THYROID UPTAKE AND SCAN

THEORY:
The THYROID UPTAKE AND SCAN is performed to determine the thyroid function, function of nodules, image nodules and help determine volume of the thyroid gland. The thyroid gland traps iodine from the bloodstream and synthesizes the iodine into triiodothyronine and tetraiodothyronine. These thyroid hormones regulate the metabolism of many of the bodies systems.

CLINICAL INDICATIONS:
1) Enlargement in neck that moves when swallowing.
2) Nodule(s) seen on thyroid ultrasound.
3) Previous history or familial history of thyroid problems.
4) Weight gain or loss.
5) Tachycardia.
6) Protruding eyes.
7) Abnormal T3, T4 or TSH values from the lab.

RADIOPHARMACEUTICAL:
300-600 uCi 123 I Na I capsules for adults.

EQUIPMENT:
1) Siemens E CAM
2) Neck phantom

PREPARATION OF EQUIPMENT:
1) Perform usual Daily QC (camera, well counter, dose calibrator, survey meter)
2) Check E CAM 123 I Na I peak
3) Prepare pillow(s) and table for patient arrival.

PREPARATION OF PATIENT:
1) A history of the patient is taken prior to scheduling the scan to ensure that the patient has not had:
   a. Thyroid medicine (1 month)
   b. Anti-thyroid drugs (10-14 days)
   c. Exogenous Iodine (4-6 weeks)
2) On the day of the scan the patient needs to be fasting for 4-6 hours prior to the swallowing of the 123 I Capsules.

PRINCIPLE:
The thyroid gland traps iodine from the bloodstream and synthesizes the iodine into triiodothyronine and tetraiodothyronine. These thyroid hormones regulate the metabolism of many of the bodies systems. By administering 123 I NaI capsules to the patient and having the
patient return later, the amount of iodine concentrating in the thyroid gland can be determined. The thyroid gland can also be imaged to visualize the size, shape and possible nodules.

PROCEDURE:

1) When the patient arrives for the scan, interview the patient to confirm that the patient:
   a. Is not pregnant
   b. Has not been taking Thyroid medicine (4-6 weeks), Anti-thyroid medicine (10-14 days), exogenous Iodine (4-6 weeks)
   c. Has been fasting for 4-6 hours
2) Instruct the patient that after ingesting the 123 I capsules, they will need to return the same day in 4 hours.
3) Measure the amount of activity in the 123 I capsules in the DOSE CALIBRATOR.
4) Administer the capsule to the patient PO with 8-12oz water.
5) Instruct the patient to not eat or drink any for the next 2 hours and instruct the patient to return in 4 hours.
6) At the appropriate time, take the patient out to the nuclear medicine truck.
7) Enter the patient’s name, MR number, DOB and the type of scan into the computer.
8) Measure the amount of activity in the std. 100 uCi 123 I capsule and record this number
9) Place the 100 uCi 123 I capsule into the neck phantom.
10) Position the neck phantom 10cm from the camera and image for 1 minute.
11) Have the patient lay on the imaging pallet with a pillow under their shoulders to extend their neck.
12) Position the camera 10cm and start the THYROID UPTAKE IMAGE which will acquire 50k counts or will scan for 10 minutes.
13) Position the camera as near to the patient’s neck as possible and image in the ANTERIOR, RAO, and LAO projections for 7 minutes for each view.
14) COMPLETE out of the scan at the end of the imaging.
15) Highlight the patient’s name on the computer and click on the THYROID PROCESSING icon and process the scan.
16) The results page will have an image of the THYROID UPTAKE, RAO image, ANT image and LAO image. In addition there will be a calculation of the THYROID UPTAKE total and each lobe. There will also be volume calculations of the total thyroid gland as well as each lobe. The normal values will also show up on the page.
17) Enter the patient’s dose of 123 I Na I, the means of administration, the time and date of administration and the technologist’s initials that administered the capsule and performed the scan. Create a SAVE SCREEN.
18) Send the SAVE SCREEN into the hospital for interpretation.