Baclofen

Baclofen works as a GABA-B receptor agonist, mostly in the spinal cord. It is used to treat spasticity and dystonia that occur in many nervous system diseases like multiple sclerosis. Side effects include CNS depression and nausea. This medication should be tapered gradually because baclofen withdrawal can be lethal.

PLAY PICMONIC

Mechanism

GABA-B Receptor Agonist
GABA-goose-(B) Bee Receptor Dragonist
GABA-B is a subtype of GABA receptors, distinct from GABA-A and GABA-C. While GABA-A and GABA-C are ligand-gated chloride channels, GABA-B receptors are G-protein-coupled and exert inhibitory effects by reducing calcium influx and increasing potassium efflux, leading to neuronal hyperpolarization and decreased excitatory neurotransmitter release. This mechanism underlies baclofen's role as a muscle relaxant.

Spinal Cord
Spinal Cord
Baclofen primarily targets GABA-B receptors in the dorsal horn of the spinal cord. These receptors modulate reflex pathways and reduce muscle tone by dampening excitatory transmission. Baclofen is particularly effective in treating spasticity of spinal origin, such as in spinal cord injury or multiple sclerosis, but is generally less effective for spasticity due to cerebral causes like stroke.

Indications

Spinal Cord Injuries
Spinal Cord Injured
Baclofen is frequently used to treat spasticity following spinal cord injury.
It is commonly indicated in cases such as traumatic spinal cord injury, spinal cord compression from tumors or fractures, post-surgical spinal damage, transverse myelitis, and multiple sclerosis involving the spinal cord. In severe cases, intrathecal administration via pump may be required for targeted, sustained delivery.

Spasticity
Spast-tick
Spasticity refers to increased muscle tone and involuntary contractions, often associated with upper motor neuron lesions.

Baclofen is a first-line agent for reducing spasticity in conditions such as multiple sclerosis, spinal cord injury, and transverse myelitis. It may also be considered in cerebral palsy, although efficacy varies based on the level of lesion.

Multiple Sclerosis
(MS) Multiple Skull-roses
Baclofen is a first-line treatment for spasticity in patients with multiple sclerosis. MS is a chronic disease characterized by a demyelinating inflammatory process of the central nervous system. Spasticity in MS commonly affects the lower limbs and impairs mobility and daily activities. By acting on spinal GABA-B receptors, baclofen helps relieve stiffness, reduce spasms, and improve function.

Trigeminal Neuralgia
Tri-gem Nerve-algae
Baclofen is used as a second-line therapy for trigeminal neuralgia.
It may be added in patients who do not respond to or cannot tolerate first-line agents like carbamazepine or oxcarbazepine. By inhibiting excitatory neurotransmission, baclofen helps reduce the sudden, stabbing facial pain characteristic of this disorder.

Side Effects

Neuropsychiatric Symptoms

Nerve-psychic with Symptoms

Baclofen toxicity, especially in overdose or abrupt withdrawal, may cause severe neuropsychiatric symptoms. These include agitation, confusion, hallucinations, delirium, psychosis, and paranoia. In severe cases, seizures, coma, or respiratory depression may occur, sometimes requiring intubation and sedation. Symptoms are more likely with high-dose oral use, intrathecal pump malfunction, or phenibut misuse (a baclofen analog).

Considerations

Taper Gradually

Tape-dispenser with Gradual amounts of pills

Baclofen should be tapered gradually to avoid life-threatening withdrawal.
Abrupt discontinuation, especially of intrathecal baclofen, can lead to rebound spasticity, hallucinations, hyperthermia, rhabdomyolysis, multi-organ failure, and even death. Gradual tapering under close medical supervision is essential.