments

**... but the majority of people who have epilepsy do not have other impairments and live very normal lives.**

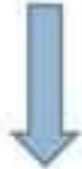
# PATHOPHYSIOLOGY

Paroxysmal discharges in cortical neurons

A seizure originates from grey matter of any cortical or subcortical area



Abnormal firing of neurons



Breakdown of normal membrane conductance & inhibitory synaptic currents



Locally



widely



Focal seizure



Generalized seizure

- Abnormality of Potassium conductance
- Defect in voltage sensitive ion channels
- Deficiency in membrane ATPase



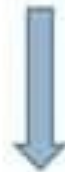
Neurone membrane instability



**seizures**

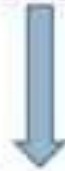
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Deficiency of inhibitory neurotransmitters  
Increase in excitatory neurotransmitters



**promotes**

Abnormal neuronal activity

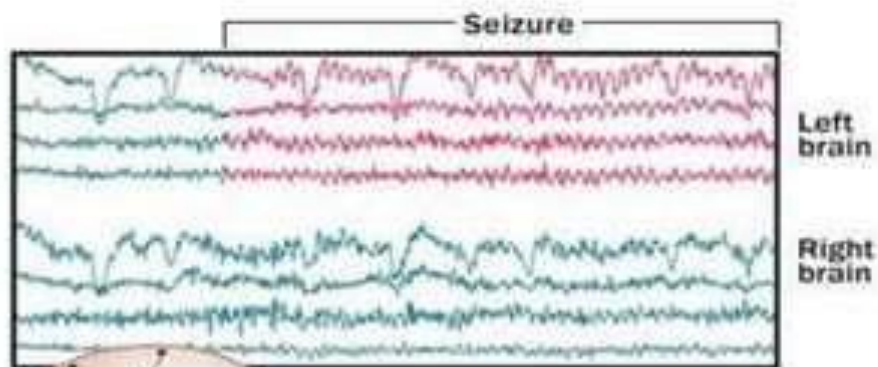


**Seizure**

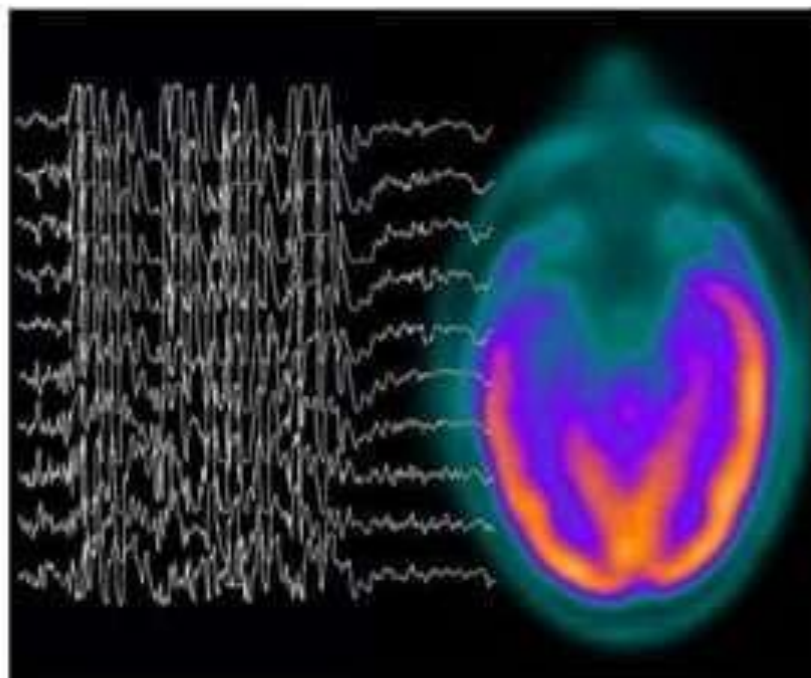


# DIAGNOSIS

- Electroencephalogram (EEG)



An electroencephalogram (EEG)



## •Neurological imaging studies

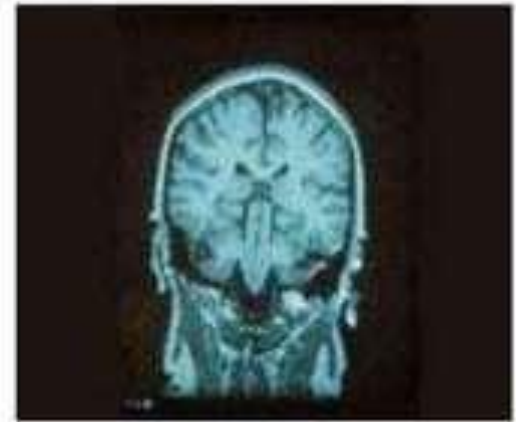
\*Magnetic Resonance Imaging (MRI)

\*Functional MRI (fMRI)

\*Computed Tomography (CT)

\*Positron emission tomography (PET)

\*Single-photon emission computerized tomography (SPECT)



# MANAGEMENT

<b>Seizure type</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>	<b>Choice 4</b>
<b>Simple partial</b>	Carbamazepine (alone/comb.)	Phenytoin	Primidone Lamotrigine Oxcarbazepine Lacosamide	Gabapentin Levetiracetam Zonisamide Tiagabine
<b>Complex partial</b>	Carbamazepine Lamotrigine	Phenytoin	Phenobarbital Zonisamide Oxcarbazepine	Valproic acid Primidone Topiramate* Tiagabine Vigabatrin**
<b>Primary generalized</b>	Valproic acid	Carbamazepine	Phenytoin	Phenobarbital
<b>Tonic-clonic</b>	Lamotrigine	-	Valproic acid	Topiramate Tiagabine
<b>Absence</b>	Lamotrigine* Ethosuximide	Zonisamide Valproic acid	-	-
<b>Myoclonic atonic</b>	Valproic acid	Clonazepam	Zonisamide	Felbamate* (alone/comb.)
<b>Status epilepticus</b>	Diazepam	Phenytoin	Phenobarbital	-
<b>Psychomotor</b>	Phenytoin	-	-	-
<b>Lennox-Gastaut syndrome</b>	Valproic acid Felbamate	Lamotrigine Topiramate Rufinamide	-	-



Thank U... 