Monoamine Oxidase Inhibitors (MAO-Is)

Monoamine oxidase inhibitors (MAO-Is) are a group of drugs that work by inhibiting the breakdown of the neurotransmitters serotonin, NE and dopamine, thereby increasing their availability. They are indicated primarily for atypical depression, but have been used for anxiety and panic disorders, bulimia, personality disorders and Parkinson's disease (treated by Selegiline). The phrase MAO "Takes Pride In Shanghai" can be used to remember commonly used MAO-I medications, representing Tranylcypromine, Phenelzine, Isocarboxazid and Selegiline. These drugs should not be combined with tyramine-containing foods, such as large amounts of wine and cheese, as the combination of MAO-Is with excess tyramine can lead to hypertensive crisis. This severe increase in blood pressure occurs due to the release of large amounts of amine neurotransmitters (serotonin, NE and dopamine), triggered by excess tyramine. Another contraindication of MAO-I therapy is combination with SSRIs, TCAs, meperadine, dextromethorphan or St. John's Wort, as this may lead to serotonin syndrome. Serotonin syndrome is a life-threatening, rapidly presenting and progressing drug reaction which has a wide range of symptomology. These symptoms include, and are not limited to hypertension, tachycardia, diaphoresis, hyperactive bowels, mental status changes, myoclonus and hyperthermia.



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Indications

Atypical Depression
A-Tipi Depressed-emo
Monoamine oxidase inhibitors are indicated for the treatment of atypical depression. Other reported uses include hypochondriasis, anxiety, bulimia and personality disorders.

Mechanism of Action

Increase Levels of Amine Neurotransmitters
Up-arrow A-mines
MAO-Is inhibit the activity of monoamine oxidase, preventing the breakdown of monoamine neurotransmitters and thereby increasing the availability of serotonin, NE, and dopamine.

Drugs

"Takes Pride In Shanghai"
"Take Pride in Shanghai" Sign
The acronym MAO "Takes Pride In Shanghai" is used to recall the MAO-I drugs: Tranylcypromine, Phenelzine, Isocarboxazid and Selegiline.

Tranylcypromine
Train-zipper
Tranylcypromine is a nonselective MAO-I, with its main indication being for the treatment of major depressive disorder. It has also been used uncommonly for mood disorders.

Phenelzine
Funnel-zen
This is a nonselective MAO-I indicated for major depressive disorder. Phenelzine has been known to be effective in patients who have failed first and second line treatments for depression.

Isocarboxazid
Ice-car-box
Isocarboxazid is a non-selective MAO-I drug indicated for depression, anxiety and panic disorders.

Selegiline
Sledge-lion
Selegiline selectively inhibits MAO-B at low doses, which preferentially metabolizes dopamine, over NE and serotonin. This leads to increased levels of dopamine availability. It is typically used as an adjunct to L-Dopa for Parkinson's treatment, as it enhances effects of L-Dopa treatment and decreases motor complications. At high doses, however, this drug loses its selectivity for MAO-B.

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