

CNS Pharmacology

- Final Summary

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First Lecture :)

Parkinson

Alzheimer

Pharmacology of Parkinson's Disease

* This disease = Dopamine deficiency*

Dopamine precursor with peripheral dopa decarboxylase inhibition

Dopamine Agonists

MAO-B Inhibitor

COMT Inhibitors

Anticholinergics

Pharmacology of Alzheimer's Disease

This disease=Ach deficiency

Cholinesterase Inhibitors

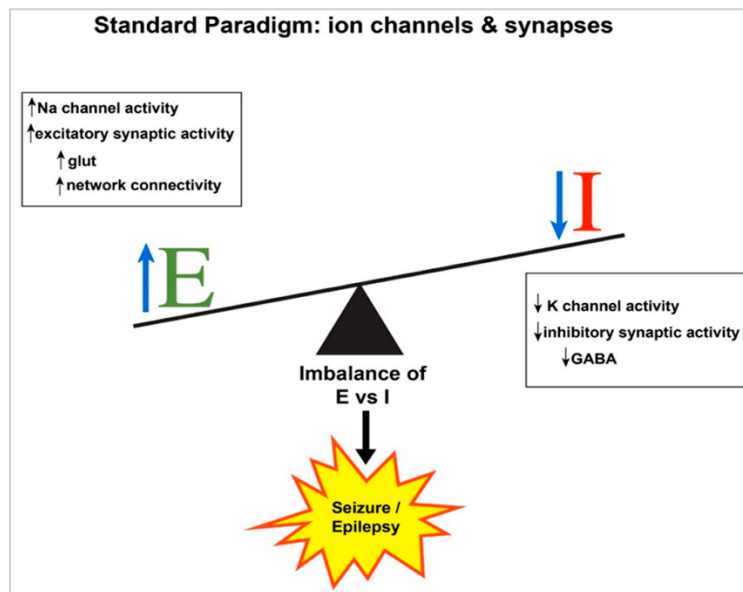
NMDA Receptor Antagonist

Anti-amyloid monoclonal antibodies (New therapy)

Lecture 2

Epilepsy

It's increased excitation, decreased inhibition, or both, favor a hyperexcitable state and an increased propensity for seizure generation .
(too much Glutamate, Ca^{+2} and Na^{+}) or too little inhibition(too little GABA and Cl^{-})



الصورة اضافية بس ممتازة
لاستنتاج آلية عمل الأدوية

Pharmacology of Epilepsy

(Older Drugs) = GABAergic Enhancers

Phenytoin

Valproic acid

Barbiturate

BDZ “ low dose”

Pharmacology of Epilepsy

(Newer Drugs)

Sodium Channel Blockers

Calcium Channel Blockers

ملاحظة: اسماء الادوية ليست للحفظ في كل مادة الدكتوراه
أهم اشياء الـ MOA لكن ضفتهم لانه الدكتوراه ذكرتهم اكثر
من مرة في محاضرتها ف للاحتياط فقط

Lecture 3

Alcohol

1. **Methanol** Intoxication causes 'snowfield' or snowflakes vision ❄️

Lecture 4

Muscle Relaxants

CNS stimulants

Classification of Skeletal Muscle Relaxants

- Centrally Acting Muscle Relaxants:
 - Baclofen (GABA-B agonist)
 - Tizanidine (Alpha-2 adrenergic agonist)
 - Diazepam (Benzodiazepine, GABA-A agonist)
 - Cyclobenzaprine (TCA-like, used for acute muscle spasms)
- Peripherally Acting Muscle Relaxants:
 - Dantrolene (Inhibits ryanodine receptors, used in malignant hyperthermia)
 - Botulinum Toxin (Prevents acetylcholine release at neuromuscular junction)

Skeletal Muscle Relaxants جدول لتنظيم أفكار الصورة

السابقة

ملاحظة: أسماء الادوية ليست للحفظ اهم اشى الـ MOA

Drug	Classification	MOA ☆ imp. ☆	How It Works هذا العمود اضافى لغايات الفهم فقط
Baclofen	Centrally Acting	GABA-B agonist	Blocks signals in spinal cord to relax muscles
Tizanidine	Centrally Acting	Alpha-2 adrenergic agonist	Reduces nerve activity → less muscle tone
Diazepam	Centrally Acting	GABA-A agonist	Enhances brain inhibition → muscles chill out
Cyclobenzaprine	Centrally Acting	TCA-like (used for acute muscle spasms)	Works on brainstem to reduce sudden muscle contractions
Dantrolene	Peripherally Acting	Inhibits ryanodine receptors (used in malignant hyperthermia)	Stops calcium release → prevents muscle contraction
Botulinum Toxin	Peripherally Acting	Prevents acetylcholine release at NMJ	Nerve can't tell muscle to move → muscle relaxes

☆ Please note that Neuromuscular blockers are also peripherally acting skeletal muscle relaxants(which are Depolarizing Agents & Non Depolarizing Agents) as following:

Depolarizing Agents	Peripherally Acting		
Nondepolarizing Agents:	Peripherally Acting		1. Curare Like, 2. Aminosteroids
1. Curare Like (" -curium ")	مهم جدا المقطع الي ينتهي فيه اسم هاي العائلة "باللون الأحمر"		
2. Aminosteroids (" -curonium ")	مهم جدا المقطع الي ينتهي فيه اسم هاي العائلة "باللون الأحمر"		

CNS stimulants:

Amphetamine Family

المعلومة الأهم انه جميع الحالات المرضية (في العمود اليسار) ممكن نعالجها بأدوية تنتهي اسماءها بمقطع phetamine

Condition can be treated with	Description / Notes
Attention Deficit Hyperactivity Disorder (ADHD)	is a brain-based, or neurodevelopmental, disorder. It's also called attention deficit disorder. It's often first diagnosed in childhood. There are 3 types: <u>ADHD, combined.</u> This is the most common type. مهم A child with this type is impulsive and hyperactive. They also have trouble paying attention and are easily distracted
Narcolepsy	Chronic neurological disorder that impairs regulation of sleep-wake cycles, particularly REM sleep.
	Core Symptoms (Pentad): <ul style="list-style-type: none"> • Excessive daytime sleepiness • Sleep-related hallucinations • Sleep paralysis

	<ul style="list-style-type: none">• Disturbed nocturnal sleep• Cataplexy
Catalepsy	is a neurological condition characterized by muscular rigidity and fixity of posture regardless of external stimuli, as well as decreased sensitivity to pain.
Cognitive Enhancement (Low Dose)	used in elderly pts