

# Two Occult Primaries Discovered on PET/CT in a Patient With Paraparesis

Shrikant Solav, MD, DRM, and Dhanpathi Halnaik, MD

**Abstract:** Metastasis with an occult primary is a challenging issue. Subjecting these patients to a host of tests ranging from sonography, regional computed tomography (CT), whole-body CT scan, magnetic resonance imaging, tumor markers, etc could be agonizing to the patient and the family. FDG PET is a potential tool that could provide objective evidence in some of these cases to settle the issue. An unknown (occult) primary is conventionally defined as a neck mass that is histologically proven to be malignant in the absence of previous malignancy with no demonstrable primary tumor by conventional investigative means. However, metastasis of an occult primary may also present with lesions outside the neck such as the brain, skeleton, liver, etc.

PET/CT has been reported to have a sensitivity between 26% and 43% to localize an occult primary. This case demonstrates an unusual occurrence of 2 occult primary sites in a patient presenting with skeletal manifestations.

One occult primary was found to be in the nasopharynx and other was found to be in the prostate gland. Please note that the value of FDG in tumors of the head and neck is undisputed, and although FDG PET has variable uptake in a prostatic neoplasm, here is an exceptional case in which a focal eccentric uptake in the prostate gland was subsequently proven to be neoplastic.

Received for publication September 17, 2009; revision accepted March 3, 2010. From the Spect Lab, Nuclear Medicine Services, Pune, India.

Reprints: Shrikant Solav, MD, DRM, Spect Lab, Nuclear Medicine ServicesK 2/1 Erandawana Co-op Society, Opposite Mangeshkar Hospital, Pune 411004, India. E-mail: solav@vsnl.com.

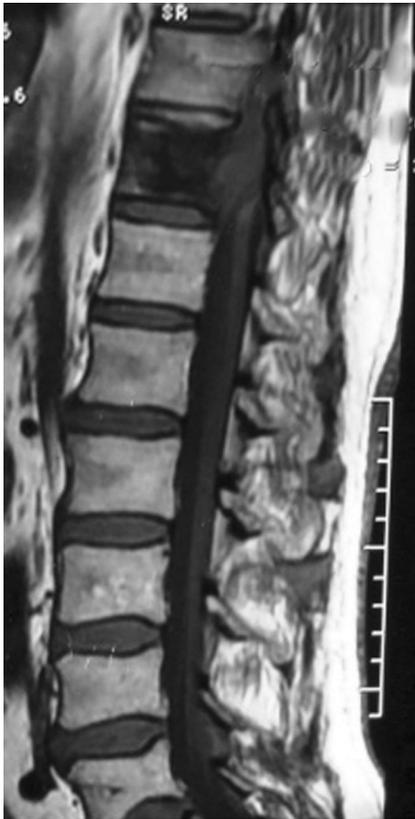
Copyright © 2010 by Lippincott Williams & Wilkins  
ISSN: 0363-9762/10/3508-0586

**Key Words:** occult primary, PET/CT scan, paraparesis

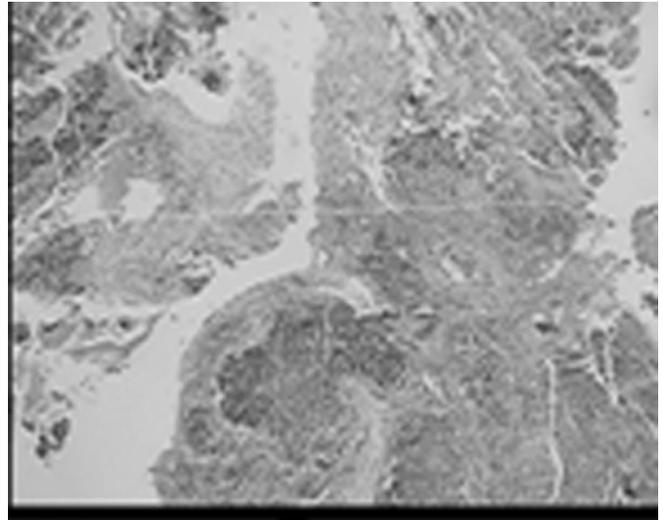
(*Clin Nucl Med* 2010;35: 586–589)

## REFERENCES

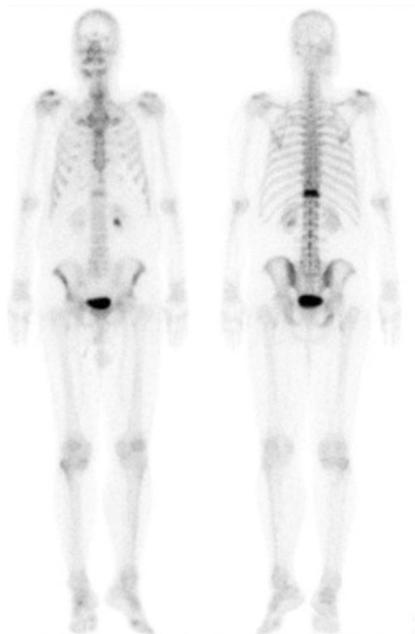
- Schapiro DV, Jarrett AR. The need to consider survival outcome and expense when evaluating and treating patients with unknown primary carcinoma. *Arch Int Med*. 1995;155:2050–2054.
- Aassar OS, Fischbein NJ, Caputo CR, et al. Metastatic head and neck cancer: role and usefulness of FDG PET in locating occult primary tumor. *Radiology*. 1999;210:177–181.
- Hanasono MM, Kunda LD, Segall GM, et al. Uses and limitations of FDG positron emission tomography in occult primary head and neck cancer. *Laryngoscope*. 1999;109:880–885.
- Greven KM, Keyes JW Jr, Williams DW III, et al. Occult primary tumors of the head and neck: lack of benefit from positron emission tomography imaging with 2-[F-18]fluoro-2-deoxy-D-glucose. *Cancer*. 1999;86:114–118.
- Joshi U, Vander Hoeven, Comans, Herder GJ, et al. In search of an unknown primary tumor presenting with extracervical metastases: the diagnostic performance of FDG PET. *Br J Radiol*. 2004;77:1000–1006.
- Effert PJ, Bares R, Handt S, et al. Metabolic imaging of untreated prostate cancer by positron emission tomography with 18-fluorine-labeled deoxyglucose. *J Urol*. 1996;155:994–998.
- Schoder H, Larsen SM. Positron emission tomography for prostate, bladder and renal cancer. *Semin Nucl Med*. 2004;34:274–292.
- Fricke E, Machtens S, Hofmann M, et al. Positron emission tomography with 11C-acetate and 18F-FDG in prostate cancer patients. *Eur J Nucl Med Mol Imaging*. 2003;30:607–611.



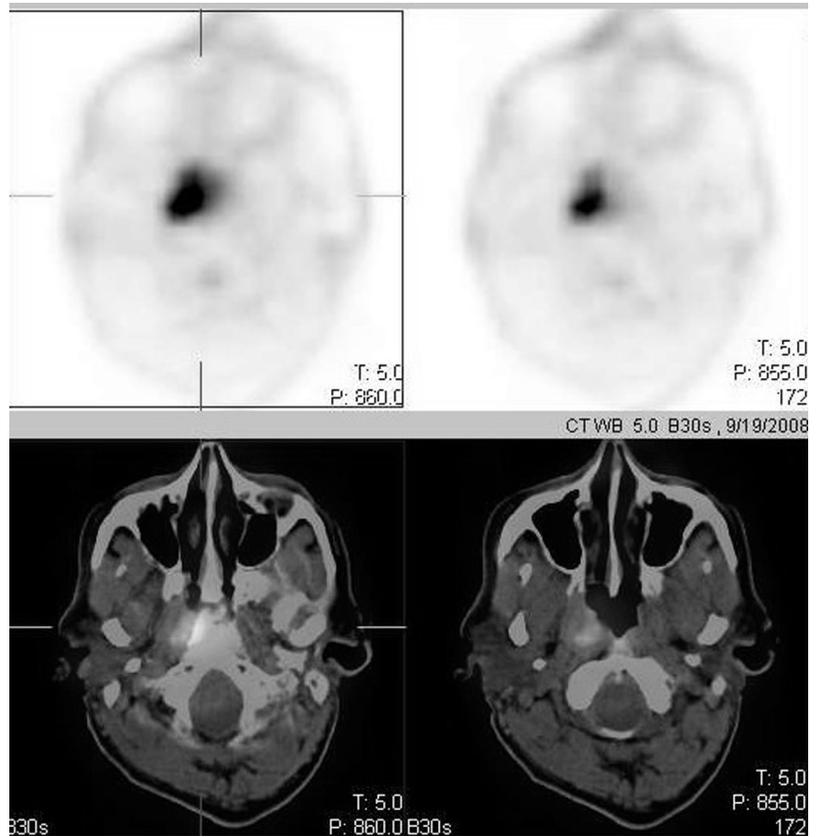
**FIGURE 1.** This 64-year-old gentleman presented with back-ache and weakness in both lower extremities. Examination revealed motor power of grade 2 to 3 in the legs. A magnetic resonance imaging study revealed abnormal signals in D11 vertebra suggestive of metastasis.



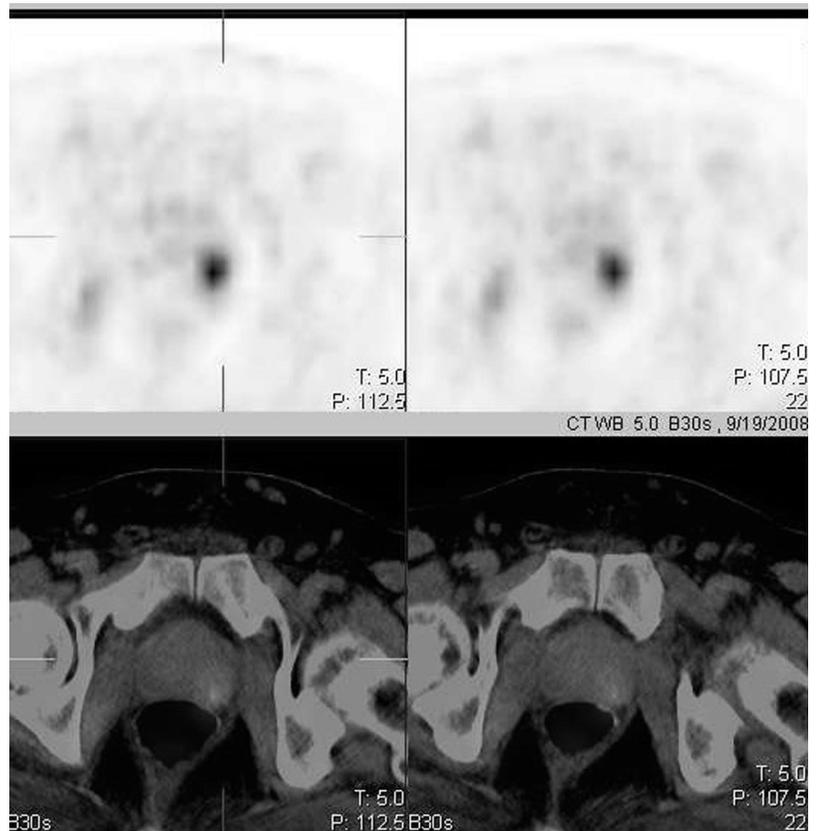
**FIGURE 3.** The histology revealed malignant cells (metastatic undifferentiated carcinoma) in the excised bone tissue.



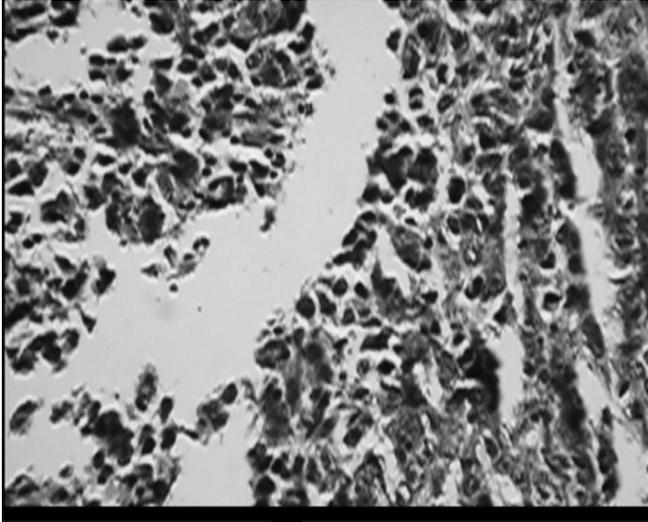
**FIGURE 2.** A whole-body bone scan was requested to look for involvement of additional sites. The study revealed solitary lesion at D11. Hence histologic evaluation was suggested.



**FIGURE 4.** A whole-body PET/CT was requested with an intention to localize the primary tumor. The study was performed using 10 mCi F-18 fluorodeoxyglucose administered intravenously on 6 hours fasting state. Whole-body images were acquired on a dedicated PET/CT (Biograph duo) system. There were 2 foci of abnormal FDG localization, one in the nasopharynx and other focus was seen in the prostate gland. This figure shows abnormal focus in the nasopharynx.



**FIGURE 5.** Eccentric focus of avid FDG uptake in the prostate gland.



**FIGURE 6.** Histology from both these sites revealed malignancy. The figure shows moderately differentiated nasopharyngeal carcinoma, hyperchromatic cells are arranged in sheets.

The incidence of an occult primary reported is about 15% of all cancers.<sup>1</sup> PET/CT is most frequently used in cases of squamous cell carcinoma of head and neck with an occult primary.<sup>2</sup> There are inherent limitations of using FDG in occult head and neck cancer in view of physiologic localization of this agent in the muscles of the nasopharynx/oropharynx, tongue, tonsil, adenoids, etc.<sup>3,4</sup> FDG PET has been reported to have a high positive predictive value in extracervical metastasis.<sup>5</sup> This case illustrates an unusual occurrence of 2 occult primary tumors in a patient who presented with skeletal manifestations. It may be noted that FDG has a variable uptake in prostatic neoplasm.<sup>6</sup> Almost 80% of prostatic neoplasms may have low FDG uptake. FDG uptake in prostate also has limitations in that the uptake overlaps with benign lesions such as prostatitis, hyperplasia, and does not correlate with stage or grade of neoplasm. The ideal compounds for evaluation of prostate cancer are carbon-11 choline, C-11 acetate, or F-18 choline, F-18 acetate especially for nodal staging and recurrence.<sup>7,8</sup> It was a coincidence that in this case both the sites of FDG uptake were subsequently proven to be neoplastic. It may also be noted that the most likely source of skeletal metastasis was the nasopharyngeal carcinoma because prostate carcinoma with skeletal involvement usually has a relatively benign course and does not present clinically with compressive myelopathy as in the present case.