

Thyroglobulin for Monitoring for Thyroid Cancer Recurrence

Some thyroid cancers can come back after removal, so monitoring for recurrence is important.

The thyroid gland is located in the lower front part of the neck above the breastbone and regulates metabolism through production of thyroid hormones (T_3 and T_4). Thyroid cancer is a malignant tumor of the thyroid gland. Papillary and follicular thyroid cancers are the most common types, and are known as differentiated thyroid cancers because they process iodine similarly to normal thyroid tissue. Surgery is the initial treatment for papillary or follicular thyroid cancers.

Recurrence Monitoring

After initial treatment, long-term monitoring is needed to check for recurrence of the cancer. This is done by repeat ultrasound examinations of the neck, radioactive scanning, and measuring thyroglobulin levels in the blood.

Thyroglobulin is a protein made by the follicular cells of the thyroid gland. It is used by the thyroid gland to produce T_3 and T_4 . The normal value for thyroglobulin is 3 to 40 nanograms per milliliter in a healthy patient. If a patient's thyroglobulin level is found to be increasing after all of the thyroid gland has been removed, the patient may have a recurrence of a differentiated thyroid cancer. Very high levels of thyroglobulin may suggest metastatic or recurrent disease. About one-fourth of patients who have thyroid cancer have antibodies to thyroglobulin. Antibodies should be checked along with thyroglobulin because if they are present, they could interfere with measurement of thyroglobulin. Thyroglobulin levels after a lobectomy (removal of half of the thyroid gland) should correlate with the size of the thyroid gland remaining after surgery. Falsely high values of thyroglobulin can occur after a partial thyroidectomy because the remaining thyroid gland can increase in size. Following thyroid gland removal, radioactive iodine ablation (destruction) of residual thyroid tissue maybe done to reduce chance of recurrence and to make monitoring of thyroglobulin more reliable.

How Is Thyroglobulin Measured?

Thyroglobulin is measured using **enzyme-linked immunosorbent assay (ELISA)**. The accuracy of the test depends on how strong the binding is between thyroglobulin and the antibody used. If a thyroglobulin value seems abnormal, the ELISA test should be done again to ensure the results are accurate. There are other tests for thyroglobulin; the results of tests depend on which type of test was done. When comparing test results, it is important that tests were the same type and done in the same laboratory.

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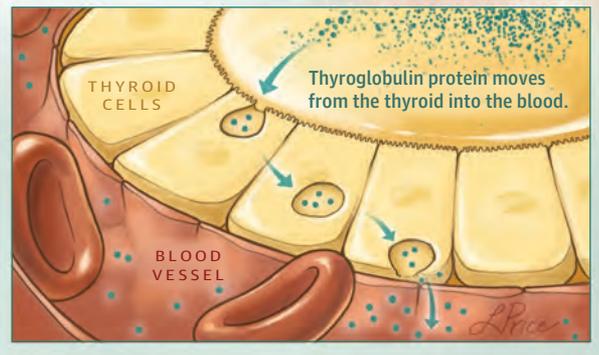
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Sources: American Thyroid Association
Holsinger FC, Ramaswamy U, Cabanillas ME, et al. Measuring the extent of total thyroidectomy for differentiated thyroid carcinoma using radioactive iodine imaging. *JAMA Otolaryngol Head Neck Surg*. 2014;140(5):410-415. doi:10.1001/jamaoto.2014.264

Thyroid Cancer Detection Using Blood Thyroglobulin Levels

- The thyroid is a gland that regulates metabolism through production of thyroid hormone.
- Thyroglobulin is a protein made by thyroid cells, from which thyroid hormone is produced.
- Increased levels of thyroglobulin in the blood can be associated with recurrence of thyroid cancer following thyroid removal.
- In patients with a history of thyroid cancer, blood thyroglobulin levels are monitored to help detect tumor recurrence.



Thyroglobulin levels should be measured every 3 to 6 months for 2 years after thyroidectomy and every 6 to 12 months after that. Depending on an individual patient's circumstances, the amount of testing may differ. If thyroglobulin levels are increasing, the cancer may have returned. When a thyroglobulin level is increased, testing should be done more frequently. When levels are decreasing, the cancer is probably receding. When there is a cancer recurrence, thyroglobulin levels can be suppressed at the same time that levels of thyroglobulin antibodies increase.

FOR MORE INFORMATION

- US National Library of Medicine
medlineplus.gov/lab-tests/thyroglobulin/
- American Thyroid Association
<http://www.thyroid.org/patient-thyroid-information/ct-for-patients/vol-7-issue-2/vol-7-issue-2-p-7-8/>

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