

Sodium Fluoride PET Bone Scan

Updated

9/8/2024

- **Indications**

- To assess skeletal metastases (including localization and determination of the extent of disease), back pain, abnormal radiographic/laboratory findings, osteomyelitis, trauma, inflammatory and degenerative arthritis, avascular necrosis, osteonecrosis of the mandible, condylar hyperplasia, metabolic bone disease, Paget disease, bone graft viability, complications of prosthetic joints, reflex sympathetic dystrophy and distribution of osteoblastic activity before administration of therapeutic radiopharmaceuticals for bone pain.

- **Radiopharmaceutical:**

- 5-10 mCi sodium F-18 fluoride administered IV

- **Patient Preparation:**

- The patient must have private insurance (other than Medicare) with prior authorization. A Medicare patient cannot have this exam unless he/she has additional third party insurance with prior authorization.
- Have the patient drink 16-20 oz of water 30-60 mins prior to exam to ensure adequate hydration.
- Have the patient empty his/her bladder immediately prior to imaging. Instruct the patient to void frequently for a day following the exam.

- **Conflicting Examinations/Medications:**

- No Nuclear Medicine exams within the previous 24 hrs.
- No barium GI exams within the previous 48 hrs.

- **Pregnancy/Lactation:**

- Pregnancy testing is only needed in potentially pregnant patients who state they could be pregnant. See Pregnant, Potentially Pregnant and Lactating Patients policy for specifics.
- Breast milk should be discarded for 4 hrs following radionuclide administration.

- **Imaging Technique:**

- PET Bed Time
 - <150 lbs - 2 mins/bed
 - 150-270 lbs - 3 mins/bed
 - >270 lbs - 4 mins/bed
 - Legs - 1 min/bed
 - Table weight limit is 450 lbs.

- Matrix Size - 128 x 128

- Patient Positioning - supine with arms by side

- **Imaging Views**

- Begin imaging 1 hr after radionuclide administration.
- Obtain axial low-dose CT images of the whole body (including arms and legs) using a bone window and kernel.
- Obtain axial non attenuation corrected and attenuation corrected PET images of the whole body (including arms and legs).
- Obtain a 3D horizontal spinner of the axial attenuation corrected PET images.
- Create axial, coronal and sagittal fused PET-CT images using a bone window and kernel for the CT portion.

- **Notes:**

- The major route of excretion is the urinary tract. The degree of localization in the urinary tract depends on renal function, state of hydration and interval between administration of F-18 and imaging.
- The uptake mechanism of F-18 fluoride resembles that of Tc-99m MDP with better pharmacokinetic characteristics including faster blood clearance and 2-fold higher uptake in bone.
- Uptake of F-18 fluoride reflects blood flow and new bone formation. Local or regional hyperemia may cause increased visualization of the osseous structures and soft tissues.
- Physiologic F-18 uptake is generally uniform throughout the skeleton. Symmetric uptake between the right and left sides is generally observed (except in periarticular sites where uptake can be variable).
- Processes that result in minimal osteoblastic activity or primarily osteolytic activity may not be detected.

- In general the degree of F-18 uptake does not differentiate benign from malignant processes. However the pattern of F-18 uptake may be suggestive or even characteristic of a specific diagnosis.
- Any degree of F-18 uptake that is visibly higher or lower than uptake in adjacent bone or uptake in the corresponding contralateral region indicates an alteration in bone metabolism.
- Subclinical joint disease commonly causes increased periarticular F-18 uptake that may be asymmetric and occurs anywhere in the body (especially in the spine and small bones of the hands and feet).
- Dental disease commonly causes increased periodontal F-18 uptake.
- Subclinical injury (especially the ribcage and costochondral junctions) may cause increased F-18 uptake.