Cyclobenzaprine (Flexeril)

PLAY PICMONIC

Mechanism

Centrally-Acting Muscle Relaxer

Muscle-guy with brain getting a massage

Cyclobenzaprine is a medication that acts as a muscle relaxer through mechanisms that moderate the interaction between the central nervous system and neuromuscular synapse.

Act on Alpha and Gamma Motor Neurons

Afro-grandma-motor-nerves

Cyclobenzaprine is thought to work by acting on alpha and gamma motor neurons. Recall that alpha neurons are lower motor neurons that synapse at the motor end plate on extrafusal skeletal muscle fibers and help permit voluntary muscle contraction, while gamma motor neurons synapse on intrafusal fibers. While they do not contribute significantly to contraction, they aid in monitoring the tension in muscle fibers and providing a feedback loop that aids in maintaining tone and muscle activation in response to stretch.

Related to Tricyclic Antidepressants (TCAs)

Tricycle-ant-emo

Cyclobenzaprine is pharmacologically related to tricyclic antidepressants, or TCAs, and hence can exert many of the same unwanted side effects.

Uses

Muscle Spasms

Muscle-man Spaceship

Cyclobenzaprine is commonly used in treating painful muscle spasms associated with various conditions. Of note, it is not useful in treating spasticity due to neurologic conditions such as cerebral palsy.

Back Pain

Back Pain-bolt

Cyclobenzaprine is often used in the treatment of back pain thought to be musculoskeletal in nature. It is best used following acute injury during pain may be caused by muscle spasms, and generally should not be used long-term as it will not provide permanent relief.

Side Effects/Interactions

MAO Inhibitors

MAO-inhibited with caution tape

Patients taking monamine oxidase (MAO) inhibitors should not take cyclobenzaprine. Since cyclobenzaprine is related pharmacologically to tricyclic antidepressants (TCAs), one of its partial actions is to prevent reuptake of certain neurotransmitters, namely norepinephrine, serotonin, and epinephrine. Taking this in concert with a MAO inhibitor could therefore cause dangerous buildup of these amines at the synapse and even lead to serotonin syndrome.

Serotonin Syndrome

Silver-tonic Savage

The most dangerous potential adverse reaction to cyclobenzaprine is serotonin syndrome. This is caused by the partial TCA-like action that cyclobenzaprine has at the neuron synapse, by preventing the re-uptake of the neurotransmitters serotonin, norepinephrine, and epinephrine. Serotonin syndrome is typically seen only in the context of polypharmacy (patients taking multiple mediations that affect the release and processing of serotonin and other catecholamines) or overdose.

Drowsiness

Sleepy-guy

Drowsiness is one of the most commonly reported side effects of cyclobenzaprine.

Arrhythmia

Broken Arrhythmia-drum

A potentially dangerous side effect of cyclobenzaprine is arrhythmia, specifically tachycardia and/or QT prolongation. These are again mediated by the partial TCA-like activity that cyclobenzaprine exibits.