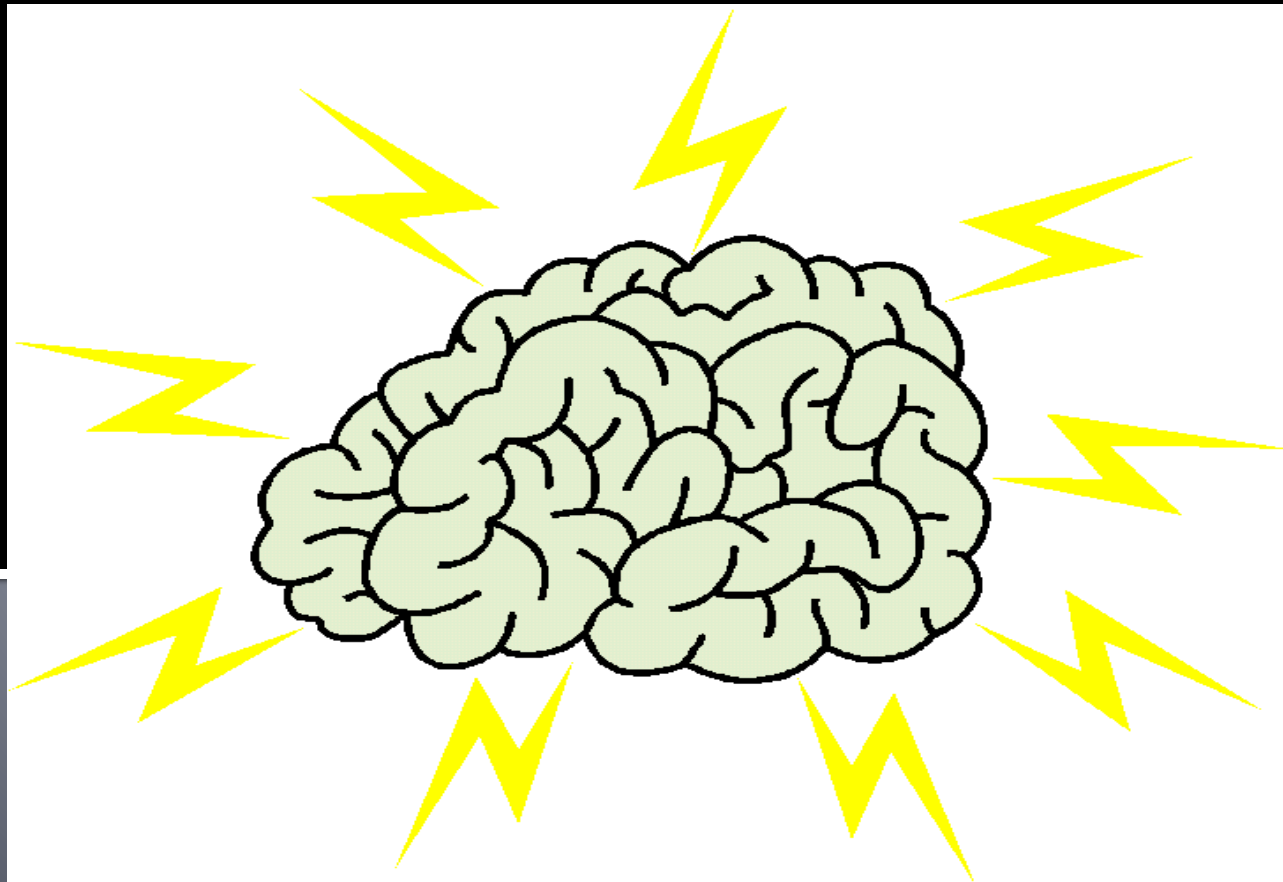


# SEIZURE DISORDERS



- Seizures are caused by malfunctions of the brain's electrical system that result from cortical neuronal discharge.
- Seizures are the most commonly observed neurologic dysfunction in children and can occur with a wide variety of conditions involving the CNS.

# EPILEPSY

- Epilepsy is recurrent, episodic, paroxysmal transient disturbances of brain function due to abnormal electrical activity of the neurons.

# Etiology

- Most seizures are idiopathic.
- A seizure disorder also can be acquired as a result of brain injury during prenatal, perinatal or postnatal periods. This injury may be caused by trauma, hypoxia, infections, exogenous or endogenous toxins, and a variety of other factors.
- Biochemical events (eg: hypoglycemia, hypocalcemia & certain nutritional deficiencies) produce seizure activity.

# Etiology cont;

- In young infants the most frequent causes are birth injuries- such as
  - intracranial trauma
  - hemorrhage or anoxia
  - congenital defects of the brain
- Acute infections are frequent cause of seizures in late infancy & early childhood.

# Pathophysiology

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Seizure activity is believed to be caused by spontaneous electric discharge initiated by a group of hyperexcitable cells referred to as the epileptogenic focus



These cells display increased electric excitability in response to any of a variety of physiologic stimuli, such as cellular dehydration, abnormal blood glucose levels, electrolyte imbalance, fatigue, emotional stress & endocrine changes.



When neuronal excitation from the epileptogenic focus spreads to the brainstem, a generalized seizure develops

# Classification

## Generalized seizures:

- a. tonic- clonic seizures (grand mal)
- b. Absence seizures-  
typical (petit mal)  
atypical
- c. Atopic seizures ( drop attacks)
- d. Myo clonic seizures

## Partial seizures:

- a. Simple partial seizures
- b. Complex partial seizures.



# Clinical manifestations: Tonic clonic

## Tonic phase:

- Lasts approximately 10-20 secs
- Eyes roll upward
- Immediate loss of consciousness
- If standing falls on floor
- Stiffness entire body musculature
- Arms flexed, legs, head & neck extended
- Apneic, may become cyanotic
- Increased salivation

## Clonic phase:

- Lasts about 30 secs
- Violent jerking movements
- May foam at the mouth
- Incontinent of urine & feces

Tonic phase



Clonic phase



# Absence seizures

- Onset usually between 4-12 yrs of age
- Brief loss of consciousness
- No alteration in muscle tone
- May go unrecognized
- Abrupt onset, suddenly develops 20 or more attacks daily.
- Hyperventilation, hypoglycemia.
- May need to reorient self to previous.

# Clinical manifestations cont;

## Atopic seizures:

- Loss of tone causes child to fall
- Unable to break fall by putting out hand
- May incur a serious injury
- LOC only momentary

## Myoclonic:

- Sudden brief cintractions of a muscle
- May or may not include loss of consciousness
- May or may not be symmetric

# Clinical manifestations- partial seizures

## Simple partial seizures:

- Eye or eyes & head turn away from the side of focus
- Loss of consciousness
- Salivation, arrested speech
- Tonic- clonic movements
- Numbness, tingling, prockling, paresthesia

# Clinical manifestations- partial seizures

## Complex partial:

- Period of altered behavior
- Amnesia
- Drowsiness
- Complex auditory or visual hallucinations
- Strange feelings of fear & anxiety
- Confused
- May perform purposeless, complicated activities in a repetitive manner

# Diagnosis

- Careful history with description of convulsive episodes.
- Detailed physical & neurological examination
- Blood examination, urine & CSF
- EEG
- X- ray skull
- CT Scan, PET OR SPECT scan & MRI
- Metabolic or cytogenetic studies.

# Management

- Antiepileptic drugs:
  - carbamazepine
  - phenytoin (dilantin)
  - fosphenytoin
  - valproic acid

Dosage is determined by monitoring serum drug levels

- When seizure activity is determined to be caused by a hematoma, tumor or other progressive cerebral lesion, surgical removal is the treatment.



# Diet therapy

- Ketogenic diet may be given to raise the seizure threshold with calculated amount of proteins & fats without carbohydrates.
- Maintain strict fluid restriction.

# Nursing management

- Assessment
- Nursing diagnoses:
  1. Risk for injury related to convulsive episodes
  2. Ineffective breathing related to spasms of respiratory muscles
  3. Social isolations related to misconceptions
  4. Altered self esteem related to lack of control over seizures
  5. Knowledge deficit related to long term care of seizure disorder

# Nursing interventions

1. Ensure safety during seizures
  - Remove hard objects, sharp things
  - Side rails of bed to be padded
  - Remove oropharyngeal secretions
  - Oxygen therapy
  - Close observation
  - Administer prescribed medications
  - Follow special instructions about diet, rest & activities

## 2. Prevent respiratory arrest & aspiration:

- Loosen clothing
- Place the child flat
- Avoid restraining the child
- Clear airway, remove secretions, turn head to one side during seizures
- Record details of event

## 3. Promote socialization

## 4. Strengthen self esteem

## 5. Provide health teaching:

- Continuation of medications
- Care during convulsions
- Diet therapy
- Restricted activities
- Misconception regarding the disease & follow up

# FEBRILE SEIZURES

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# Febrile seizures

- It refers to the seizures associated with fever but excluding those related to CNS infections.
- It is the commonest cause of convulsions in early childhood
- It is related to abrupt increase in body temperature rather than degree of temperature rise.

# Types

1. Typical : lasts less than 10 minutes
  - Found in children between 6 months to 5 yrs of age
  - Fits occur in 24 hrs of onset of fever
  - There is no recurrence before 12- 18 hrs of attack
2. Atypical :
  - Focal convulsions of more than 20 mins duration even without significant fever
  - There may be abnormal EEG for 2 weeks after the attack.



# Management

- Anticonvulsive drugs: diazepam 0.3mg/kg IV  
Phenobarbital 5mg/kg IM
- Antipyretics
- Tepid sponge
- Hydration & nutrition status
- Clearing of airway
- Oxygen therapy
- Rest, comfortable position & hygienic measures
- Explanation & emotional support
- Temperature monitoring



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