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THYROID STIMULATING HORMONE (TSH) TEST

It is often the test of choice for evaluating thyroid functions and/or symptoms of hyperthyroidism or hypothyroidism. It is frequently ordered along with free thyroxine (T4) test. Other thyroid tests that may be ordered include a free Triiodothyronine (FT3) test and thyroid antibodies (if autoimmune-related thyroid disease is suspected.

TSH Testing is used to:

- Diagnose a thyroid disorder in a person with symptoms.
- Screen newborns for underactive thyroid.
- Monitor thyroid replacement therapy in people with hypothyroidism.
- Diagnose and monitor female infertility problems
- Help evaluate the function of the pituitary gland (occasionally).
- Screen adults for thyroid disorders.

The Correlation Between Thyroid disorders and Diabetes:

Both conditions involve a dysfunction of the endocrine system. Thyroid hormones regulate carbohydrate metabolism and pancreatic functions and on the other hand, diabetes affect thyroid functions tests that prevent thyroid disorders affect glucose control in patients, therefore thyroid testing in patients with diabetes is recommended.

When is the test Ordered?

The Doctor might order the TSH test when someone has symptoms of hyperthyroidism or hypothyroidism and/or when a person has an enlarged thyroid gland (Goiter).

Signs and symptoms of hyperthyroidism may include:

- Increased heart rate.
- Anxiety.
- Weight Loss.

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- The eye may be affected: puffiness around the eyes, dryness, irritation, and in some cases bulging of the eyes.
- Difficulty sleeping.
- Tremors in the hands.
- Weaknesses.
- Diabetes.
- Diarrhea (Sometimes).
- Light sensitivity, visual disturbances.

Signs and symptoms of hypothyroidism may include:

- Weight Gain.
- Dry skin.
- Hair loss.
- Fatigue.
- Constipation.
- Menstrual irregularity in women.
- Cold intolerance.
- Diabetes.
- Puffy Skin.

Type of Sample Needed:

Blood (Serum). Fasting is not required.

Interpretation of the results:

The following table summarize s test results and their potential meaning.

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TSH	T4	T3	Interpretation
High	Normal	Normal	Mild (Subclinical) Hypothyroidism
High	Low	Low or Normal	Hypothyroidism
Low	Normal	Normal	Mild (Subclinical) Hyperthyroidism
Low	High or Normal	High or Normal	Hyperthyroidism
Low	Low or Normal	Low or Normal	Non-Thyrodial illness ,Rare Pituitary (secondry) Hypothyroidism

Reference Ranges:

It should be remembered that different testing laboratories may have different reference ranges.

TSH	0.38-5.3 ulU/ml
Free T4	7.86-14.41 ulU/ml
Free T3	3.8-6.0 ulU/ml
Turn Around Time (TAT)	7 Days

References:

- American Thyroid Association (ATA)
- Provides comprehensive guidelines on thyroid function testing and thyroid disorders.
- National Institutes of Health (NIH) – Office of Dietary Supplements
- American Diabetes Association (ADA)
- Standards of Medical Care in Diabetes – 2024

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