

CNS pharmacology - final

Page 2 **Anti epilepsy drugs**

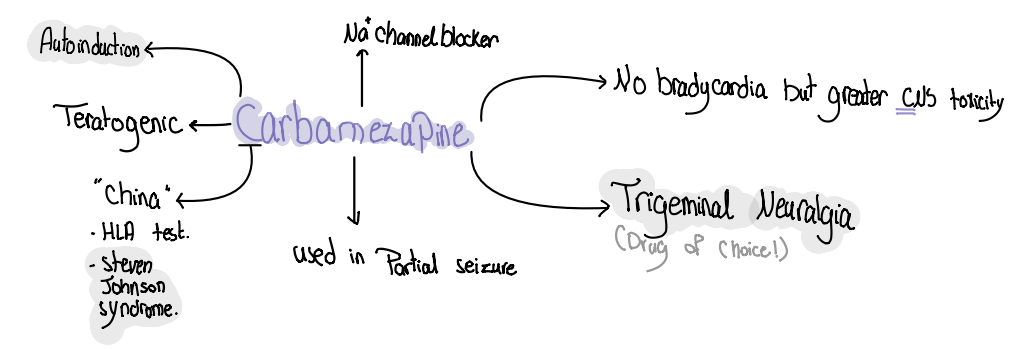
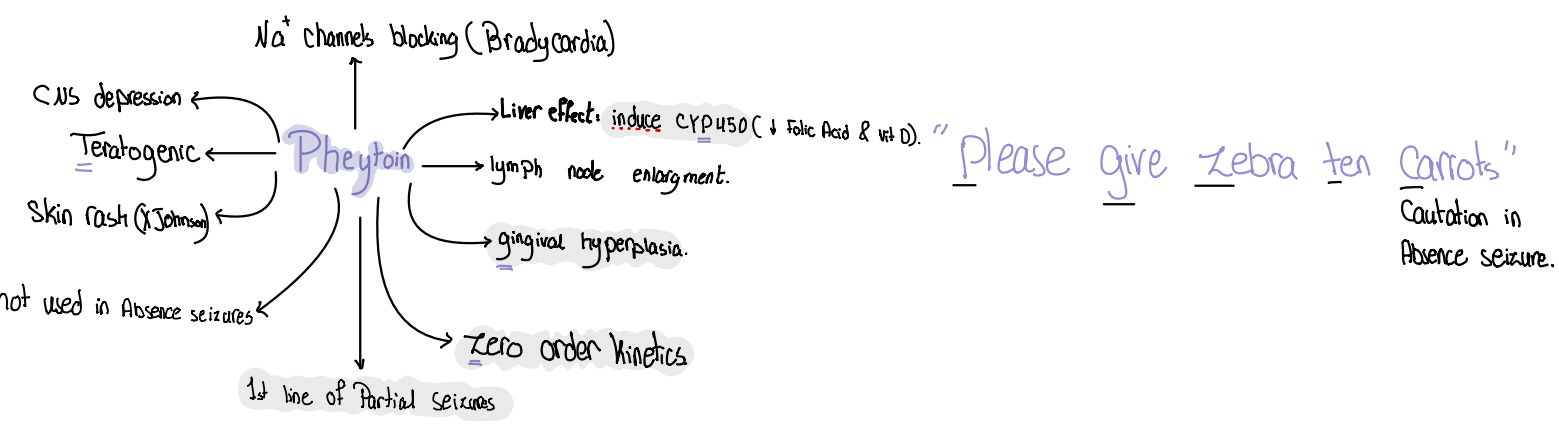
Page 3 **Antipsychotic drugs**

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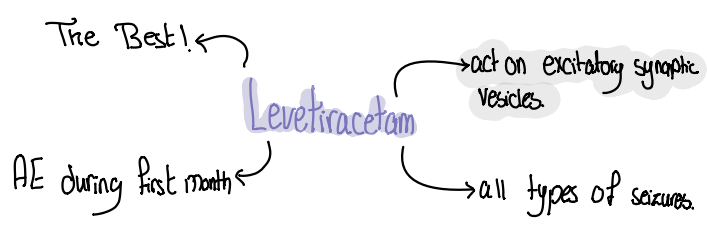
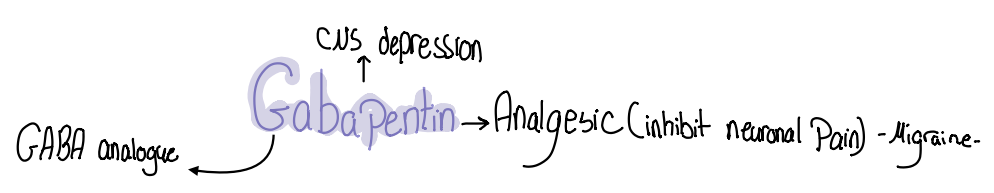
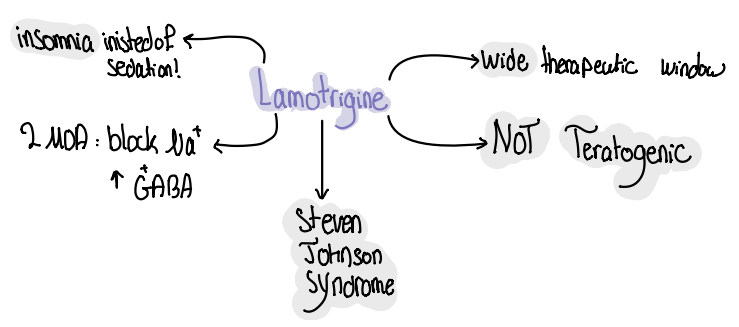
Page 5 **Antidepressant drugs**

Anti epilepsy drugs

*Warning:
 • ↑ Suicidal thoughts.
 • Never stop them abruptly.



Ethosuximide (Succinimides) → 1st choice with Absence seizures (T-type Ca²⁺)



Diazepam → treat status Epileptics

Phenobarbital → treat infants Epilepsy.

Antipsychotic drugs

- irreversible.
- Not genetic disease.
- Thought disease.
- Cure X, manage ✓
- sedation, hypotension (acute or fatal)
- No Tolerance.

* Dopamine theory increase in dopamine, ↑ activation of D2 receptors, Positive symptoms → Antagonize D2 receptors (past)
 * Antagonize D2 & serotonin receptors (present).

long term use lead ← **Haloperidol** → The only Atypical drug:
 - only Positive symptoms.
 - only for acute attack.
 - D2 antagonist.

Clozapine → best drug for Negative symptoms.
 Agranulocytosis! → Diabetes mellitus! + ↑↑ weight gain.

Endocrine effects (loss of libido ...) ← **Risperidone** → major effect on serotonin receptors, also block D2

Olanzapine → metabolic syndrome + ↑ weight gain.

Quetiapine → DM, weight gain.
 → ↑↑ Sedation
 → Doesn't elevate Prolactin

metabolized by CYP2D6, CYP3A4 (genetic effect) ← **Aripiprazole** → mild weight gain.
 → Partial D2 agonist
 → Dizzy!
 hard dosage adjustments ←

Neurological side effect of Antipsychotics (Extra Pyramidal side effect)

- Acute dystonia
 - Akathisia
 - Parkinsonism
 - Tardive dyskinesia
- can be treated similarly with antiparkinsonian agents
- Inversible, worse on withdrawal, with long term use (chronic D2 blockade).
 - امتداد نسبة الدواء -

- result from D2 receptor block -
 !high dose of risperidone!

General anesthesia

Phases of Anesthesia



* Possible complications:

- ↑ Heart Rate ⇒ Sotalol.
- hypotension ⇒ Vasopressor.
- Pain during surgery ⇒ Fentanyl.

* Ketamine لا يتحلل hypotension باستثناء Ketamine
 * أغلب الأدوية يرفع ال intracranial pressure باستثناء Propofol

* For induction: "IV"

Propofol

- MoA: through GABA.
- drug of choice for induction.
- Anti emetic, no analgesic effect.
- Reduce cerebral blood flow. (تقلل من ضغط الدم داخل الجمجمة - intracranial pressure)
- Promote bacterial growth.

Ketamine

- block NMDA receptors.
- used as: Antidepressant, in resistant type-pain (analgesic)
- Dissociated state.
- short acting (تأثير سريع يستمره بالوقت)
- used in Adults in case of bradycardia hypotension

* For maintenance: "inhalation"

- The potency of inhaled anesthesia = MAC
- No metabolism for these drugs except Halothane (20% → produce toxic metabolite in Adult) - not in Children.

Halothane

- nice in children.
- no vasoconstriction so use it in Asthma & COPD Patient
- Nausea, very bad bradycardia & hypotension.

Isflurane

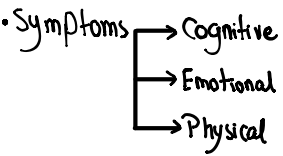
- ✓ hypotension, ✗ bradycardia.
- The most common nowadays.
- Zero metabolism = zero hepatotoxicity

Nitric oxide

- second gas effect
- accelerate effect of inhaled anesthesia - combined with it.
- Rapid onset.

Antidepressant drugs

• Imbalance between Dopamine, Norepinephrine & Serotonin = Depression.



• Treatment: Medications + Psychotherapy.

• SSRI are first line of treatment.

• Antidepressant works by increasing NT level, MAO inhibitors increase all three NTs - used in Atypical depression.

• Side effects appear due to increase NT in synapse (synaptic effect) which need hours to days before therapeutic effect appear (need 1-6 weeks)

• A key concept in treatment is Compliance

↑ hours to weeks → increase serotonin level
 ↓ 2-6 weeks (2-8 weeks) → for true effect.
 ↓ 8 weeks → trial activity (to know Antidepressant work or not)

* Monoamine hypothesis: depression is related to deficiency in serotonin, NE and dopamine.

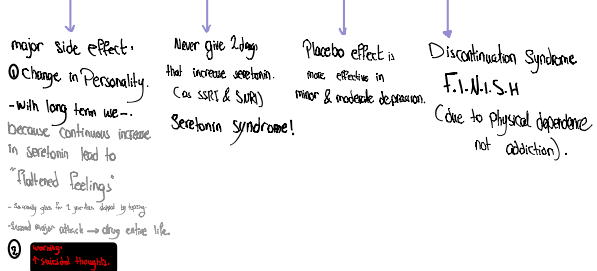
→ amine level increase immediately but therapeutic effects need weeks!

* Neurotrophic hypothesis: depression is related to drop in BDNF & in tyrosine kinase receptor

→ Chronic activation - weeks - of monoamine receptors lead to increase in BDNF transcription = Rebuilding brain Plasticity.

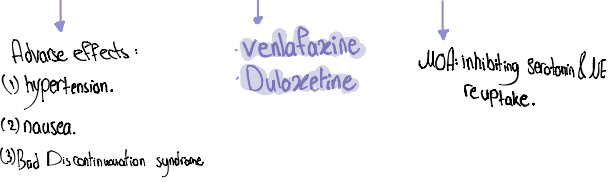
The goal is to restore brain Plasticity so don't judge treatment before 8 weeks.

Serotonin Specific reuptake inhibitors

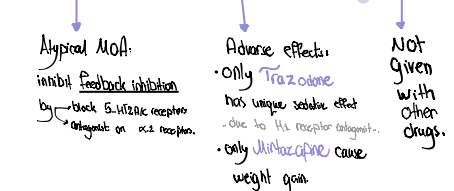


* إذا ما زبط مع الريف SSRI يستعمل لا SSRI
 يوحده SSRI لمدة 8 أسابيع إذا ما زبط فأنه
 يقل tapering لمدة (سبوعين) ويوقف الدواء
 لمدة 1-2 أسابيع (tapering time 2-4 أسابيع).
 - SSRI لا يوحده مع الريف (watching time 2-4 أسابيع).

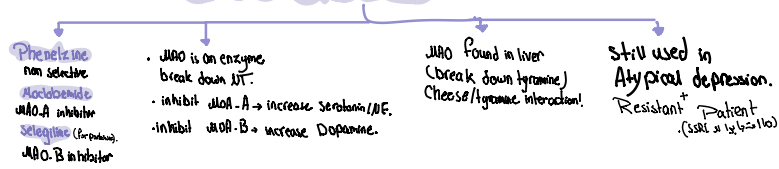
Serotonin Norepinephrine reuptake inhibitors



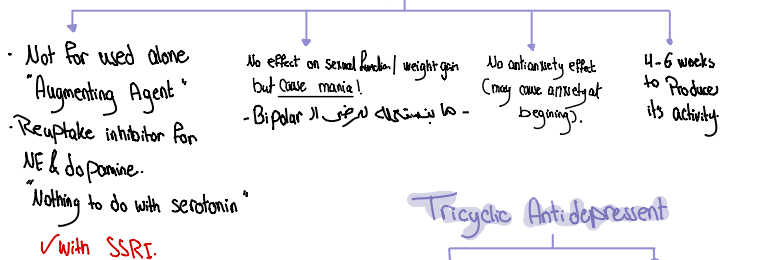
Trazodone & Mirtazapine



MAO inhibitors



Bupropion



Tertiary Antidepressant

