CLASS TEACHING

LESSON PLAN

ON

EPILEPSY

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ICON

GENERAL OBJECTIVE:

The student will acquire knowledge about the topic **"Epilepsy"** and develop desirable attitude and skills towards the topic and in future practice.

SPECIFIC OBJECTIVES

The student will be able to

- discuss the overview of epilepsy
- define epilepsy
- state the incidence of epilepsy
- enlist the risk factors of epilepsy
- list out the causes of epilepsy
- state the pathophysiology of epilepsy
- enumerate the classification of epilepsy with signs and symptoms
- outline the diagnostic evaluation of epilepsy
- describe about the management of epilepsy
- list out the complication of epilepsy
- explain about the prevention of epilepsy

TOPIC INTRODUCTION

Before entering into the topic I will give you some clue so that you can guess today topic.

A condition in which muscles contract and relax quickly and cause uncontrolled shaking of the body

YES!!!! SEIZURE

A sudden uncontrolled electrical disturbances in the brain

S. NO	TIME	SPECIFIC OBJECTIVES	CONTENT	TEACHER'S AND LEARNER'S ACTIVITY	AV AIDS	EVALUATION
1	2mins	discuss the overview of epilepsy	**EPILEPSY** **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 behavioural disturbances. The word epilepsy describes a syndrome of recurrent unprovoked, seizure unrelated to fever or to acute " **cerebral insult.**" In general: a convulsive or seizure is a paroxysmal manifestations of **neurological dysfunction.**	**Teacher :** Teaching **Learner :** Listening	Black Board	Discuss the overview of epilepsy?
2	5 mins	define epilepsy	**DEFINITION** • Epilepsy is a chronic disorder characterized by recurrent unprovoked paroxysmal seizure. • Seizure is transient occurrence of signs and or symptoms due to abnormally excessive or synchronous neuronal activity in the brain • Seizures or convulsion are paroxysmal episodes involve sudden, violent, involuntary contraction of a group of the skeletal muscles	**Teacher :** Teaching **Learner :** Listening	Black Board	Define epilepsy?

			and disturbances in consciousness, behavior, sensation and autonomic functioning. • Seizures are sudden, abnormal electrical discharges from the brain that result in changes in sensation, behavior, movements, perception, or consciousness. **Neonatal seizure** is defined clinically as "a paroxysmal alteration in **neurological function** (i.d behavioural, motor or autonomic function) either or all three, occurring within 28 days" **Status epilieticus (SE)** is a severe form of seizure activity lasting more than **30 minutes** or recurrent seizures with failure to recover **consciousness** between repeated attacks.			
3.	2 mins	state the incidence of epilepsy	**INCIDENCE** • Full term baby – 3 in 1000 • Pre-term baby – 60 in 1000 • Infants with birth weight <1500 gm : 57.5/1000 • Infants with birth weight between 2500gm to 3999 gm: 2.8/1000 • 12000 are under the age of 18 years • Incidence is higher under 2 years and over age of 65 years.	**Teacher :** Teaching **Learner :** Listening	Black Board	State the incidence of epilepsy?

<table>
<tr>
<td>4</td>
<td>2 mins</td>
<td>enlist the risk factors of epilepsy</td>
<td>RISK FACTORS
<table>
<tr><th>MAJOR</th><th>MINOR</th></tr>
<tr><td>Age < 1 year</td><td>Family h/o of febrile seizure</td></tr>
<tr><td>Prolonged fever</td><td>Family h/o of epilepsy</td></tr>
<tr><td>Hyper pyrexia</td><td>Complex febrile seizure</td></tr>
<tr><td>Infections</td><td>Male gender</td></tr>
<tr><td></td><td>Electrolytes imbalance</td></tr>
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<td>5</td>
<td>5 mins</td>
<td>list out the causes of epilepsy</td>
<td><u>ETIOLOGY:</u>

Acute (Non-recurrent)

✓ Febrile episodes
✓ Intracranial infection
✓ Intracranial hemorrhage
✓ Cerebral edema
✓ Brain tumors
✓ Space occupying lesions (cyst &tumor)
✓ Anoxia
✓ Toxins &drugs
✓ Shigella, Salmonella organisms
✓ Tetanus

Metabolic causes like
</td>
<td>Teacher : Teaching
Learner : Listening</td>
<td>Black Board</td>
<td>List out the causes of epilepsy?</td>
</tr>
</table>

			• Hypocalcaemia • Hypoglycemia • Hyponatremia • Hypernatremia • Hypomagnesmia • Alkalosis • Disorders of amino acid metabolism • Hyperbilirubinemia • **Chronic(recurrent)** • Idiopathic • Epilepsy secondary to ✓ Trauma ✓ Hemorrhage ,anoxia ✓ Infections ✓ Toxins ✓ Congenital defects ✓ Epilepsy stimulating states such as, • Narcolepsy & catalepsy • Psychogenic • Uremia			

			• Allergy • Migraine			
6	5 mins	state the patho physiology	**PATHOPHYSIOLOGY:** ➢ Risk factors and etiological factors ➢ Altered integrity of neuron in the epileptogenic focus ➢ Hyperexcitability of neurons ➢ Partial depolirization ➢ Partial stimulations of neurotransmitter molecules ➢ Imbalanced release of excitatory and inhibitory neurotransmitters ➢ Lowered seizures threshold ➢ Abnormal spontaneous spread of electrical discharge ➢ Clinical manifestations of epilepsy	**Teacher :** Teaching **Learner :** Listening	Black Board	State the patho physiology?
7	15 mins	enumerate the classification of epilepsy with signs and symptoms	**CLASSIFICATION WITH CLINICAL MANIFESTATION** **Seizure** • **Partial seizure** ➢ Simple partial seizure ➢ Complex partial seizure • **Generalized seizure** ➢ Tonic Clonic seizure ➢ Tonic seizure	**Teacher :** Teaching **Learner :** Listening	Black Board	Enumerate the classification of epilepsy with signs and symptoms?

			➢ Clonic seizure ➢ Atonic seizure ➢ Absence seizure ➢ Myoclonicseizure **1) <u>Partial seizures</u>:** Partial seizures which have local onset &involve a relatively small location in the brain (a) **Simple partial seizures with motor signs** Characterized by: • Localized motor symptoms • Somatosensory , psychic , autonomic symptoms • Combination of these • Abnormal discharges remaining unilateral **Manifestations:** • Aversive seizure(most common motor seizure in children)-eye or eyes and head turn away from the side of the focus ; awareness of movement or loss of consciousness. • Rolandic(sylvan)seizure-Tonic-clonic movements involving the face, salivation, arrested speech ;most common during sleep. • Jacksonian march (rare in children)-orderly, sequential progression of clonic movements beginning in a foot, hand or			

			face and moving or marching to adjacent body parts. **(b) Simple partial seizures with sensory signs** Characterized by various sensations, including : • Numbness, tingling, prickling,paresthesia or pain originating in one area . • Visual sensations. • Motor phenomena such as posturing or hypertonia. • Uncommon in children younger than 8 years of age. **(c) Complex Partial Seizures(Psychomotor Seizures)** Observed more often in children from 3 years through adolescence Characterized by: • Period of altered behavior. • Amnesia for event (no recollection of behavior) • Inability to respond to environment • Impaired consciousness during event • Drowsiness or sleep usually following seizure • Confusion and amnesia possibly prolonged • Complex sensory phenomena-Most frequent sensation is a strange feeling in the pit of the stomach that rises toward the throat ; often accompanied by;			

			✓ Odd or unpleasant odors or tastes ✓ Complex auditory or visual hallucinations ✓ Feelings of elation or strangeness (e.g. déjà vu, a feeling of familiarity in a strange environment) • Strong feelings of fear and anxiety; distorted sense of time and self. 2) **Generalized seizures:** It involves both the hemispheres of the brain & are without local onset • **Tonic- clonic seizures**(Formerly known as Grand Mal) Most common and most dramatic of all seizure manifestations occur without warning • **Tonic Phase:** Lasts approximately 10-20seconds **Manifestations:** ✓ Eyes roll upward ✓ Immediate loss of consciousness. ✓ If standing, falls to floor or ground. ✓ Stiffens in generalized , symmetric tonic contraction of entire musculature.			

			✓ Arms usually flexed ✓ Legs ,head and neck extended ✓ May utter a peculiar piercing cry ✓ Apneic may become cyanotic. ✓ Increased salivation and loss of swallowing reflex • **Clonic Phase** Lasts about 30 seconds but can vary from only a few seconds to hours or longer **Manifestations:** • Violent jerking movements as the trunk and extremities undergo rhythmic contraction and relaxation • May foam at he mouth • May be incontinent of urine and feces. As event ends,movements less intense, occuring at longer intense ceasing entirely • **Status Epilepticus:** ❖ Series of seizures at intervals too brief to allow the child to regain consciousness between the time and one event ends and the next begins. ♦ Requires emergency intervention. ♦ Can lead to exhaustion, respiratory failure and death			

			• **Post- ictal state** **Manifestations :** • Appears to relax. • Semiconscious and difficult to arouse. • Confused for several hours. • Poor coordination. • Mild impairment of fine motors movements. • Visual and speech difficulties. • May vomit or complain of severe headache. • On awakening is fully conscious. • **Absence Seizures**(Formally called Petit Mal or Lapses) Characterized by : • Onset usually between 4 and 12 years of age. • More common in girls than in boys. • Usually cease at puberty. • Brief loss of consciousness. • Abrupt onset ; suddenly develops 20 or more attacks daily. • Day dreaming • Events possibly precipitated by hyperventilation , hypoglycemia, stresses ,fatigue or sleeplessness.			

			Manifestations : • Brief loss of consciousness . • Appear without warning or aura. • Usually last about 5 to 10 seconds. • Slight loss of muscle tone may cause child to drop objects. • Minor movements such as lip smacking , twitching of eyelids or face or slight hand movements. • Amnesia for episode. • **Atonic and Akinetic Seizures (also known as drop attacks)** Characterized by : • Onset usually between 2 and 5 years of age. • Sudden , momentary loss of muscle tone and postural control. • Events recurring frequently during the day, particularly in the morning hours and shortly after awakening. **Manifestations:** • Loss of tone causing child to fall to the floor violently; unable to break fall by putting out hand; may incur a serious injury to the face ,head or shoulder. • Loss of consciousness only momentary.			

			Myo-clonic Seizures • A variety of seizures episodes May be isolated as benign essential myoclonus. May occur in association with other seizure forms. Characterized by : • Sudden, brief contractures of a muscle or group of muscles • Occur singly or repetitively. • No post- ictal state. • May or may not be symmetric. • May or may not include loss of consciousness. **Infantile Spasms:** • Also called infantile myoclonus, massive spasms, salaam episodes or infantile myoclonic spasms. • Mostly commonly occur during the first 6 to 8 months of life. • Twice as common in boys as in girls. • Numerous seizures during the day without post-ictaldrowsiness or sleep . • Poor outlook for normal intelligence. **Manifestations:**			

			• Possible series of sudden, brief, symmetric ,muscular contractions. • Head flexed ,arms extended and legs drawn up. • Eyes sometimes rolling upward or inward. • May be preceded or followed by a cry or giggling. • May or may not include loss of consciousness . • Sometimes flushing, pallor or cyanosis.			
8	2 mins	outline the diagnostic evaluation	**DIAGNOSTIC EVALUATION:** • Establishing a diagnosis is critical for establishing a prognosis & planning proper treatment . The process of diagnosis includes : 1. Determining whether epilepsy and seizures exist & not an alternative diagnosis . 2. Defining the underlying cause if possible. o History collection about age at onset, time ,child's behavior during the event etc. o Family history, labour and delivery history o Physical and neurological examination. o Lab investigations o EEG , CT and MRI o Lumbar puncture	**Teacher :** Teaching **Learner :** Listening	Black Board	Outline the diagnostic evaluation?

9	13 mins	describe about the management of epilepsy	***MANAGEMENT:*** **<u>THERAPEUTIC MANAGEMENT:</u>** The goal is to control the seizures or to reduce their frequency and severity , discover and correct the cause when possible and help the child live as normal life as possible. It has four treatment options: **i) Drug Therapy :** - Administration of appropriate antiepileptic drugs. **Phenobarbitone** 15 - 20mg / kg IV loading dose 3.5 - 5mg / kg / day maintenance dose **Phenytoin** 15 - 20 mg / kg IV at 1mg / kg / min 4 - 8 mg / kg day maintenance dose **Midazolam** 0.02 - 0.4 mg/kg IM 0.02 - 0.1mg/kg IV 0.06 - 0.4mg/kg/hr **Others:** Lorazepam, diazepam, Paraldehyde - 75% of children achieved complete control with epilepsy. **(ii) Ketogenic Diet :** It is a high fat , low carbohydrate & adequate protein diet	**Teacher :** Teaching **Learner :** Listening	Black Board	Describe about the management of epilepsy?

			.Consumption of such a diet forces the body to shift from curing from using glucose as the primary energy source to using fat & child may develop a state of Ketosis Potential side effects of the diet are constipation, weight loss, lethargy&kidney disease. It is unknown whether long term effects such as increased blood lipids will occur. About 90% of children had decrease in seizure after instituting the ketogenic diet. **(iii) Vagus Nerve Stimulation** Vagus Nerve Stimulation uses an implantable device that reduces seizures in individuals who have not had effective control with drug therapy. A programmable signal generator is implanted subcutaneously in the chest Electrodes tunneled underneath the skin deliver electrical impulses to the left vagus nerve. The device is programmed non invasively to deliver a precise pattern of stimulation to left vagus nerve. Caregiver can activate the device using magnet at the onset of seizures. About 1/3 rd of patients have 50% or greater reduction in seizures after 1 year of therapy. **(iv) Surgical Therapy :** • Surgical removal in case of hematoma, cyst ,tumor is the cause.			

			• Removal of epileptogenic area ,corpus callosotomy, Temporal and lobectomy.			
10	2 mins	list out the complications of epilepsy	**COMPLICATIONS** ➢ Cranial nerve palsies ➢ Raises ICP ➢ Subdural effusion ➢ Cerebral palsy ➢ Hydrocephalus ➢ Mental-physical handicaps ➢ Learning disability ➢ Recurrence of epilepsy	**Teacher :** Teaching **Learner :** Listening	Black Board	List out the complications of epilepsy?
11	5 mins	explain about the prevention of epilepsy	**PREVENTIONS** ✓ Regular ANC check up ✓ Treatment of infections during ANC period ✓ Correction of anemia and control of Gestational Diabetes ✓ Training of local Dias or paramedics about proper delivery and referral system ✓ Raising awareness about institutional delivery ✓ Manage actively fetal distress ✓ Ensuring proper training of neonatal resuscitations.	**Teacher :** Teaching **Learner :** Listening	Black Board	Explain about the prevention of epilepsy?

SUMMARY

So far we have discussed about definition, causes, types, pathophysiology, clinical manifestation, diagnostic evaluation and management in epilepsy

CONCLUSION

Epilepsy , in general the more frequent and more severe the seizures, the more likely that neurobehavioral disorders will develop.

RECAPTIUALIZATION:

1. Define epilepsy?
2. Enlist the risk factors of epilepsy?
3. List out the causes of epilepsy?
4. State the pathophysiology of epilepsy?
5. Enumerate the classification of epilepsy?
6. List out the complication of epilepsy?

Bibliography

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