Levothyroxine (Synthroid)

Levothyroxine is a synthetic form of the hormone thyroxine (T4) and is used to treat hypothyroidism. Thyroid hormones are responsible for promoting growth and development and regulating metabolism in the body.



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Mechanism

Synthetic T4
Making Tea with (4) Fork
Synthetic T4 is converted to T3 within the body, a more potent form of the thyroid hormone, which is capable of penetrating the cell nucleus and producing thyroid mediating hormone effects.

Indications

Hypothyroidism
Hippo-thigh-droid
Hypothyroidism generally occurs due to decreased secretion of thyroid hormones. If hypothyroidism is unmanaged, it may lead to the development of cretinism, simple goiter, and myxedema coma. Levothyroxine is indicated for the treatment of hypothyroidism and the associated effects of hypothyroidism. In addition, it may be indicated for treatment after part or all of the thyroid are removed due to hyperthyroidism (Grave’s disease), such as with a thyroidectomy or thyroid ablation.

Side Effects

Thyrotoxicosis
Thigh with toxic-green-glow
Levothyroxine generally does not cause side effects unless an acute overdose occurs. When this happens, the patient may develop thyrotoxicosis and will present with tachycardia, tremors, angina, insomnia, and heat intolerance.

Tremors
Trimmer
The patient should be watched for signs of overdose which include the development of tremors or nervousness. This may be indicative of thyrotoxicosis.

Heat Intolerance
Intolerant of Hot-flames
Heat intolerance is another side effect indicative of an acute overdose and the development of thyrotoxicosis. The patient will develop hyperthermia and will experience increased sweating.

Insomnia
Taped-awake-insomniac
If the patient is having trouble sleeping and experiencing insomnia, they may be experiencing an acute overdose of levothyroxine leading to the development of thyrotoxicosis.

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Tachycardia

Tac-heart-card

When an acute overdose of levothyroxine occurs, the patient will develop increased heart rate, palpitations, and chest pain. If the patient experiences multiple overdoses, they may develop atrial fibrillation causing the heart to contract improperly.

Considerations

Do Not Use for Obesity

Running from Obesity

Although levothyroxine increases metabolism, it should not be utilized for weight loss. This medication and other synthetic thyroid hormones speed the entire metabolic process of the body and produce many side effects.

TSH Monitoring

TSH-tissue Monitor

It is important to monitor TSH (Thyroid Stimulating Hormone) levels, because if replacement therapy is effective, TSH levels should decrease. It may take 6-8 weeks after starting levothyroxine to see changes in TSH levels; therefore, this lab test should not be monitored for at least 6-8 weeks.

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