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THYROID HORMONE THERAPY

Triiodothyronine (T_3) treatment after mild heart attacks is safe but not associated with a clear benefit

BACKGROUND

During a major illness, the levels of thyroid hormones (T_4 and T_3) and thyroid stimulating hormone (TSH) change in most patients. These changes do not represent a problem in thyroid gland, but they are part of a larger hormonal reaction that happens at the time of a significant sickness. The most common finding is a low T_3 level, as the body shuts down the production of T_3 from T_4 during sickness. This may also occur after a heart attack. Indeed, 15-20% of patients have low levels of T_3 for several days after a heart attack. Patients with the lowest levels of T_3 are usually the sickest and have a higher chance of dying.

While most researchers and physicians believe that the hormonal changes during a sickness are helpful and beneficial for recovery, there is debate on whether treatment with T_3 may be helpful when it declines to very low levels. In the past, various animal and clinical investigations have been conducted to answer this question. In this study, the authors tried to evaluate the effect of treatment with T_3 on recovery from heart attack; specifically, to assess the potential benefits of T_3 on the extent of heart muscle damage and its function.

THE FULL ARTICLE TITLE

Pingitore A et al 2018 Usefulness of triiodothyronine replacement therapy in patients with ST elevation myocardial infarction and borderline/reduced triiodothyronine levels (from the THIRST study). Am J Cardiol. Epub 2018 Dec 18. PMID: 30638544.

SUMMARY OF THE STUDY

This study was done in Pisa, Italy. The authors recruited patients with heart attack who were admitted to cardiac intensive unit. The patients were eligible to enter the study if they had a low level of T_3 at the time of admission or a 20% drop in T_3 level within the first 72 hours after arrival to hospital. They also had to be treated with a heart procedure to open up the coronary arteries within 12 hours of the onset of their initial symptoms. Patients who were very sick, had history of previous thyroid disease or heart disease and took certain medications were not considered appropriate for the study. A total of 37 patients participated. Patients received either T_3 plus standard heart care (19) or just standard heart care (18). The 19 patients who received T_3 continued taking it for 6 months. The starting dose was based on patient's age (lower in older individuals), with later doses based on the results of blood tests for TSH, T_4 and T_3.

The average age of participants was 68 years and only 16% were female. TSH, T_4 and T_3 were measured at the time of admission, on daily basis during hospitalization and on regular basis after discharge. MRI was done to assess the extent of heart muscle damage after heart attack as well as its function (ability to pump blood). There was a minimum improvement in the function of heart muscle in patients who received T_3 but this was not statistically significant. No side effects were noted from T_3.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study confirmed that after a heart attack, patients who are sicker have a lower level of T_3. Although no harm was observed by treating patients with T_3 after a heart attack, this study showed that no significant improvement in the function or decrease in the extent of damaged heart muscle was noted from such treatment. At this point, T_3 treatment is not recommended after a heart attack based on this study and larger randomized clinical trials are needed.

— Shirin Haddady, MD

THYROID HORMONE THERAPY, continued

ATA THYROID BROCHURE LINKS

Thyroid Function Tests: https://www.thyroid.org/thyroid-function-tests/

Thyroid Hormone Treatment: https://www.thyroid.org/thyroid-hormone-treatment/

ABBREVIATIONS & DEFINITIONS

Thyroxine (T4): the major hormone produced by the thyroid gland. T_4 gets converted to the active hormone T_3 in various tissues in the body.

Triiodothyronine (T3): the active thyroid hormone, usually produced from thyroxine, available in pill form as Cytomel™.

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.