Lithium

Lithium is a drug used for mood stabilization in patients with mood disorders, such as bipolar disorder. Other indications for lithium salts include manic episodes and for the treatment of SIADH. These medications exhibit behavior as a mood stabilizer and the mechanism is not entirely known. There is speculation that lithium works by the use of second messengers such as IP3 (an initol-triphosphate) and DAG (diacylglycerol). One side effect of treatment with lithium is nephrogenic diabetes insipidus, thus patients should have regular kidney function tests. This side effect of the drug can also be used to counter the effects of SIADH. Another side effect of this drug is hypothyroidism and the development of papillary thyroid carcinoma, which is why patients should get regular thyroid function tests. Lithium can lead to movement disorders, such as tremor and ataxia, as well as heart block and other arrhythmias. A contraindication to lithium treatment is pregnancy. Administration of this medication to pregnant patients in the 1st trimester leads to Ebstein's anomaly in the fetus, which is described as atrialization of the right ventricle. Furthermore, patients taking the medication should have their plasma levels regularly monitored, due to the narrow therapeutic and toxic window of this drug.



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Mechanism of Action

Mood Stabilizer
Moody-mask Stabilized
These drugs work in an unclear pathway to stabilize patients with labile mood disorders. Lithium has a narrow therapeutic/toxic ratio, and patients should get regular plasma monitoring.

Unknown Mechanism
Question-mark Mechanism
The mechanism of these drugs is unknown and complex, but it is believed to alter sodium transport across cell membranes in nerve and muscle cells. It is also believed to alter intracellular signaling via activity on second messenger systems.

Indications

Bipolar Disorder
Bi-polar-bear
This drug is indicated in patients with bipolar disorder. It is also useful for blocking relapse into another mood disorder and can also be used for treatment in acute manic episodes. This drug has also been used in patients with SIADH due to the excessive urination the drug causes.

Side Effects

Nephrogenic Diabetes Insipidus
Dyed-beads Kidney with Sippy-cup
As lithium is almost exclusively excreted by the kidney, it can lead to nephrogenic diabetes insipidus. An off-label use of lithium is in the treatment of SIADH, to cause urination. Patients taking these drugs should have their kidney function checked regularly.

Hypothyroidism
Hippo-thigh-droid
Patients taking lithium should get regular thyroid function tests, as this drug causes thyroid suppression. A very rare side effect is papillary thyroid carcinoma.

Tremor
Trimmer
Tremor and ataxia are side effects of lithium toxicity.

Heart Block
Heart Block
Patients taking lithium salts have been shown to have 1st degree and complete heart block, along with other various arrhythmias.

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Contraindication

Pregnancy

Caution-tape Pregnant-woman

Lithium salt administration in the first trimester of pregnancy has been linked to fetal cardiac abnormalities. Ebstein's anomaly is described as atrialization of the right ventricle and tricuspid regurgitation.

Considerations

Monitor Plasma Levels

Plasma-TV Level-indicator

Lithium has a narrow therapeutic and toxic window. This means that lithium levels should be monitored in the patient's plasma to ensure that the right dosage is being given to properly treat the disorder. Monitoring also makes sure that lithium levels are not too high, which can lead to toxicity. Plan for every 1-2 weeks until appropriate serum concentration is reached. Then every 2 to 3 months for the first 6 months. 6 to 12 months thereafter to monitor stability.

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