



THYROID CANCER

Care should be taken in interpreting blood thyroglobulin levels in thyroid cancer

WHAT IS THE STUDY ABOUT?

Thyroglobulin is the major protein produced by functioning thyroid cells, both normal and cancerous. In patients with thyroid cancer, thyroglobulin can be used as a cancer marker after all of the normal thyroid tissue is removed by thyroidectomy and radioactive iodine therapy. Indeed, blood thyroglobulin levels are now the major tool to track the treatment and recurrence of thyroid cancer; thyroglobulin levels are generally directly related to the amount of cancer present. The major limitation to this is the presence of anti-thyroglobulin antibodies which occur in ~25% of thyroid cancer patients and which make the thyroglobulin measurement inaccurate. These antibodies are easily detected in routine testing. However, there can be other antibodies that can possibly affect the measurement of thyroglobulin, including heterophile antibodies (antibodies directed against foreign proteins but interfering in the thyroglobulin assays). These antibodies usually cause measurements that are higher than the actual level. These antibodies are not usually measured and it is not known how common they are. This study was performed to determine if heterophile antibodies were common enough to be a concern.

FULL ARTICLE TITLE:

Verburg FA et al. Heterophile antibodies rarely influence the measurement of thyroglobulin and thyroglobulin antibodies in differentiated thyroid cancer patients. *Horm Metab Res* 2010. 10.1055/s-0030-1254132 [doi]

WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to determine if heterophile antibodies occur frequently enough to be a concern in routine clinical assays for thyroglobulin.

WHO WAS STUDIED?

Blood was collected from 201 thyroid cancer patients in Germany, Switzerland and The Netherlands as well as another 52 control patients who did not have thyroid cancer.

HOW WAS THE STUDY DONE?

All blood samples were divided in half. Part was run in routine assays for thyroglobulin and anti-thyroglobulin antibodies and the other part was first incubated for one hour in test tubes that contained substances that blocked heterophile antibodies and then run in the same routine assays.

WHAT WERE THE RESULTS OF THE STUDY?

In only 2 of the 201 (1%) thyroid cancer patients blood tests was there a difference between the routine assays and the assays after the serum was incubated. In neither of these two patients was the difference great enough to affect clinical management. In all the testing performed, there was a difference in only 0.4% of tests.

HOW DID THIS COMPARE WITH OTHER STUDIES?

Higher percentages of heterophile antibody interference have been found in other studies. The current study suggests that antibody interference may be lower than suggested by previous studies, but this interference may still be present in a few patients.

WHAT ARE THE IMPLICATIONS OF THIS AND THE OTHER STUDIES?

While antibodies to thyroglobulin may cause problems when following thyroglobulin levels in thyroid cancer patients, it does not appear that heterophile antibodies are a problem. However, it is always a consideration when the thyroglobulin level does not correlate with the clinical status of the patient.

— Henry Fein MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html

Thyroid Function Tests: http://thyroid.org/patients/patient_brochures/function_tests.html

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THYROID CANCER, continued


ABBREVIATIONS & DEFINITIONS

Thyroidectomy — surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.


Thyroglobulin — a protein made only by thyroid cells, both normal and cancerous. When all normal thyroid

tissue is destroyed after radioactive iodine therapy in patients with thyroid cancer, thyroglobulin can be used as a thyroid cancer marker in patients that do not have thyroglobulin antibodies.

Heterophile antibodies — antibodies directed against foreign proteins that may interfere with hormone assays. These antibodies often cause hormone measurements that are much higher than the actual levels.



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