Thyroid scan & Thyroid Uptake

Definition:

The thyroid scan and radioactive iodine uptake test (RAIU), also known as a thyroid uptake, are nuclear medicine examinations that help evaluate the structure and function of the thyroid.

The thyroid scan is used to determine the size, shape and position of the thyroid gland. Whole-body thyroid scan is typically performed on patients of thyroid cancer.

The thyroid uptake is performed to evaluate the function of the gland.

Procedure:

Thyroid scan

For both tests, a small amount of a radiopharmaceutical or radiotracer (iodine or technetium) is injected into a vein or swallowed by mouth. The iodine tracer taken by mouth may be in liquid or capsule form and may be taken up to 24 hours before the test. Typically a dose of 5 mCi is used.The technetium tracer, given by intravenous injection, is typically given 30 minutes prior to the test. This material eventually collects in the thyroid, where it gives off energy in the form of gamma rays. Working together, a probe, camera and computer detect these emissions, measure the amount of radiotracer absorbed into the gland and produce a digitized image of the thyroid gland. When it is time for the procedure to begin, the patient will lie down on an examination table with the head tipped backward and the neck extended. The gamma camera will then take a series of images, capturing images of the thyroid gland from three different angles. The patient will need to remain still for brief periods of time while the camera is taking pictures. A thyroid scan lasts about 30 minutes.

Thyroid Uptake

The patient will be given radioactive iodine (I-123 or I-131) in liquid or capsule form to swallow. The patient is then scheduled to have the thyroid uptake several hours (from six to 24 hours) later.When it is time for the procedure to be performed, the patient will sit in a chair while a probe is placed over the thyroid gland in the neck. This small probe is capable of detecting and measuring the gamma rays emitted from the radiotracer that has accumulated in the thyroid gland. This procedure lasts approximately 30 minutes.

Applications:

- Determine thyroid function
- Diagnosis of hyperthyroidism
- Identification of thyroid nodules
- Estimate extent of residual thyroid tissue after radical surgery for thyroid cancer
- Following up patients of thyroid cancer

Limitations:

The resolution of structures using thyroid scan is less than that attained with CT or MRI. However, the functional information gained from nuclear medicine is unequaled in other imaging techniques.

Contra-indications:

(1) Pregnancy or lactation

(2) Allergy to iodine/ iodine-containing substances

Preparations:

(1) Stop all thyroid-suppressive or thyroid-replacement medications for at least 6 weeks before the test. Also stop all iodine-containing medications.

(2) NPM for at least 6 hours before the test

(3) Remove all metallic articles of clothing as well as spectacles, to prevent any interference with the scanner.

Post-procedure management:

Both thyroid scan and uptake are day-care procedures and the amount of radiation is small enough for the patient to be allowed home immediately afterwards.

However, the patient will need to take special precautions after urinating during the 24 hours following the test as during this time, the radioactive tracer be excreted through the urine. It is important to flush the toilet and wash the hands thoroughly after urinating.