Vigabatrin and Tiagabine

Vigabatrin and tiagabine are antiepileptic medications. They work to increase GABA concentrations by inhibiting its degradation and reuptake. These drugs are indicated for infantile spasms and partial (focal) seizures. The major side effect of vigabatrin and tiagabine is permanent visual loss (black box warning).



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Mechanisms

Increases GABA Concentration

Up-arrow GABA-goose

Vigabatrin and tiagabine increase GABA concentrations in the central nervous system. This helps to prevent excessive neuronal firing seen in seizures and epilepsy syndromes.

Inhibits GABA Degradation (Vigabatrin)

Inhibiting-chains on Degrading Goose

Vigabatrin (brand name Sabril) inhibits GABA degradation by inhibiting GABA transaminase, an enzyme that breaks down GABA. By blocking this function, GABA concentration increases.

Inhibits GABA Reuptake (Tiagabine)

Inhibiting-chains on GABA-goose and Reuptake-tube

Tiagabine (brand name Gabitril) works by inhibiting GABA reuptake into presynaptic neurons. This results in higher synaptic availability of GABA that will be able to bind to receptors on the postsynaptic membrane.

Indications

Infantile Spasms

Infant Muscle-man-spaceship

Infantile spasms, also known as West Syndrome, is an epilepsy syndrome of infancy and childhood which is most commonly seen in the first year of life. It is characterized by mental retardation and hypsarrhythmia on interictal EEG. Vigabatrin can be used as monotherapy to treat this condition.

Partial (Focal) Seizure

Partial Caesar with Focusing-magnifying-glass

Vigabatrin is used as adjunctive therapy for adult and older pediatric patients with refractory complex partial seizures. Tiagabine is similarly indicated in patients younger than 12 years of age.

Side Effects

Permanent Visual Loss (Vigabatrin)

Blur-blind-eye

Vigabatrin may cause permanent, concentric peripheral visual field loss. The risk is dose-dependent. This is thought to occur from drug-induced injury of retinal photoreceptors, ganglion cells, and their axons. Visual field and ophthalmological testing are needed before treatment and routinely checked every 3 months during treatment. Because of this side effect, this medication is labeled with a black box warning from the FDA.

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