Calcified peritoneal metastasis identified on 18F-fluoride positron emission tomography/computed tomography: Importance of extraosseous uptake of F-18 fluoride

Priyanka Verma, Piyush Chandra, Archi Agrawal, Nilendu Purandare, Sneha Shah, Venkatesh Rangarajan

Department of Nuclear Medicine and Molecular Imaging, Tata Memorial Hospital, Parel, Mumbai, Maharashtra, India

ABSTRACT

F-18 NaF positron emission tomography/computed tomography (PET/CT) is used for the evaluation of malignant and nonmalignant osseous disease. Extraosseous uptake of 18 fluoride-NaF has been observed in the arterial vasculature, gastrointestinal tract, and genitourinary tract. We describe a case of a woman with carcinoma of unknown primary in whom F-18 NaF PET/CT showed tracer uptake in the calcified peritoneal metastasis. Extraosseous findings on F-18 NaF PET/CT, though rare, may be visualized and may result in important management changes.

Keywords: 18F-fluoride positron emission tomography/computed tomography, bone scintigraphy, calcified soft tissue metastasis, extraosseous finding

F-18 NaF positron emission tomography/computed tomography (PET/CT) is used routinely for bone imaging for the detection of malignant and nonmalignant osseous disease.[1,2] Extraosseous uptake of 18F-NaF (18 fluoride NaF) has been observed in structures such as the arterial vasculature, gastrointestinal tract, and genitourinary tract.[3-6] As a bone-seeking radiopharmaceutical, 18F-NaF can localize in extraosseous calcifying lesions. Lesions containing dystrophic or microscopic calcification or calcified visceral metastases can show focal uptake of 18F-NaF.[7-10] Tc-99m methylene diphosphonate uptake has been reported in ovarian carcinoma and its soft tissue metastases.[11] In literature, there is one case report of F-18 fluoride uptake in calcified extraosseous metastases from ovarian papillary serous adenocarcinoma.[12] We describe a case of a 73-year-old woman with carcinoma of unknown primary in whom F-18 NAF PET/CT showed tracer uptake in the calcified peritoneal metastasis. She presented with abdominal distension, and ascitic fluid cytology was positive for malignant cells, suggestive of metastatic adenocarcinoma. She underwent F-18F bone scan for evaluation of skeletal metastases. Whole body F-18F PET/CT maximum intensity projection (MIP) [Figure 1] showed focal increased tracer uptake in the right iliac fossa. Axial PET/CT fused [Figure 2] showed increased tracer uptake corresponding to calcified soft tissue peritoneal metastasis. No evidence of skeletal metastases was seen. Figure 3 shows the coronal and sagittal images of the same patient. Contrast-enhanced CT scan [Figure 4] was done, which demonstrated the presence of calcified peritoneal metastasis. However, the primary site could not be identified. The patient was given a diagnosis of peritoneal metastases with an unknown primary and was referred for chemotherapy. Extraosseous findings on F-18 NaF PET/CT, like the one described here, though rare, may be visualized and may result in important management changes, if it is a metastatic site as in our case. However, confirmation with histology or other imaging modality should be made.

Address for correspondence:
Dr. Venkatesh Rangarajan, Department of Nuclear Medicine and Molecular Imaging, Tata Memorial Hospital, Parel, Mumbai - 400 012, Maharashtra, India.
E-mail: drvrangarajan@gmail.com

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Figure 1: Whole body 18-F fluoride positron emission tomography/computed tomography maximum intensity projection image shows focal increased tracer uptake tracer uptake in the right iliac fossa. No evidence of skeletal metastases was seen

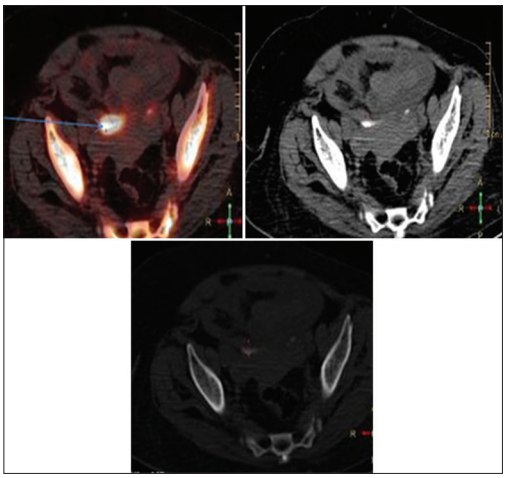

Figure 2: Axial positron emission tomography/computed tomography fused image shows increased tracer uptake corresponding to calcified soft tissue peritoneal metastasis

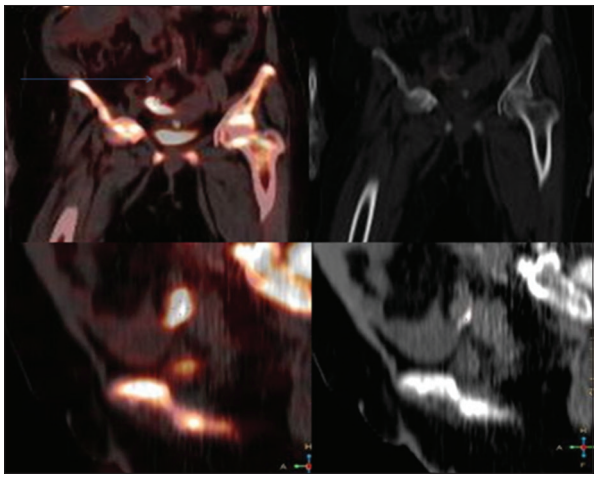

Figure 3: The coronal and sagittal images of the same patient

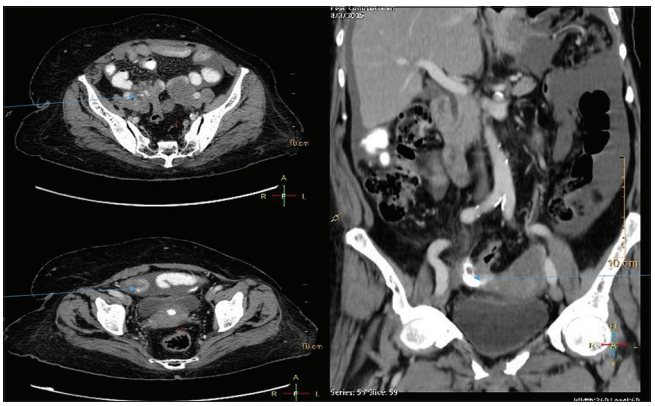

Figure 4: The axial and coronal contrast-enhanced computed tomography images showing the calcified soft tissue peritoneal metastasis

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Conflicts of interest

There are no conflicts of interest.

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