

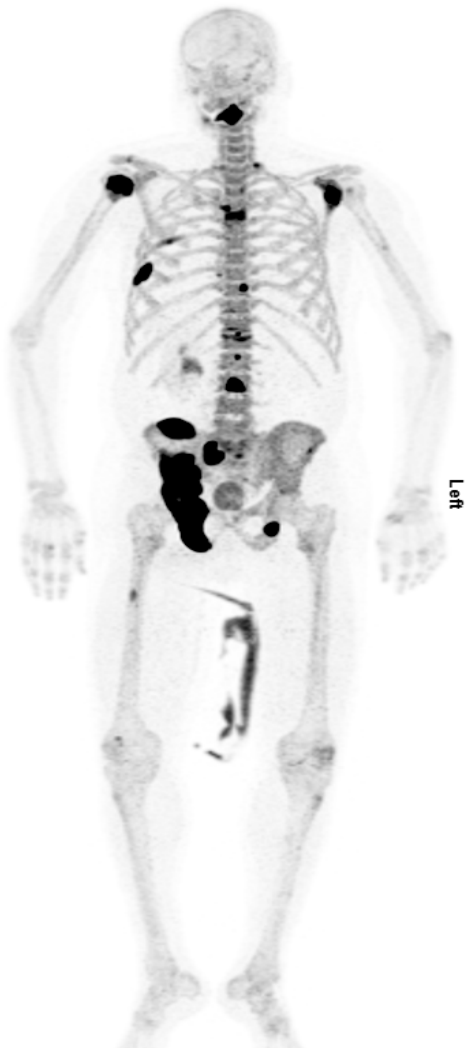
Series Editor: G GNANASEGARAN

¹⁸F-NaF Bone Scan: Bone Metastases

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CLINICAL DETAILS

Recurrent Prostate Cancer: Patient with known prostate cancer and rising PSA was referred for a bone scan to assess any bone metastases.



SCAN FINDINGS

¹⁸F-Fluoride (¹⁸F-NaF) bone scan shows widespread foci of abnormal increased tracer uptake involving the axial and appendicular skeleton (spine, ribs, right humerus, left scapula, pelvis right femur). Note is made of absent left kidney.

DISCUSSION

^{99m}Tc -methylene diphosphonate (MDP), is a common skeletal imaging agent. However, ^{18}F -sodium Fluoride (NaF) gained popularity for skeletal scintigraphy following its introduction by Blau and others in the early 1960s (1). ^{18}F -NaF has rapid and high bone uptake and very rapid blood clearance (2). There is high bone-to-background ratio and often produces high-quality diagnostic images of the skeleton. Images can be acquired in less than an hour following administration of ^{18}F -NaF. Studies using ^{18}F -fluoride has shown to have a higher diagnostic accuracy in the assessment of malignant and benign skeletal disease PET when compared to ^{99m}Tc -MDP bone scans.

The advantages of ^{18}F -NaF include (3-6):

- Better pharmacokinetic characteristics.
- High bone-to-soft-tissue activity ratio=High-quality images
- Quantitative assessment of bone metabolism is feasible

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KEY POINTS (3-7)

- Skeletal scintigraphy is conventionally performed with ^{99m}Tc -MDP due to its widespread availability
- With advancement of hybrid imaging systems in the 1990s, increasing number of studies have shown that ^{18}F -NaF is superior to ^{99m}Tc -MDP
- The advantages of ^{18}F -NaF has the potential to replace ^{99m}Tc -MDP bone scintigraphy
- However, In the absence of correlative CT scans, ^{18}F -fluoride PET and combined planar imaging / SPECT had similar specificities
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