*Commentary*

# A Short Note on Thyroid Conditions and its Diagnosis

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## ABOUT THE STUDY

The thyroid gland is an endocrine gland located at the front of the neck. The thyroid gland is located under Adam's apple, near the windpipe. The thyroid has two side lobes that are joined by an isthmus in the centre. Thyroid hormones are a group of hormones secreted by the thyroid. Thyroxine, generally known as T4, is the predominant hormone. Thyroid hormones influence metabolism, growth and development and body temperature throughout the body. Adequate thyroid hormone levels are essential for brain development during infancy and adolescence.

Thyroxine (T4) and Tri-iodothyronine (T3) are two hormones that are produced by the thyroid gland. They are secreted into the blood circulation and these hormones raise our body's metabolic rate. The metabolic rate of the body is essential. It depends on how rapidly the cells in our body utilize the energy that is stored inside us. Thyroid hormones help our body to maintain temperature by managing how much energy our cells utilize. When we consume energy, heat is released, which raises our body temperature. Thyroid hormones are also involved in the production of proteins, which are the building blocks of the body's cells. They also make better use of the fat and glucose reserves in the body.

The thyroid gland requires iodine to produce T3 and T4, which are present in the diet. It is termed as T4 because it includes four atoms of iodine. T3 is made up of three atoms of iodine. The majority of T4 in the body's cells and tissues are transformed to T3. T3 is the more active hormone, influencing the activity of all of your body's cells and organs.

Calcitonin is another hormone produced by the thyroid. This aids in the regulation of calcium and phosphorus levels in the blood. These minerals are required to maintain bones strong and healthy, among many other things.

### Thyroid Conditions

**Goitre:** It is a condition in which the thyroid swells. Goitres can be benign or indicate iodine deficiency or Hashimoto's thyroiditis, a disorder related to thyroid inflammation.

**Thyroiditis:** Thyroid inflammation caused by a viral infection or an autoimmune disease. Thyroiditis can be unpleasant, or it might be asymptomatic.

**Hyperthyroidism:** It is characterized by excessive thyroid hormone production. The most common causes of hyperthyroidism are Grave's disease or an overactive thyroid nodule.

**Hypothyroidism:** It is a disease characterized by a decrease in thyroid hormone production. The most prevalent cause of hypothyroidism is thyroid damage induced by autoimmune illness.

**Grave's disease:** It is an autoimmune disorder where the thyroid becomes overstimulated, resulting in hyperthyroidism.

**Thyroid nodule:** A thyroid nodule is a tiny abnormal mass or lump in the thyroid gland. Thyroid nodules are frequent. Only a few are malignant. They may produce several hormones, resulting in hyperthyroidism, or they may not create any complications.

**Thyroid storm:** It is an uncommon form of hyperthyroidism characterized by especially elevated thyroid hormone levels.

Thyroid cancer is a rare type, which is typically treatable. Thyroid cancer can be treated by surgery, radiation, or hormone therapy.

### Diagnosis

**Anti-TPO antibodies:** In autoimmune thyroid disease, proteins damage the thyroid peroxidase enzyme, which the thyroid uses to produce hormones.

**Thyroid ultrasound:** A probe is inserted on the skin near the neck, and captured sound waves can reveal abnormalities of thyroid tissue.

**Thyroid scan:** A small quantity of radioactive iodine is administered orally to get images of the thyroid gland. The thyroid gland has a high concentration of radioactive iodine.

**Thyroid biopsy:** A tiny piece of thyroid tissue is taken and examined for thyroid cancer. Thyroid biopsies are usually performed using a needle.

**Thyroid-Stimulating Hormone (TSH):** TSH is a hormone secreted by the brain that controls the release of thyroid hormones. A blood test with a high TSH level indicates hypothyroidism, whereas a low TSH level implies hyperthyroidism.

**Thyroglobulins:** A thyroid-secreted material that can be utilized as a marker for thyroid cancer. It is frequently assessed during thyroid cancer follow-up. High levels indicate the reoccurrence of cancer.

**Recombinant human TSH:** Injecting this thyroid-stimulating substance can improve the visibility of thyroid malignancy in imaging studies.



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