



## THYROID FUNCTION TESTS

### Higher Free T<sub>4</sub> levels are associated with an increased risk of any solid cancer

#### BACKGROUND

Thyroid hormone levels can be measured in the blood by a simple lab test. Thyroxine (T<sub>4</sub>) is the major hormone produced by the thyroid gland and it can be measured as free T<sub>4</sub> in the blood. There have been studies suggesting that higher levels of free T<sub>4</sub> in the blood may be associated with an increased risk of developing a solid cancers (for example, lung, breast, prostate, gastrointestinal (GI) cancers). Other studies have not agreed with this finding. This study looks at a large group of people to determine whether T<sub>4</sub>, even within the normal range, may increase the risk of developing any solid cancer.

#### THE FULL ARTICLE TITLE

Khan SR et al. Thyroid function and cancer risk: the Rotterdam Study. *J Clin Endocrinol Metab*. September 20, 2016 [Epub ahead of print].

#### SUMMARY OF THE STUDY

The study included a group of middle to older aged subjects from the Rotterdam Study in the Netherlands which investigated a variety of medical conditions in older people. Using this population, the authors were able to include 10,318 participants who all had thyroid hormone blood tests (TSH, FT<sub>4</sub>), who did not have a history of cancer, and who they could follow from 1990

to 2012 or death to determine if the subject developed a solid cancer. The subject's average age was 61 years and 57% were women. There were 1465 cases of solid cancer over an average follow up time of 10.4 years. Based on the complicated statistical methods which included adjusting the statistics for other potential causes or risk factors for developing cancer, they found that there was a significant positive association between FT<sub>4</sub> level and lung cancer and breast cancer, but not for prostate or GI cancers.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

If we assume that this study is correct that higher FT<sub>4</sub> levels, even within the normal range (euthyroid), increase the risk for solid cancers, it profoundly impacts all people, not just those who take thyroid hormone as treatment of hypothyroidism. The authors propose mechanisms by which thyroxine can initiate the path toward developing a malignancy, but these mechanisms need to be studied further. Additional clinical trials are also needed to confirm these results.

—Wendy Sacks, MD

#### ATA THYROID BROCHURE LINKS

Thyroid Function Tests: <http://www.thyroid.org/thyroid-function-tests/>

#### ABBREVIATIONS & DEFINITIONS

**Thyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland. T<sub>4</sub> gets converted to the active hormone T<sub>3</sub> in various tissues in the body.

**Euthyroid:** a condition where the thyroid gland as working normally and producing normal levels of thyroid hormone.

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.