Opinion
Volume 13:1, 2022

Journal of
Nuclear Medicine & Radiation Therapy

ISSN: 2155-9619 Open Access

A Quick Overview on Thyroid Scan

Leena Lory*

Department of Medicine, The Johns Hopkins University School of Medicine, Baltimore, United States

Opinion

Small amounts of radioactive materials called radiotracers are injected into the bloodstream, breathed, or eaten in nuclear medicine imaging. The radiotracer passes through the area being studied and emits energy in the form of gamma rays, which are detected by a special camera and computer and used to make images of the inside of your body. Nuclear medicine imaging provides information that other imaging procedures cannot always provide, and it has the potential to detect disease at an early stage.

What is the definition of general nuclear medicine?

Radiotracers, which are minuscule amounts of radioactive material, are used in nuclear medicine. Nuclear medicine is used by doctors to diagnose, evaluate, and treat a variety of disorders. Cancer, heart disease, gastrointestinal, endocrine, or neurological diseases, among other things, are among them. Nuclear medicine examinations are used to identify molecular activity. They will be able to detect disease in its early stages as a result of this. They can also demonstrate how well you're doing with your treatment.

Nuclear medicine is a painless procedure. It is normally painless, with the exception of intravenous injections. To diagnose and analyse medical disorders, these tests use radioactive materials known as radiopharmaceuticals or radiotracers. Radiotracers are molecules that are attached to a little amount of radioactive material, or "labelled" with it. They build up in tumours and inflammatory areas. They have the ability to bind to certain proteins in the body as well. F-18 fluorodeoxyglucose (FDG), a chemical comparable to glucose, is the most often used radiotracer. Cancer cells have a greater metabolic rate and may absorb glucose more quickly. On PET scans, this higher rate can be seen. This allows your doctor to discover disease before other imaging tests reveal it. FDG is just one of numerous radiotracers that are now in use or being developed. The radiotracer is commonly given as an injection. Depending on the exam, you can either ingest it or inhale it as a gas. It collects in the area under investigation.

The radiotracer emits gamma rays, which are detected by a specific camera. A camera and a computer create images and provide molecular data. To create unique views, many imaging centres combine nuclear medicine images with computed tomography (CT) or magnetic resonance imaging (MRI). This is referred to as image fusion or co-registration by doctors. Image fusion allows a doctor to combine and interpret data from two separate exams on a single image. This results in more precise data and a more precise diagnosis. Both SPECT/CT (single photon emission computed tomography/CT) and PET/CT (positron emission tomography/CT) units can perform both exams at the same time. PET/MRI is a relatively new imaging technique. It isn't available everywhere right now.

***Address for Correspondence:** Leena Lory, Department of Medicine, The Johns Hopkins University School of Medicine, Baltimore, United States, E-mail: lory.l@gmail.com*

Received 08 January, 2022, Manuscript No. jnmrt-22-52542; **Editor Assigned:** 10 January, 2022, PreQC No. P-52542; QC No.Q-52542; **Reviewed:** 13 January, 2022; **Revised:** 18 January, 2022, Manuscript No. R-52542; **Published:** 23 January, 2022, DOI:10.37421/2155-9619.2022.13.467

Therapy

Nuclear medicine also provides therapeutic methods such as radioactive iodine (I-131) therapy, which uses small amounts of radioactive material to treat thyroid cancer and other medical issues, as well as therapies for other malignancies and other conditions. Patients with non-lymphoma Hodgkin's who do not respond to chemotherapy may benefit from radioimmunotherapy (RIT).

Nuclear medicine imaging technologies are used by doctors to see the structure and function of an organ, tissue, bone, or system in the body. Nuclear medicine is used in adults to:

Lungs:

- Examine your lungs for problems with breathing and blood flow.
- Differential lung function should be assessed before lung reduction or transplant operations.
- Identify rejection of a lung transplant.

Heart:

- View the blood flow and activity of the heart (such as a myocardial perfusion scan).
- Find out if you have coronary artery disease and how severe your stenosis is determine the extent of heart damage following a heart attack.
- Consider treatment options like bypass surgery and angioplasty.
- Re-evaluate the revascularization findings (blood flow restoration) procedures.
- Detect rejection of a heart transplant.
- Before and after treatment, assess cardiac function (MUGA).

Bones:

- Check for fractures, infection, and arthritis in the bones.
- Look for signs of metastatic bone disease.
- Examine aching prosthetic joints.

Brain:

- Aid in surgical planning and identification of brain regions that may be producing seizures.
- In patients with probable Parkinson's disease or associated movement disorders, look for anomalies in a neurotransmitter in the brain that controls movement.

Other methods:

- Identify gallbladder inflammation or abnormal function.
- Find out whether there's any bowel bleeding.
- Evaluate gallbladder surgery post-operative complications.
- Lymphedema assessment.

A unique gamma camera and single-photon emission computed tomography (SPECT) imaging techniques are used in nuclear medicine. The

gamma camera captures and converts the energy emitted by the radiotracer in your body into an image. The gamma camera does not emit any radiation of its own. It has gamma camera heads, which are radiation detectors. These are enclosed in metal and plastic and attached to a spherical, donut-shaped gantry, commonly in the shape of a box. The patient is placed on an exam table that slides between two parallel gamma camera heads that are located above and below the patient. The gamma camera heads are sometimes angled at a 90-degree angle over the patient's torso by the doctor. SPECT uses rotating gamma camera heads to provide detailed, three-dimensional images of the patient's body. PET scanners are large machines with a donut-shaped hole in the centre. It appears to be a CT or MRI scanner. The energy emitted from the radiotracer in your body are recorded by multiple rings of detectors inside the equipment. The photos are created by a computer using data from the gamma camera. A probe is a hand-held instrument that looks like a microphone [1-5].

Reference

1. Kumar, Rajeev Ranjan, and Rahul Kumar. "Thyroid (In the Pharyngeal Arch, the Extension of Endoderm)"The Consistent of Endocrine System"."
2. Vanderpump, Mark PJ. "The epidemiology of thyroid disease." *Br Med Bull* 1 (2011).
3. Bennedbæk, Finn Noe, Hans Perrild, and Laszlo Hegedüs. "Diagnosis and treatment of the solitary thyroid nodule. Results of a European survey." *Clinical endocrinology* 3 (1999): 357-363.
4. Ravetto, Carlo, Luigia Colombo, and Massimo E. Dottorini. "Usefulness of fine-needle aspiration in the diagnosis of thyroid carcinoma: a retrospective study in 37,895 patients." *Cancer Cytopathology* 6 (2000): 357-363.
5. Grani, Giorgio, Livia Lamartina, Valeria Ascoli and Daniela Bosco, et al. "Ultrasonography scoring systems can rule out malignancy in cytologically indeterminate thyroid nodules." *Endocrine* 2 (2017): 256-261.

How to cite this article: Lory, Leena. "A Quick Overview on Thyroid Scan." J Nucl Med Radiat Ther 13(2022): 467.