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Thyroid Gland: Small but Mighty

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You know how important it is to keep your brain sharp and your heart pounding with a strong, steady beat. But how much do you know about your thyroid? Named after a Greek word meaning “shield,” your thyroid is a butterfly shaped gland located in the front of your neck between your voice box and your windpipe. Although it’s about the size of a quarter and weighs less than an ounce, the thyroid plays a huge role in keeping your body functioning, as it should.

The job of the thyroid is to concentrate iodine from food and water to produce 100 to 125 micrograms of thyroxine (T4) each day and smaller quantities of triiodothyronine (T3), hormones that play a vital role in every aspect of metabolism—from how fast your heart beats to how efficiently you burn calories. In one way or another, these thyroid hormones influence chemical interactions in virtually every cell of your body. They affect the speed of your heart and central nervous system, secretions of your gastrointestinal tract, your breathing rate, muscle strength, bone density, cholesterol and even your mood and personal appearance.

An infant without healthy thyroid function is at risk of severe physical and mental retardation, known as cretinism. An older child may have delayed puberty, stunted growth and brain development and symptoms similar to those of attention deficit disorder. Of the 13 million Americans with thyroid disorders, however, the majority are older adults, many of who go undiagnosed, but usually with much less serious consequences.

Two major thyroid disorders are hypothyroidism (underactive thyroid) and hyperthyroidism (overactive thyroid). Both can be detected through a simple blood test measuring levels of thyroid stimulating hormone (TSH), a substance that regulates the rate at which thyroid hormones are produced.

HYPOTHYROIDISM: When thyroxin levels are low, the pituitary responds by releasing TSH in larger

quantities. As a result, high TSH is the best indication of an underactive thyroid. Symptoms of an underactive thyroid include fatigue, lack of energy, sleepiness, forgetfulness, difficulty concentrating, decreased hearing, reduced appetite, weight gain, constipation, sensitivity to cold, dry skin, premature graying and puffy eyes. Any given individual may experience only a selected few of these symptoms, however, or none at all, particularly in the early stages when increased levels of TSH keep thyroid hormones at a somewhat normal level.

When hypothyroidism is detected, doctors treat it by prescribing the synthetic thyroid hormone, levothyroxine (Levothyroid, Synthroid) to restore normal blood levels of T3 and T4. In most cases, the patient must take the medication for the rest of her life. One of the most widely prescribed drugs in the country, levothyroxine is relatively inexpensive and has virtually no side effects if used in the proper dose. Some rather severe effects can occur if the dose is too high, however, most doctors usually start low and follow up with TSH tests every four to eight weeks until the right dose is determined.

Within a few weeks, most patients note an improvement in their energy level and the way they feel. As one man put it, "I never knew I had symptoms until I discovered how much better I felt when they were gone."

Mild hypothyroidism may or may not be treated. In most cases, however, low levels of thyroid hormones will eventually lead to high blood pressure, elevated cholesterol, an enlarged heart and congestive heart failure. Older adults may become increasingly slow mentally and physically, an acceleration of what some might consider normal aging. The most serious, but rare, consequence is myxedema, a life-threatening coma-usually a result of years of undiagnosed hypothyroidism.

HYPERTHYROIDISM: With hyperthyroidism, TSH levels in the blood are low, thyroid hormones are high and the body is set on fast forward. In addition to an enlarged thyroid, a doctor will note a rapid pulse; moist, smooth skin and a slight tremor at the fingertips. If the overactive thyroid is caused by an autoimmune reaction (a disorder known as Graves' disease), the most visible symptom is bulging of the eyeballs and a wide-eyed, surprised look. This is caused by an inflammation behind the eyes.

Other signs include restlessness, weakness, weight loss, heat intolerance, increased sweating, diarrhea, heart palpitations and an increased heart rate. As with hypothyroidism, these symptoms develop gradually

and are often mistaken for nervousness or psychiatric disorders such as mania or panic disorder. Some patients develop a lumpy, reddish thickening of the skin in front of the shins, known as pretibial myxedema. While most Americans fantasize about having a fast metabolism and being able to eat freely with little worry of weight gain, the reality of the disorder is not so desirable. One 63-year-old teacher, who continues to lose weight despite a good appetite, is so weak that it's difficult to carry more than three books at a time, and her hand tremor makes it impossible for her to write on the blackboard. She feels a fluttering sensation and chest discomfort climbing just one flight of stairs.

If the high thyroid levels are caused by an inflammation of the gland, antithyroid medications may be prescribed. The most common treatment uses radioactive iodine to destroy thyroid cells. Another option is surgical removal of the thyroid, an option usually reserved for cases in which thyroid cancer is suspected. Other drugs such as beta-blockers can be used to manage symptoms such as increased heart rate and nervousness. All three of these treatments are usually effective in the short term, but eventually, because of the attack on the gland itself, most patients develop hypothyroidism which must be treated long term with levothyroxine.

Both hypothyroidism and hyperthyroidism are frequently triggered by an autoimmune response an antibody in the blood that destroys or over stimulates to the thyroid. And the presence of this antibody tends to run in families. Worldwide, iodine deficiency is the leading cause of thyroid disorders, but in the United States, where iodized salt has been common for many years, there is more likely a genetic or environmental cause. The latter include exposure to radiation, medications such as beta-blockers and lithium, birth control pills, chronic illness and, some believe, hormone-disrupting chemicals in commercially processed foods.

Considering the vital role thyroid hormones play, thyroid disorders are relatively easy to treat. And even though many patients go undiagnosed, a simple blood test can determine the need for treatment.

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