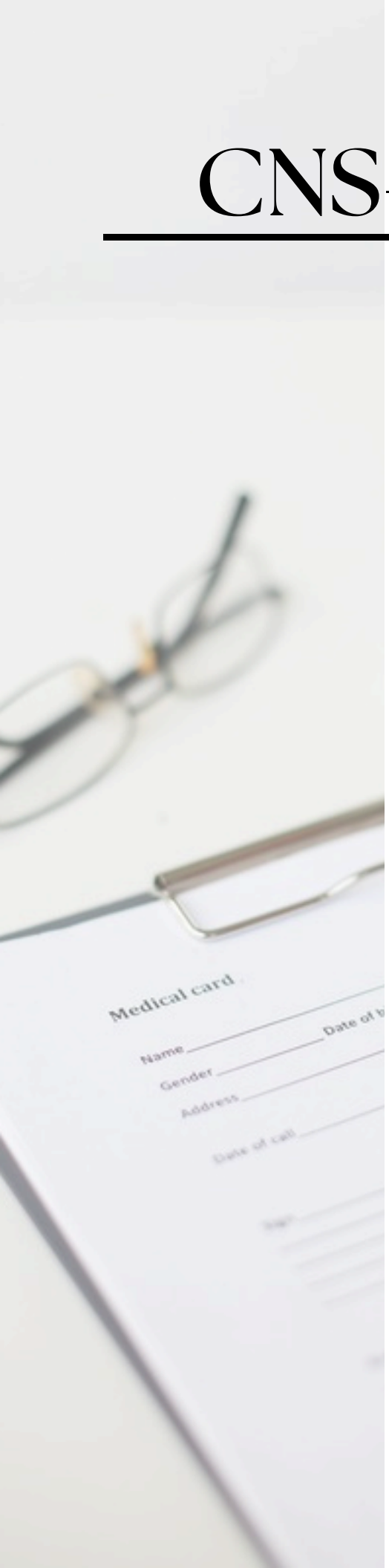
# CNS-Pharmacology




# Archive

## Lecture 3

### Antiepileptic Drugs

# CNS-Pharmacology Lecture 3

**1.Thefollowingadverseeffects match except?**

a. Phenytoin: Hypertrophy of the gums.
b. Carbamazepine: worsening of petit mal and myoclonic epilepsy.
c. Vigabatrin: constriction of visual field.
d. Topiramate: myopia and glaucoma
e. Sodium valproate: impaired cognition in children

**Topiramate**

**MOA:**
blocks Na & Ca++ channels.
Bind glutamate receptor
**Used in:**
focal, generalized epilepsy and absence seizures
**Side effects:**
impaired concentration, diplopia, weight loss & kidney stones

**Answer: d**

**2.Regarding diazepam : Which one of the following is true?**

It is effective for stopping convulsions of status epilepticus

.Diazepam, Clonazepam & Lorazepam : drug of choice for treatment of status epilepticus (rapid onset).

**3.The followings are useful for treatment epilepsy except?**

a. Clonazepam.
b. Valproate.
c. Pregabalin.
d. Gabapentin
e. Oxycodone

**Answer: e**

**4.All are Mechanisms of action of antiepileptic drugs except?**

a. Block sodium channels
b. Block calcium channels
c. Enhance inhibitory GABAergic impulse
d. Interference with glutamate
e. Selective serotonin reuptake inhibitor

**Answer: e**

**5.Which of the following is a Ca channel blocker?**

a. Valproic acid
b. carbamazepine
c. benzodiazepines
d. Tiagabine

**III- Valproic acid, valproate, divalproex**

- Pharmacokinetics:
  - Well absorbed orally.
  - 90% bound to plasma proteins.
  - Metabolized in the liver to toxic metabolites.
- Mechanism of action:
- It acts by increasing GABA concentrations in synaptic regions through:

-Inhibition of ***GABA transaminase*** (enzyme that breaks GABA) or

-Inhibition of ***GABA reuptake*** by nerve endings.

- It blocks Na+ channels & T-Ca+ channels.

**Answer: a**

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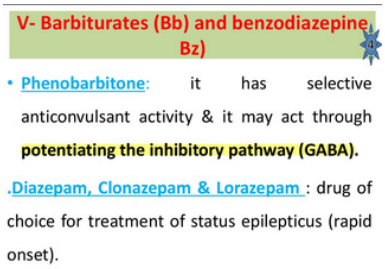
**6.Which of the following isn't a Na channel blocker?**

a. Phenytoin
b. Valproic acid
c. lamotrigine
d. benzodiazepines



V- Barbiturates (Bb) and benzodiazepine Bz)

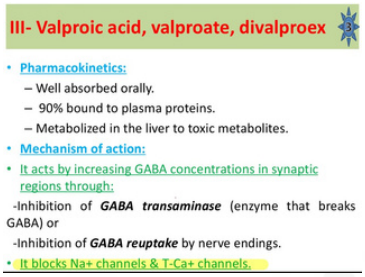
- Phenobarbitone: it has selective anticonvulsant activity & it may act through potentiating the inhibitory pathway (GABA).

.Diazepam, Clonazepam & Lorazepam : drug of choice for treatment of status epilepticus (rapid onset).

**Answer: d**

**7. Valproic acid mechanisms ?**

A) Inhibition of GABA transaminase
B) prolong Na+ channels activation
C) activation of Ca+ channels



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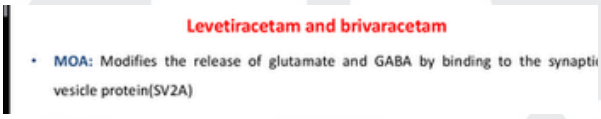
**Answer: a**

**8.Which of the following is false about anti-epileptic drugs? Select one:**

a. Carbamazepine blocks voltage dependent sodium channels in the inactivated state.
b. Vigabatrin and valproate increase brain GABA level by inhibiting its catabolism.
c. Levetiracetam blocks NMDA glutamate receptors.
d. Ethosuximide blocks T-type calcium channels in thalamic neurons.
e. Topiramate enhances endogenous GABA activity after binding to GABA-A receptors.



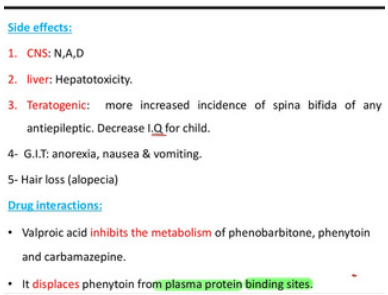
Levetiracetam and brivaracetam

- MOA: Modifies the release of glutamate and GABA by binding to the synaptic vesicle protein(SV2A)

**Answer: c**

**9.The following are adverse effects of sodium valproate when used in epilepsy except?**

a. Impaired cognition.
b. Hepatitis.
c. Alopecia.
d. Increase in weight
e. Increased blood level of lamotrigine.



Side effects:

1. CNS: N,A,D
2. liver: Hepatotoxicity.
3. Teratogenic: more increased incidence of spina bifida of any antiepileptic. Decrease I.Q for child.
4. G.I.T: anorexia, nausea & vomiting.
5. Hair loss (alopecia)

Drug interactions:

- Valproic acid inhibits the metabolism of phenobarbitone, phenytoin and carbamazepine.
- It displaces phenytoin from plasma protein binding sites.

**Answer: e**

**10.The following are useful for classical petit mal (Absence seizures) epilepsy except?**

a. Clonazepam.
b. Valproate.
c. Ethosuximide.
d. Levetiracetam.
e. Tiagabine.

**Answer: e**

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**11.Carbamazepine:Which oneof the following is false?**

a. It induces hepatic microsomal enzymes which shortens its own half-life
b, It is useful for chronic control of both grand mal and partial epilepsy.
c. It is first choice drug for treatment of trigeminal neuralgia in adults.
d. It can cause dizziness and diplopia as side effects at beginning of its use.
e. It inhibits repetitive neuronal firing by increasing brain GABA level.

**Answer: e**

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**12. A patient was started on Lamotrigine and develops skin rash and peeling. This serious side effect of this drug is called:**

A. Kidney stones
B. Oligohidrosis
C. Stevens-Johnson syndrome
D. Dizziness
E. Diplopia

**Lamotrigine**

**MOA:**
blocks Na & Ca++ channels.
**used in**
all types of epilepsy except status epileptics
**Side effects**
dizziness, headache & ataxia, Stevens Johnson syndrome

**Answer: C**

**13. The primary mechanism of action of Phenytoin:**

A. Blocking of $Na^+$ channels
B. Blocking of $Cl^-$ channels
C. Enhancing GABA metabolism
D. Inhibiting glutamate synthesis
E. Blocking $Ca^{2+}$ channels

- **Mechanism of action**
  - It blocks voltage-gated **Na+ channels**.
  - At higher concentrations. It can block voltage-dependent **Ca++ channels**
  - interferes with the **release of neurotransmitters**.

**Answer: A**

**14.Valopric acid and warfarin interaction:**

A.Valopric acid displace warfarin from plasma protein
B.Valopric acid increase metabolism of warfarin
C.Valopric acid decrease warfarin metabolism

**Side effects:**
1. CNS: N,A,D
2. liver: Hepatotoxicity.
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4- G.I.T: anorexia, nausea & vomiting.
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**Answer:C**