THYROID FUNCTION TESTS

A high proportion of serum rT₃ tests are ordered by a relatively small number of providers in the United States

BACKGROUND

Different types of laboratory tests are available for evaluation of thyroid disorders. These tests are used mainly to measure either hormones (like TSH, T₄ and T₃) or thyroid antibodies. Extensive clinical studies have been done to guide clinicians to choose the most effective test in every clinical situation.

Reverse T₃ (rT₃) is not one of the primary hormones produced by thyroid gland. It is mostly produced inside the cells in other tissues from the breakdown of T₄. The normal pathway is that T₄ is broken down to T₃, which is the active hormone. T₄ can also be broken down to rT₁, which is an inactive hormone. The production of T₃ and rT₃ is exactly opposite: the higher the T₃ level, the lower the rT₃ level; the lower the T₃ level, the higher the rT₃ level. Because of this relationship, and the fact that rT₃ is inactive, most clinicians do not use measurement of rT₃ for assessing a patient for hypothyroidism or hyperthyroidism. Still, some providers continue to order rT₃ in the assessment of thyroid function. This study was done to identify the ordering pattern of serum rT₃ by clinicians.

They found that relatively small proportion of providers had ordered majority of rT₃ tests. Of the 100 providers who had ordered rT₃ the most, 60% were practitioner of functional medicine and 40% conventional medicine (thyroid specialists, internal medicine, family medicine and gynecologist). Functional medicine was defined as a form of alternative medicine often based on complementary and holistic treatment techniques.

The review of medical articles about this topic showed that 90% were published before 2000 and provided limited evidence to support measuring rT₃ for evaluation of regular thyroid disorders like hypothyroidism and hyperthyroidism. Most of the publications were about the effect of medications, medical conditions other than thyroid disease and severe illness on rT₃ level.

The Google search showed mostly links to published articles in medical journals. Most of the webpages that discussed the use of rT₃ level for clinical purposes were 8-fold more associated with functional medicine than conventional medicine.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the majority of rT₃ tests are ordered by a relatively small proportion of clinicians, mostly providers practicing functional medicine. The review of medical literature does not support routine measurement of rT₃ in clinical care of a patient with hypothyroidism and hyperthyroidism. This is important for patients who have thyroid disease and would like to be involved in decision making regarding their care. This might be especially important for patients who have to pay or share the cost of their laboratory tests.

— Shirin Haddady, MD
THYROID FUNCTION TESTS, continued

ATA THYROID BROCHURE LINKS

Thyroid Function Tests: https://www.thyroid.org/thyroid-function-tests/
Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/
Hyperthyroidism (Overactive): https://www.thyroid.org/hyperthyroidism/
Thyroid Disease and Complementary and Alternative Medicine (CAM): https://www.thyroid.org/thyroid-disease-cam/

ABBREVIATIONS & DEFINITIONS

TSH: thyroid stimulating hormone – produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally

Thyroxine (T4): the major hormone produced by the thyroid gland. T₄ gets converted to the active hormone T₃ in various tissues in the body.

Triiodothyronine (T₃): the active thyroid hormone, usually produced from thyroxine.

Reverse Triiodothyronine (rT₃): the inactive thyroid hormone produced from thyroxine in various tissues in the body. Levels of T₃ and rT₃ are exactly opposite each other.

Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of January is Thyroid Awareness Month and a bracelet is available through the ATA Marketplace to support thyroid cancer awareness and education related to thyroid disease.