INTRODUCTION

◦ The word convulsion (or seizures) describes an involuntary violent spasms, or a series of jerking of face, trunk, or extremities with or without loss of consciousness, sensory, autonomic or behavioral disturbances.

◦ The word epilepsy describes a syndrome of recurrent unprovoked, seizure unrelated to fever or to acute “cerebral insult”.
Status epilepticus (SE) is a severe form of seizure activity lasting more than 30 minutes or recurrent seizures with failure to recover consciousness between repeated attacks.
Neonatal seizure is defined clinically as “a paroxysmal alteration in neurological function (i.e. behavioral, motor or autonomic function) either or all three, occurring within 28 days.”

In general: a convulsive or seizure is a paroxysmal manifestations of neurological dysfunction.
Incidence

- Full term baby - 3 in 1000
- Pre-term baby - 60 in 1000
- Infants with birth weight <1500g: 57.5/1000
- Infants with birth weight between 2500g to 3999g: 2.8/1000
- 12000 are under the age of 18 years
- Incidence is higher under 2 years and over age of 65 years.
RISK FACTORS

MAJOR

- Age < 1 year
- Family h/o of febrile seizures
- Prolonged fever
- Complex febrile seizures
- Hyperpyrexia
- Male gender
- Infections
- Electrolytes imbalance

MINOR

- Family h/o of epilepsy
- Electrolytes imbalance
ETIOLOGY

NON RECURRENT (ACUTE)

• Febrile episode
• Intracranial infections
• Intracranial hemorrhage
• Cerebral edema
• Brain tumors
• Anoxia
• Toxins e.g. Drugs, tetanus, lead
• Metabolic alterations
• Hyperbilirubinemia

RECURRENT (CHRONIC)

• Idiopathic
• Trauma
• Infections
• Congenital defects
• Parasite brain diseases
• Hormonal disorders
• Hepatic disorder
• Allergy
• Sensory stimulus
• Migraine
RISK FACTORS AND ETIOLOGICAL FACTORS

ALTERED INTEGRITY OF NEURON IN THE EPILEPTOGENIC FOCUS

HYPEREXCITABILITY OF NEURONS

PARTIAL DEPOLARIZATION
IMBALANCED RELEASE OF EXCITATORY AND INHIBITORY NEUROTRANSMITTERS

LOWERED SEIZURES THRESHOLD

ABNORMAL SPONTANEOUS SPREAD OF ELECTRICAL DISCHARGE

CLINICAL MANIFESTATIONS
CONVULSION CLASSIFICATIONS AND CLINICAL MANIFESTATIONS

FEBRILE CONVULSIONS

❖ It refers to the seizures associated with fever but excluding those related to CNS infections. Common cause of convulsions in early childhood (6 months to 5 years of age).
❖ It has two types
   ❖ Typical and Atypical
<table>
<thead>
<tr>
<th>Typical or simple febrile convulsions</th>
<th>Atypical febrile or complex convulsions</th>
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<tbody>
<tr>
<td>Brief &lt; 15 minutes</td>
<td>Long &gt; 15 minutes</td>
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<tr>
<td>Occurs as a solitary event (one attack/ 24 hours)</td>
<td>Repeated convulsions for several hours a day</td>
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<tr>
<td>Typically generalized tonic-clonic convulsions</td>
<td>May be focal or generalized, tonic-clonic convulsions</td>
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<tr>
<td>Followed by a brief period of postictal drowsiness</td>
<td>Followed by a long period of postictal drowsiness</td>
</tr>
<tr>
<td>EEG are normal after the attack</td>
<td>EEG show abnormal for 2 weeks after the</td>
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</tbody>
</table>
### Generalized seizures

1. **Tonic-clonical seizures** *(grand mal)*
2. **Absence seizures**
3. **Atopic seizures**
4. **Myoclonic seizures**

### Partial seizures

1. **Simple partial seizures**
   - With elementary symptoms
     - No impaired consciousness
   - With motors signs *(jacksonians)*
   - With somatory-sensory- visual or auditory
   - With autonomic manifestations *(abdominal)* epilepsy
2. **Complex partial seizures**
   - Includes psychomotor or temporal lobe seizures
   - With impaired consciousness
DIAGNOSTIC EVALUATIONS

- **HISTORY TAKING**
  - Maternal history
  - Family history
  - Labour and delivery history
  - Baby conditions at birth

- **NEONATAL EXAMINATION**
  - General examination
  - Neurological examination
  - CBG
  - Spo2

- **METABOLIC WORK UP**
- **INFECTIONS WORK UP**
  - CBC

- **CULTURE**
  - Torch
  - IgM
  - CRP

- **BLOOD GAS ANALYSIS**
- **INBORN ERRORS OF METABOLISM**
- **CT-SCAN**
- **MRI**
- **EEG**
- **LUMBAR PUNCTURE**
COMPLICATIONS

- Cranial nerve palsies
- Raised ICP
- Subdural effusion
- Cerebral palsy
- Hydrocephalus
- Mental-physical handicaps
- Learning disability
- Recurrence
PREVENTIONS

✓ Regular ANC check up
✓ Treatment of infections during ANC period
✓ Correction of anemia and control of Gestational Diabetes
✓ Training of local Dais or paramedics about proper delivery and referral system
✓ Raising awareness about institutional delivery
✓ Manage actively fetal distress
✓ Ensuring proper training of neonatal resuscitations
MANAGEMENT

**MEDICAL**

**GOALS**

- TO CONTROL CONVULSIONS
- TO TREAT UNDERLYING PATHOLOGY

1. **Initial stabilization**
   - Establish TABC
   - Apply O2 and ventilations
   - Establish IV access
   - Take samples for initial studies
2. DRUGS

First line (benzodiazepines)

- **Diazepam**: 0.5mg/kg (max 10 mg) IV slow
- **Lorazepam**: 0.05-0.1mg/kg IV per rectum or sublingual
- **Midazolam**: 0.1-0.2mg/kg IV or IM

- Dose may be repeated q5minutes up to 3 doses
- Monitor respirations
3. SECOND LINE DRUGS (PHENYTOIN AND BARBITURATES)

- **Phenytoin** - 20mg/kg slow IV (no faster than 1 mg/kg/min with a maximum of 50 mg/min)
- **Phenobarbitone** - 15-20 mg/kg slow IV

Monitor blood pressure

4. Other drugs

- **Carabamzepine** - 10-15mg/kg/day
- **Sodium valproate** - 20-60mg/kg/day
- **Felbamate** - 15mg/kg/day
Surgical management

- Resective surgery
- Callostomy
- Multiple subpial transection
