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**Diploma in Pharmacy 2<sup>nd</sup> Year**  
**Pharmacotherapeutics**  
**Important Questions**  
**Chapter 2 (d) : Central Nervous System**

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## Chapter 2 (d)

### Central Nervous System

### IMPORTANT Questions

**Q1. What is Epilepsy ? Write etiopathogenesis, clinical manifestations, pharmacological management, and non-pharmacological management.**

**Ans.**

## Epilepsy

- Epilepsy is a nervous system disorder due to abnormal electrical activity in brain cells, it is also called seizure and convulsant.
- This disorder results contraction , involuntary movement , shaking of the body etc.

### Classification of seizures

- Seizure is classified on the basis of behavioural and electrophysiologic pattern of activity as

#### 1. Partial (Focal seizures)

- ⇒ It mainly appears in only one hemisphere.
- ⇒ That means symptoms only happen in a specific part or on one side of your body. But focal seizures can sometimes spread and become generalized seizures.
  - a) Simple partial seizures with motor, sensory, or autonomic symptoms.
  - b) Complex partial seizures.
  - c) Partial seizures with secondary generalization.

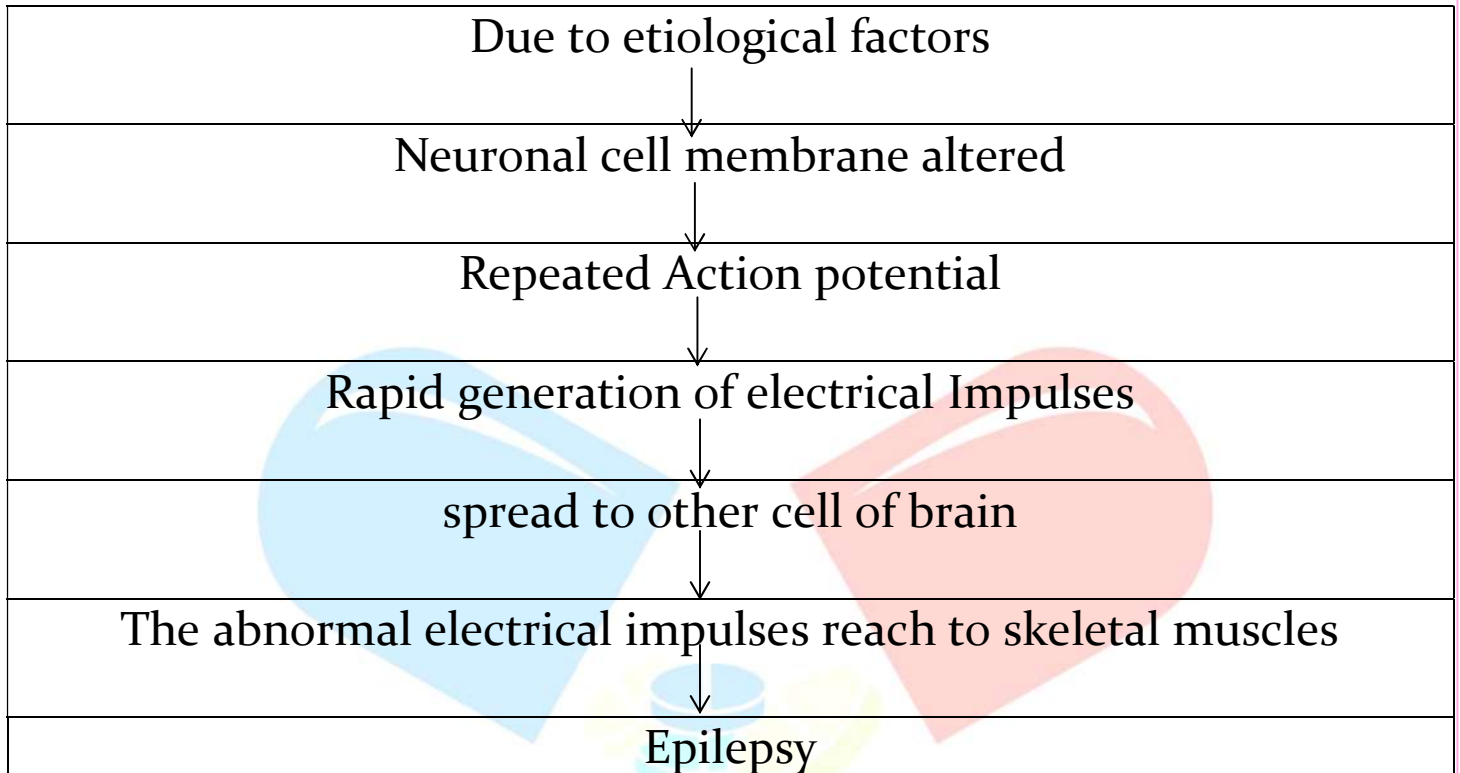
#### 2. Generalized seizures

- ⇒ These are seizures that happen in both hemispheres of your brain side. These seizures tend to cause more severe effects and symptoms.
  - a. Absence seizures.
  - b. Tonic- clonic seizures.
  - c. Other (Myoclonic, tonic, clonic, atonic

### Etiology

- Brain injury
- High fever
- lack of oxygen to brain
- Brain tumor
- Genetic brain disorder
- Stroke (reduce blood supply to brain )

## Pathogenesis



## Clinical Manifestation

- ✦ Recurrent of seizure
- ✦ Sudden stiffness due to unknown reason
- ✦ Sudden falling due to unknown reason
- ✦ Sudden bouts of chewing due to unspecific reason
- ✦ Rpetitive involuntary movement
- ✦ Changes in sense of smell touch and sound

## Non Pharmacological Management

- ❖ Ketogenic diet is useful in children are suffering from seizure . ketogenic diet is a high -fat adequate protein , and low carbohydrates diet for example fish , meat , eggs , seafood etc

## Pharmacological managements

- ❖ Benzodiazepines— ex- clonazepam, lorazepam, diazepam.
- ❖ Barbiturates— ex- phenobarbital, desoxyphenobarbital.
- ❖ Deoxy barbiturates— ex- primidone.
- ❖ Hydantoin— ex-phenytoin, ethotoin.
- ❖ Aliphatic carboxylic Acid— ex- valproic acid, magnesium valproate.
- ❖ Oxazolidine derivatives— ex- trimethadione, paramethadione.
- ❖ Cyclic GABA Analogues— ex- gabapentin, pregabalin.
- ❖ Iminostilbene— carbamazepine, oxcarbazepine.
- ❖ Other drugs— ex- levetiracetam, parampanel, brivaracetam, lacosamide

## Q2. Define Parkinson's ? Give etiopathogenesis, clinical manifestations, pharmacological management, and non-pharmacological management.

### Ans. **Parkinson's Disease**

→ It is a chronic, progressive, neurodegeneration disorder. in which slows down the voluntary movement of body parts (bradykinesia), muscles tone changed (rigidity) and tremor at rest.

#### Etiology

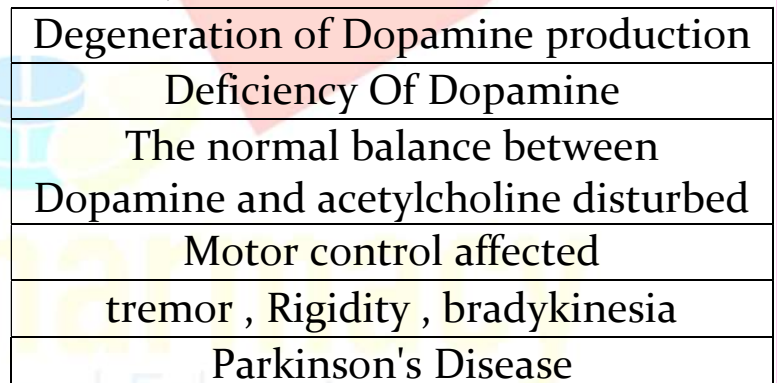
- Genetic factors
- Advancing age : above 60 year mostly scene
- Head injury
- Drugs : like neuroleptics , antiemetics etc.
- Exposure to toxin.
- Low production of Dopamine

#### Pathogenesis of Parkinson's Disease

#### Clinical

#### Manifestation

- ✚ Slow movement
- ✚ Tremor / trembling
- ✚ Low volume of speech
- ✚ Dropping of saliva
- ✚ Constipation
- ✚ Tendency to fall backwards
- ✚ Depression



#### Non Pharmacological Management

- ❖ Avoid and discard the all activities which cause/induce the depression, stress, sleep disorders etc.
- ❖ Follow and change the diet plans according to own demand or prescription by any RMP
- ❖ Practice the yoga, meditation, physical exercise regularly. Ventilation is one of the reasons which leads to brain disorders and cardiac disorders also
- ❖ Practice of herbal/natural medicine other than allopathic.
- ❖ Do such all activities which makes you happy and cheerful.

#### Pharmacological Management

- ❖ **Levodopa** : It converts into dopamine when reach to the brain . It is the most effective drug For PD.
- ❖ **Dopamine agonist** : Bromocriptine , ropinirole : They work like dopamine on dopaminergic receptors.
- ❖ **MAOI** : Selegiline , Rasagline.
- ❖ **Anti-cholinergic drugs** : Benztropine , Procyclidine.

### Q3. What is Alzheimer's Diseases ? Give etiopathogenesis, clinical manifestations, pharmacological management, and non-pharmacological management.

**Ans.**

## Alzheimer 's Disease

→ Alzheimer's disease is a chronic irreversible neurodegeneration disease which gradually destroy the ability to think, remember, and learn ,and involves memory loss.

### Etiology

- Neurochemical factor
- Genetic factors
- Environmental factors
- Head injury
- Smoking
- Advancing age ( above 65 years ).

### Pathogenesis

Degeneration of neurochemicals

due to etiological factors

deficiency of neurochemicals

Alzheimer disease

### Clinical Manifestation

- ✚ Loss of memory
- ✚ Placing object at unusual place
- ✚ Confusion about events, time and place
- ✚ Asking the same question repeatedly
- ✚ Problem to perform familiar work
- ✚ Getting lost of or wandering
- ✚ Problem in sleeping
- ✚ Behaviour changes like agitation , anxiety
- ✚ Poor thinking or understanding
- ✚ Difficulty in recognising family members or friends
- ✚ Difficulty in speaking during choosing the right words.

### Non Pharmacological Management

- ❖ Avoid and discard the all activities which cause/induce the depression, stress, sleep disorders etc.
- ❖ Follow and change the diet plans according to own demand or prescription by any RMP
- ❖ Practice the yoga, meditation, physical exercise regularly. Ventilation is one of the reasons which leads to brain disorders and cardiac disorders also
- ❖ Practice of herbal/natural medicine other than allopathic.
- ❖ Do such all activities which makes you happy and cheerful.

### Pharmacological Management

- ❖ **Chonilesterase Inhibitors** : Donepezil , galantamine.
- ❖ **Glutametergic Drugs** : Gabapentin , Lamotrigine



## Q4. What is Stroke ? Give etiopathogenesis, clinical manifestations, pharmacological management, and non-pharmacological management.

**Ans.**

### Stroke

- Stroke is a condition in which blood supply to the brain reduced or stops due to blockage or hemorrhage.
- In stroke condition brain function is stopped due to the death of brain cell.
- Stroke is also called brain attack and cerebrovascular accident ( CVA).

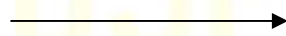
### Types

- **Ischemic stroke** : Blood flow to the brain reduced due to narrowed or blocked arteries of brain by Thrombus( lipid deposition ) or embolus ( blood clot ).
- **Haemorrhagic stroke** : Blood flow is disturbed due to leakage of blood vessels of brain.

### Etiology

- Blockage in brain arteries
- Leakage in blood vessels
- Diabetes mellitus
- Smoking
- Inactivity
- Obesity
- Alcoholism
- Estrogen use
- Advancing age
- Family history

### Pathogenesis



Due to Etiological Factors ( Blockage )
Reduced Blood Supply
Death of brain cell
loss of brain functions
Stroke

### Clinical Manifestations

- ✚ Dizziness
- ✚ Loss of control and coordination
- ✚ Difficulty in speaking and understanding
- ✚ Paralysis in face, leg, arms , mostly on one side of the body
- ✚ Blurred vision
- ✚ Severe headache

### Non Pharmacological Management

- ❖ Early Contact to doctor
- ❖ Early Diagnosis

### Pharmacological Management

- ❖ Emergency treatment with medications
- ❖ Alteplase Injection : it is given by vein in arm , it dissolves the blood clot and restore the blood flow
- ❖ Anticoagulant drugs : these drugs prevent further blood clot .Heparin , warfarin.

**Q5. Define Migraine ? Write etiopathogenesis, clinical manifestations, pharmacological management, and non-pharmacological management.**

**Ans. Migraine**

- Migraine is a recurrent attacks of headache that affects one side of head.
- Migraine may last 4-48 hours.
- A migraine is a headache that can cause severe throbbing pain or a pulsing sensation, usually on one side of the head and also involving altered regulation and control of afferents, with a particular focus on the cranium. It's often accompanied by nausea, vomiting, and extreme sensitivity to light and sound.

**Types**

- **Migraine with Aura** : It is a type of migraine in which a person has warning sign ( aura ) that a migraine attacks is going happen
  - Examples of aura : constipation , mood changes , neck stiffness , increasing urination
- **Migraine without aura** : This is the most common type of migraine.

**Etiology**

- Abnormal metabolism of serotonin in brain.
- Family History
- Age ( above 30 )
- Hormonal changes
- Pregnancy
- Oral contraceptives

**Pathogenesis** →

**Clinical**

**Manifestation**

- ✚ One side headache
- ✚ Nausea and Vomiting
- ✚ Blure vision
- ✚ Sensitivity to light noise or odours
- ✚ Feeling tired
- ✚ Stiff neck

Etiological factors
disturbance in neurochemical
aura ( some time )
Migraine

**Non Pharmacological Management**

- ❖ Should avoid triggers of headache like intense light and sound , and stress etc.
- ❖ Should rest in a dark place

**Pharmacological Management**

- ◇ **NSAIDs** : Should use in mild to moderate headache. Paracetamol , Ibuprofen , aspirin
- ◇ **Calcium channel blocker** : Amlodipine , Verapamil.
- ◇ **β Blockers** : Atenolol , propranolol.
- ◇ **Antidepressant** : Amitriptyline , Venlafaxine.
- ◇ **Anti- epileptic drugs** : Valproate , carbamazepine.
- ◇ **Vitamins** : Riboflavin ( B<sub>2</sub> )



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