

Einstein: “If you can't explain it simply, you don't understand it well enough”

Parkinson's disease = dopamine deficiency

Treatment

Dopamine cannot be given orally as it is degraded by the stomach instead, we use:

Levodopa (L-dopa) and carbidopa: levodopa is an endogenous precursor for dopamine synthesis.

Carbidopa a dopa decarboxylase inhibitor diminishes the metabolism of levodopa peripherally and in GI.

Dopamine agonists

Monoamine oxidase inhibitors (MAOIs)

Catechol-o-methyl transferase inhibitors (COMTIs)

Anticholinergic drugs (antimuscarinic) atropine-like drugs to reduce parkinsonism symptoms.

As dopamine controls the release of acetylcholine so that it will be in balance in case of PD the dopamine is not sufficient to do so.

Alzheimer's disease = acetylcholine deficiency

Treatment

Anticholinesterases (cholinesterase inhibitors)

If AD is because of Beta-amyloid plaques.

Treatment with an NMDA receptor antagonist (Ca^{+2} channel blocker)

CNS stimulants mainly amphetamines are used for conditions like:

Attention deficit hyperactivity disorder ADHD.

Narcolepsy and catalepsy

Migraine is a severe headache a brain-related condition that can cause pain, vision loss or distortion, nausea, light or sound sensitivity, and much more (especially migraines with aura). For some, these symptoms are unbearable, and the only thing they can do is find a dark, quiet place to lie down until the migraine ends.

Antimigraine are serotonin agonists all end up by triptans (triptans family) for acute migraine attacks.

Beta-blockers ending with lol (mainly propranolol) are used for prophylaxis from migraine attacks.

Commonly Amphetamines are drugs that end with amphetamine.

They are used to treat attention deficit hyperactivity disorder (ADHD)

Antiepileptics: too much excitation (too much Glutamate, Ca^{+2} and Na^{+}) or too little inhibition(too little GABA and Cl^{-})

Epilepsy imbalance between glutamate which controls positive ions (Na^{+} and Ca^{+2} and GABA which controls negative ions Cl^{-1})

A seizure is a sudden uncontrolled impulse of electricity in the brain it can be:

Focal seizure in one hemisphere is not accompanied by loss of consciousness.

Generalized seizure in both hemispheres accompanied by loss of consciousness.

Anticonvulsants or antiseizure or antiepileptics are:

Older

Valproic acid

Phenytoin

Barbiturates

Newer

Na⁺ channel blockers

Ca⁺² channel blockers

GABA reuptake inhibitors

General and local anesthesia

Stages of anesthetic activity

Stage I Analgesia

Stage II Excitement

Stage III surgical anesthesia

Stage IV Medullary paralysis

The general anesthetic propofol is commonly used in operations it has fast and short induction time

Nitrous oxide (NO) is odorless, colorless, and the least potent inhalational anesthetic called laughing gas used by dentists, especially children

Local anesthetics all end by caine as the parent or prototype drug is cocaine