Parkinson's Drugs

Parkinson's disease drugs work to counter the neurotransmitter pathologies experienced by patients. They act by either increased dopamine bioavailability or antagonizing acetylcholine. Patients with Parkinson's disease suffer from cellular death in the midbrain, with degeneration of the substantia nigra, which serves to generate dopamine. This leads to a neurotransmitter imbalance, with decreased dopamine and relatively increased acetylcholine. A balance of these neurotransmitters is necessary for coordinated motor movement. BALSA is an acronym used to help recall commonly used antiparkinsonian drugs. BALSA: Bromocripitine, Amantadine, Levodopa, Selegiline, Antimuscarinics. Bromocriptine is a potent dopaminergic agonist, while amantadine has an unknown mechanism, but can also be used as an antiviral. Levodopa, also called L-Dopa, is a dopamine isomer which readily crosses the blood-brain barrier. Selegiline inhibits MAO-B, an enzyme which acts to break down dopamine. Antimuscarinic drugs, such as benztropine, block cholinergic neuronal activity and are more successful at treating tremor and rigidity than bradykinesia.

PLAY PICMONIC

Parkinsons Characteristics

Decreased Dopamine
Down-arrow Doberman
Parkinson's disease is described as a neurodegenerative disorder caused by the death of dopamine-generating cells in the substantia nigra. It is due to this cellular death and decreased dopamine that motor symptoms arise.

Increased Acetylcholine
Up-arrow A-seagull-cola
A relative increase of acetylcholine occurs. This is because as dopamine decreases, there is an imbalance of neurotransmitters required for motor control. There is not a gross excess of acetylcholine, but rather an imbalance, leading to a higher acetylcholine in comparison to dopamine.

Drug Names

BALSA Acronym
BALSA Wood-mill
Commonly used Parkinson's drugs can be remembered by the acronym BALSA: Bromocriptine, Amantadine, Levodopa, Selegiline, Antimuscarinics.

Bromocriptine
Broom-crypt Keeper
Bromocriptine is an ergot alkaloid. It is a potent dopamine agonist, and increases its availability in Parkinson's disease. It also effects serotonergic, alpha adrenergic and glutamate receptors.

Amantadine
A-manta-ray
Amantadine is an interesting medication because it has activity as an antiparkinsonian medication, as well as an antiviral medication. It increases dopamine release by a poorly understood mechanism and also has anticholinergic action.

Levodopa
Levitating L-Doberman
Levodopa, also known as L-Dopa, is a dopamine isomer which is commonly administered with carbidopa. L-Dopa is protected from breakdown by carbidopa in the gut and periphery and readily passes through the blood-brain barrier to increase central dopamine bioavailability.

Selegiline
Sledge-lion
MAO-B is an enzyme which metabolizes dopamine in the body. Selegiline is an MAO-B inhibitor, and prevents breakdown of dopamine, increasing its bioavailability.

Antimuscarinics

Ant-tie-mustache

Antimuscarinic drugs, such as benztropine, block muscarinic receptors to curb cholinergic neuron activity. This class of drugs works to alleviate tremor and rigidity associated with Parkinson's, but does not work well at treating bradykinesia.