MedStar Franklin Square Medical Center

9000 Franklin Square Drive
Baltimore, MD 21237
443-777-7441 PHONE
443-777-7397 FAX
MedStarFranklin.org/PETCases

Nuclear Medicine

Gabriel Soudry, MD
gabriel.soudry@medstar.net
Director, Nuclear Medicine and PET-CT Services

Prostate Cancer

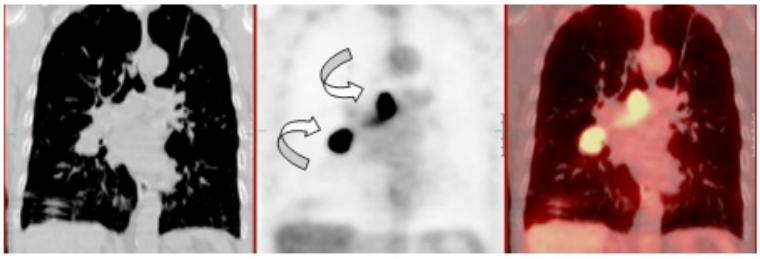

Fig. 1

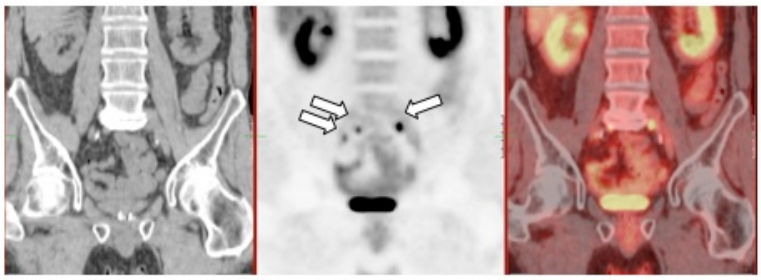

Fig. 2

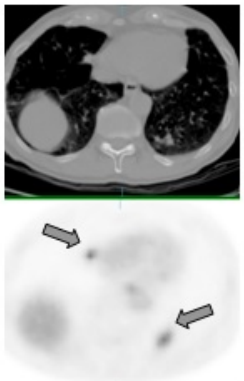

Fig. 3

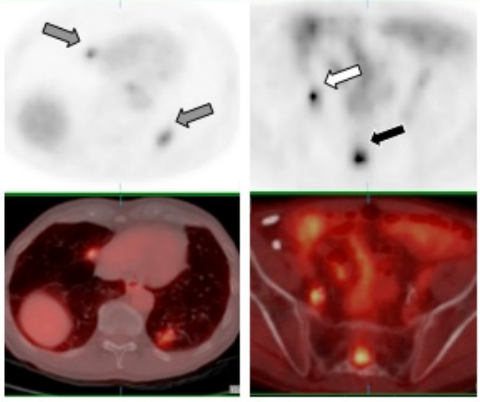

Fig. 4

This 68 year old man had received radiotherapy for **prostate cancer** five years earlier followed by maintenance hormonal therapy. He recently was noted to have a rising PSA, and CT of the chest, abdomen, and pelvis revealed mediastinal lymphadenopathy. A radionuclide bone scan was negative. He had a long, heavy smoking history and lung cancer was a concern. A PET-CT was ordered to assess the extent of disease. The PET-CT showed abnormal uptake in hilar and mediastinal lymph nodes (curved arrows, Fig. 1), in multiple pelvic lymph nodes (white arrows, Fig. 2 & 4), in multiple pulmonary nodules (grey arrows, Fig. 3), and in the sacrum (black arrow, Fig. 4). Mediastinal biopsy showed metastatic prostate cancer.

How did the PET-CT help?

The PET-CT scan identified additional metastases in normal size pelvic lymph nodes and a sacral metastasis that was not seen on bone scan, as well as a subtle lung metastasis that was not identified on the CT scan. The recent NCCN (National Comprehensive Cancer Network) task force report on the clinical utility of PET suggests that PET may be of use in hormonally resistant prostate cancer, and the

NOPR (National Oncologic PET Registry) now covers PET for evaluation of subsequent treatment strategy for prostate cancer[1,2].

(1) J Natl Compr Canc Netw. 2009 Jun;7 Suppl 2:S1-26
(2) http://www.cancerpetregistry.org/indications_facilities.htm

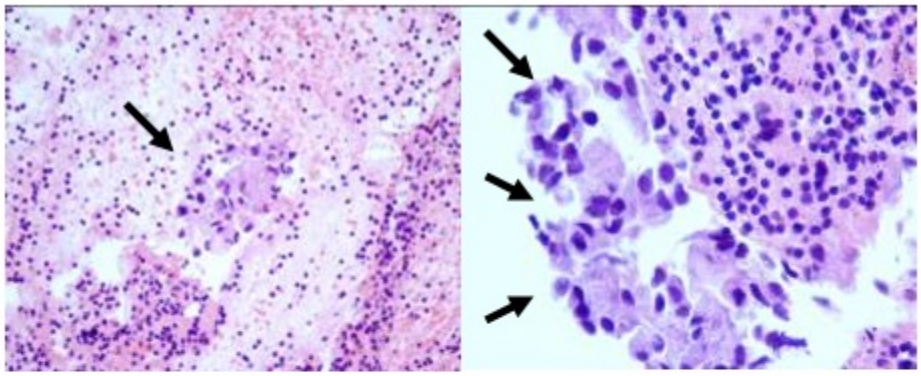

Fig.5

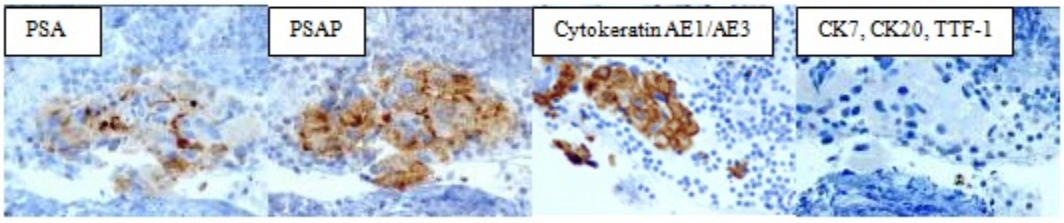

Fig.6

The mediastinal biopsy showed rare, cohesive groups of atypical epithelial cells (black arrows, Fig. 5) in a background of normal lymphoid tissue. These epithelial groups demonstrated an immunohistochemical staining profile diagnostic for metastatic prostate cancer, showing immunoreactivity for prostate specific antigen (PSA), prostate specific acid phosphatase (PSAP), and the epithelial marker cytokeratin AE1/AE3 (Fig. 6). Staining was negative for cytokeratin 7, cytokeratin 20, and TTF-1 (a lung and thyroid marker), which also supported the diagnosis (Fig. 6).

Histology courtesy of Jennifer Broussard, MD