

NUCLEAR MEDICINE

Is a medical imaging specialty involving the use of small amounts of radioactive substances (radionuclides) in the diagnosis and treatment of disease. For most nuclear medicine imaging studies the radionuclide is injected into the patient where it temporarily collects in the organ under investigation. The patient lies on a table while a gamma camera is positioned above the patient. The gamma camera detects the gamma rays emitted from the radionuclide and uses this information to produce images that show the distribution of the radionuclide within the organ under investigation. Images are stored in the computer and later recorded on film. The examination is called a scintigram or scan.

Positron emission tomography (PET) and single-photon emission computed tomography (SPECT) are specialized examinations. For the latter, the gamma camera rotates around the patient while in the former, the patient lies on the imaging table which moves across the PET scanner taking images of the organ of interest. A computer then aids in the analysis of images to obtain two and three -dimensional images representing thin slices of internal organs such as the heart, brain, and liver or any other organ of interest.

Nuclear medicine imaging is unique, in that it provides information about both structure and function, based on the cellular function and physiology of the organ, rather than relying on physical changes in the anatomy. In some diseases it can even identify abnormalities at an earlier stage than other diagnostic tests for example stress fractures.

Nuclear medicine technologists schedule examinations, prepare and inject dosages of radionuclides according to set safety procedures, position patients on the imaging table and operate the gamma camera, which creates pictures of the drug as it passes through the patient's body. Nuclear medicine technologists function under strict radiation control measures and practice good patient management and care.