

Referrer's Guide to PET/CT NaF Imaging at The Brooklyn Hospital Center

Summary

Order F-18 NaF PET/CT bone scan instead of Tc-99m MDP bone scan under all established protocols to increase sensitivity and specificity for diagnosing metastasis.

Background

Functionally, F-18 NaF and Tc-99m MDP are similar; both concentrate in areas of bone remodeling. One major difference between them is NaF has higher contrast. The other major difference is PET has higher spatial resolution than planar imaging or SPECT. These differences allow NaF PET to detect smaller lesions and makes it more sensitive. The CT portion of PET/CT adds anatomical information that makes it more specific than conventional bone imaging.¹

Even-Sapir⁴ measured sensitivity and specificity in patients with high risk prostate cancer. They reported for planar bone scan 70% and 57%, respectively, for SPECT 92% and 82% while for PET/CT 100% and 100%. Hetzel⁵ measured area under the ROC for lung cancer patients and reported for planar bone scan 0.771, for SPECT 0.875 and for PET/CT 0.989. Similar findings were reported by Iagaru¹, Mosavi² and Schirrmeyer⁶.

Indications

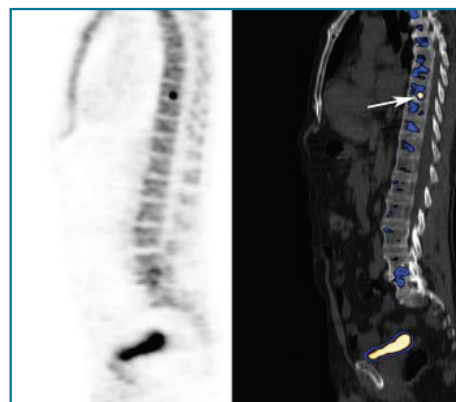
For FDG-avid tumors, order F-18 FDG PET/CT for patients with suspected metastatic disease. FDG PET/CT can detect osteolytic lesions as well as occult metastatic disease. However, since a negative F-18 FDG PET/CT does not exclude bone metastasis, if detecting more bone lesions would change management, then follow-up with F-18 NaF PET/CT.

For non-FDG-avid tumors, such as prostate tumors, use F-18 NaF PET/CT for bone scanning if bone mets are suspected.

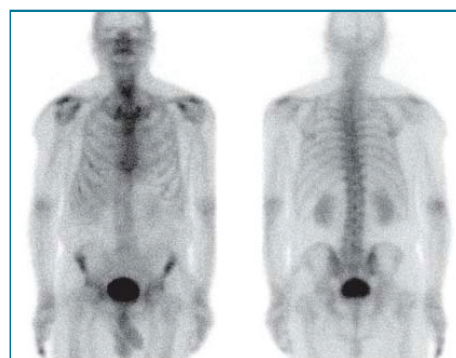
Reimbursement

Currently F-18 NaF PET/CT for detection of bone metastasis is covered by CMS under coverage with evidence development (CED) as part of the National Oncologic PET Registry (NOPR). For more information, contact The Brooklyn Hospital Center.

Coverage by private payers varies. In general, F-18 NaF bone PET/CT scans will require pre-authorization.



F-18 NaF PET/CT



Tc-99m MDP Bone Scan

Images courtesy Einat Even-Sapir

References

1. Iagaru, A. Pilot Prospective Evaluation of 99mTc-MDP Scintigraphy, 18F NaF PET/CT, 18F FDG PET/CT and Whole-Body MRI for Detection of Skeletal Metastases. *Clin Nucl Med.* 2013 Feb 28.
2. Mosavi, F. Whole-Body Diffusion-Weighted MRI Compared With 18F-NaF PET/CT for Detection of Bone Metastases in Patients With High-Risk Prostate Carcinoma. *Am J Roent.* 2012 Nov; 199:1114-20.
3. Segall, G., SNM practice guideline for sodium 18F-fluoride PET/CT bone scans 1.0. *J Nucl Med.* 2010 Nov; 51(11):1813-20.
4. Even-Sapir, E., The detection of bone metastases in patients with high-risk prostate cancer: 99mTc-MDP Planar bone scintigraphy, single- and multi-field-of-view SPECT, 18F-fluoride PET, and 18F-fluoride PET/CT. *J Nucl Med.* 2006 Feb; 47(2):287-97.
5. Hetzel, M., F-18 NaF PET for detection of bone metastases in lung cancer: accuracy, cost-effectiveness, and impact on patient management. *J Bone Miner Res.* 2003 Dec; 18(12):2206-14.
6. Schirrmeyer, H., Prospective evaluation of the clinical value of planar bone scans, SPECT, and (18)F-labeled NaF PET in newly diagnosed lung cancer. *J Nucl Med.* 2001 Dec; 42(12):1800-4.



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