OPEN ACCESS Freely available online

Journal of Biomedical Engineering and Medical Devices

Commentary

Bone Scintigraphy: Latest Medical Imaging Technique to Examine Bones

Christopher J. Thomas*

Department of Orthopaedic Surgery, Rothman Institute of Orthopaedics, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA

DESCRIPTION

Nuclear medicine imaging techniques are painless, non-invasive diagnostic examinations that assist doctors diagnose and evaluate medical disorders properly. A bone scan, also known as bone scintigraphy, is a nuclear medicine imaging procedure that examines the bones. It can help in the treatment of a variety of bone disorders, such as bone cancer or metastases, the location of bone inflammation and fractures (which may not be evident on typical X-ray pictures), and bone infection (osteomyelitis). Nuclear medicine provides functional imaging and enables for the visualisation of bone metabolism and remodelling, which is not possible with most conventional imaging modalities (such as X-ray Computed Tomography, CT). Bone scintigraphy competes with Positron Emission Tomography (PET) for imaging aberrant bone metabolism, although it is far less expensive. Bone scintigraphy has a higher sensitivity but a poorer specificity than CT or MRI for scaphoid fracture diagnosis after a negative plain radiography. 99mTc with methylene diphosphonate is the most often used radiopharmaceutical for bone scintigraphy . 99mTc with HDP, HMDP, and DPD are some of the other bone radiopharmaceuticals. A bone scan (skeletal scintigraphy) involves small amounts of radioactive elements called radiotracers that are injected into the circulation to diagnose and evaluate a variety of bone illnesses and ailments. The radiotracer goes across the area being inspected and emits gamma rays, which are detected by a special gamma camera and computer and used to build images of your bones. This technique has the ability to detect disease in its early stages since it may localize molecular activity within the body. Radiopharmaceuticals or radiotracers, which are radioactive compounds, are used in these imaging examinations. A particular camera or imaging device detects the radioactive energy emitted by the radiotracer and produces scintigrams, which are photographs of the bones. Areas of aberrant bone that take up more or less radiopharmaceutical and appear brighter or darker than normal bone on the scintigram suggest abnormalities. Nuclear medicine treatments can scan the processes of the body at the molecular level, which means they can detect disease in its early stages and monitor a patient'sreaction to therapeutic interventions. In fact,a bone scan can often detect problems in the bones far earlier than a standard x-ray examination. Ordinary x-ray exams create an image by passing x-rays through the body. Radiopharmaceuticals or radiotracers are radioactive materials used in nuclear medicine. A bone scan is a specialised radiology examination that examines the skeleton's numerous bones. It's done to find out where there are physical and chemical alterations in the bones. A bone scan can also be used to track how well particular treatments are working. This chemical is usually injected into the patients' bloodstream by doctor. It can also be taken by mouth or inhale as a gas. The substance collects in the area under investigation and emits gamma rays. Special cameras detect this energy and use a computer to create images that show how patient's organs and tissues look and operate. Nuclear medicine examinations provide information that is often unavailable may be included in this information. For many bone disorders, nuclear medicine provides the most relevant diagnostic or therapy information. Some of the advantages of bone scan includes: 1) A nuclear medicine scan is less expensive than exploratory surgery and may provide more precise information;2)A bone scan allows doctors to assess the health of patient's bones and detect fractures and other problems that may go undetected during a Bone Radiography or X-ray check; 3) Early diagnosis of primary cancer and cancer that has progressed to the bones from other parts of the body is possible with a bone scan;4) A bone scan can reveal osteomyelitis, a bone or bone marrow infection;5) A bone scan might help you keep track of the effects of treatment on bone. When a person's cumulative lifetime radiation exposure from diagnostic medical imaging surpasses 100 mSv, there is an elevated risk of radiation damage. Although gamma camera imaging of 99mTc radiopharmaceuticals is the most common form of bone scintigraphy, imaging with PET scanners employing fluorine-18 sodium fluoride is also available. Nuclear medicine images may not have the same image resolution as CT or MRI images. Nuclear medicine scans, on the other hand, are more sensitive for a number of purposes. Other imaging techniques are generally unable to gather the functional information they provide. For many years to come, radionuclidebone imaging will likely remain a popular and significant imaging modality.

Correspondence to: Christopher J. Tomas, Department of Orthopaedic Surgery, Rothman Institute of Orthopaedics, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA, E-mail: Christomas329@gmail.com

Received: 31-Mar-2022, Manuscript No. BEMD-22-17291; **Editor assigned:** 04-Apr-2022, PreQC No. BEMD-22-17291 (PQ); **Reviewed:** 19- Apr -2022, QC No. BEMD-22-17291; **Revised:** 25- Apr -2022, Manuscript No. BEMD-22-17291 (R); **Published:** 02-May-2022, DOI: 10.35248/2475-7586.22.07.210

Citation: Thomas CJ (2022) Bone Scintigraphy: Latest Medical Imaging Technique to Examine Bones. J Biomed Eng & Med Dev. 07: 210