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## **THYROGEN<sup>®</sup>-RADIOACTIVE IODINE (I-131) WHOLE BODY SCAN**

### **Background**

Three tests that are frequently done after a thyroidectomy to detect thyroid cancer are a) thyroid sonography, b) whole-body scanning using radioactive iodine (I-131), and c) a blood test to measure thyroglobulin. You have been advised to do tests b&c.

The **sonogram** employs sound waves to depict the anatomy of the neck and reveals nodules that could be benign or malignant.

The **whole-body I-131 scan** provides a map of the cells that accumulate iodine. They could be remnants of non-cancerous thyroid, which were not removed surgically, or thyroid cancer.

**Radioactive iodine (I-131)** has been used in large numbers of patients for diagnostic scanning and for treatment of hyperthyroidism or thyroid cancer since the late 1940's. It is generally considered to be relatively safe. However precautions are necessary. **RADIOACTIVE IODINE IS NOT GIVEN TO PREGNANT WOMEN OR THOSE WHO ARE NURSING A CHILD. ITS USE IN CHILDREN IS INDIVIDUALIZED.** If conceiving a child is a consideration, discuss with your doctor the possible effects of this test and possible treatment with radioactive iodine to your future offspring. The precise nature or possible hazard to future offspring is not fully known at this time, but most authorities agree that there is no known risk. However, you should discuss how long you should wait after the procedure before you do conceive

**Thyroglobulin** is a protein that is a storage site for thyroid hormone. After a total thyroidectomy there should be none of this material in the blood. Its presence signifies that somewhere in the body there is thyroid tissue, benign or malignant.

### **NEED FOR TSH ELEVATION**

The I-131 scan and thyroglobulin tests are most sensitive when thyroid hormone replacement medication is stopped, and the level of thyrotropin (thyroid stimulating hormone, TSH) is allowed to increase. When TSH is increased, thyroid-derived tissue is activated and can be better detected by scanning or by thyroglobulin blood test. However, stopping thyroid hormone medication may make you experience unwanted symptoms of hypothyroidism (deficiency of thyroid hormone) such as fatigue, constipation, and feeling cold when others are not.

**Thyrogen<sup>®</sup>**, a drug approved by the Food and Drug Administration (FDA), is a recombinant form of TSH developed by Genzyme Corporation. "Recombinant" means that it has been made in the laboratory but largely identical to the TSH present in humans. Thyrogen<sup>®</sup> increases the TSH levels and activates the thyroid tissue without the need for you to stop taking your thyroid replacement medication. Thyrogen<sup>®</sup> has been shown to simulate thyroid tissue to accumulate I-131 and to significantly increase the sensitivity of thyroglobulin testing in-patients while they continue to take thyroid hormone medication.

**PREPARATION: \*\*\*\*\***

**Excessive iodine precludes a whole body scan.** Discuss with your other physicians and let me know when you last had x-ray procedures using iodinated contrast agents.

Do not take iodine containing medications or iodine rich foods.

Use a ***LOW-IODINE DIET FOR SEVERAL WEEKS TO A MONTH. Avoid The Following Items:*** Seafood especially shellfish (Fresh water fish generally does not contain much iodine.), Kelp, Seaweed, milk and dairy products, medications that contain iodine, iodine containing antiseptics, iodine containing radiographic contrast materials, iodized salt, and breads made with iodate dough conditioners. Check the labels on prepared foods and over the counter or prescribed medications. Do not use foods containing iodized salt, sea salt, iodates, iodides, algin, alginates, agar agar, red food dyes (may be found in candies, vitamins or other medications, and colored foods such as cereals). Check medications with your physician. Be careful of restaurant food (including "fast" foods").

**PRECAUTIONS AFTER THE ADMINISTRATION OF I-131: \*\*\*\*\***

1. Keep the time you spend in close contact with others to a minimum. Sleep alone. No sexual contact. Do not kiss anyone for 24 hours.
2. Prolonged contact with a pregnant woman or children should be minimized and limited to arm's distance for approximately one week.
3. Should you expectorate or vomit for any reason, dispose of these materials by flushing into the toilet. Dispose of paper that is needed to "clean up" into the toilet as well. Note that the radioactive iodine should not cause vomiting.
4. Eating utensils may contain some radioactive after the treatment. Wash utensils thoroughly or use disposable materials.
5. Do not save urine specimens for any reason unless you discuss it with me. Void into the toilet, being careful not to contaminate surroundings (men should sit, not stand while voiding). Flush twice. Contamination can be removed with paper toweling, soap and water - which should also be flushed down the toilet. Wash your hands after each use of the toilet.
6. Use separate baths linens and launder these and your underclothing separately.

**POTENTIAL RISKS \*\*\*\*\***

**I-131** precautions and risks have been discussed above.

The most common side effects that have been reported after the administration of **Thyrogen**<sup>®</sup> include nausea, vomiting, headache, and weakness. A few patients have experienced mild temporary allergic reactions such as a rash, hives, itching or flushing. Some patients have occasionally experienced chills, fever or flu-like symptoms.

In a study involving ill patients who often had thyroid cancer that had spread to the other parts of the body (metastatic disease), some patients experienced bleeding or swelling at those sites of metastatic disease. Depending on the location of the metastatic disease, this may have resulted in surgery, loss of eyesight, difficulty swallowing or pain at the site of metastases. Some or all of these events may have been related to the use of **Thyrogen**<sup>®</sup>. The exact level of this risk or other side effects is not fully known because **Thyrogen**<sup>®</sup> is a relatively new drug. Similar reactions have also been observed after thyroid hormone suppressive therapy has been discontinued to allow TSH to increase in preparation for an I-131 scan.

If there is a large amount of residual thyroid tissue the **Thyrogen**<sup>®</sup> may cause the production and release of thyroid hormones that could result in the consequences of hyperthyroidism, for instance, in elderly patients or those with heart disease.

If you have ever experienced a **hypersensitivity** reaction to bovine TSH (which was used years ago) please tell your doctor.

The risks of an **intramuscular injection** are a hematoma (bruise, black and blue mark) and/or abscess (small area of infection).

When **blood samples** are taken and a vein is pricked, there is the risk of a hematoma (bruise, black and blue) forming at the skin prick site. Occasionally, a person may become dizzy or faint when blood is drawn and there is a rare possibility of infection or temporary nerve damage.

Women: I-131 is not safe during **pregnancy or nursing**. The safety of **Thyrogen**<sup>®</sup> has not been established during pregnancy or nursing. Therefore, if you are a woman of childbearing potential, you must not be pregnant if this test is to be done.

## **THE TEST \*\*\*\*\*SEE INSTRUCTION PAGE\*\*\*\*\***

The test will take 5 – 6 days. **In the Nuclear Medicine Laboratory (Tisch Hospital 2<sup>nd</sup> floor)** you will receive intramuscular injection(s) of **Thyrogen** on days 1 and 2 and you will receive a tracer dose of I-131 on day 3. Scans, whole body isotope measurements, and blood tests for purposes of radiation dosimetry will be done **in the Nuclear Medicine laboratory** on days 3, 4 and 5 and possibly thereafter. **In addition, blood will be drawn in the FPO Laboratory (which is located in the lobby of the Schwartz Health Care Building) on day 3 and 5 to measure TSH and/or thyroglobulin. PLEASE DO NOT FORGET TO GO TO THE FPO LABORATORY AS INDICATED IN THE SCHEDULE.**

**DO NOT TAKE THE ISOTOPE IF YOU ARE OR MAY BE PREGNANT OR IF YOU ARE NURSING A CHILD.**

After you swallow the radioactive iodine, your saliva and urine will be radioactive for a short time. The thyroid will contain the radioactive iodine for a somewhat longer period.

Please contact the Nuclear Medicine Laboratory, its physicians, your doctor, and me if there are problems or questions.

**CONSENT FOR ADMINISTRATION OF THYROGEN<sup>®</sup> I-131 AND SCAN**

I fully understand the reason for and nature of the test described above and consent to the same being administered. I am not pregnant. I am aware that there may be unknown risks from radiation in general and from radioactive iodine (I-131). I shall exercise precautions. I also understand that treatment with radioactive iodine may be required.

WITNESS \_\_\_\_\_ PATIENT'S SIGNATURE \_\_\_\_\_

Date \_\_\_\_\_

**INSTRUCTIONS**

<b>DAY #</b>	<b>Day of week</b>	<b>DATE</b>	<b>Go to Location</b>	<b>Activity</b>
1			<b>FPO pharmacy Lobby HCC, me, or the medication may have been mailed to you or Nuclear Medicine</b>	<b>Obtain 2 vials of Thyrogen</b>
1			Nuclear Medicine Lab 2 <sup>nd</sup> floor, Tisch	Get injection of Thyrogen®
2			Nuclear Medicine Lab 2 <sup>nd</sup> floor, Tisch	Get injection of Thyrogen®
<b>3</b>			<b>FPO Lab Lobby HCC</b>	<b>Have TSH and perhaps other blood tests</b>
3			Nuclear Medicine Lab 2 <sup>nd</sup> floor, Tisch	Receive I-131 capsule
4			Nuclear Medicine Lab 2 <sup>nd</sup> floor, Tisch	Scans, blood tests, etc.
5			Nuclear Medicine Lab 2 <sup>nd</sup> floor, Tisch	Scans, blood tests, etc.
<b>5</b>			<b>FPO Lab Lobby HCC</b>	<b>Have Thyroglobulin and perhaps other blood tests</b>

**AFTER THE TEST HAS BEEN COMPLETED PLEASE SEE ME FOR EXAMINATION, THE REPORT, AND FURTHER INSTRUCTIONS.**

**APPT:** \_\_\_\_\_