F-18 PSMA Uptake in Male Breast Cancer during Restaging Evaluation of Carcinoma Prostate

Abstract

Fluorine-18 prostate-specific membrane antigen (PSMA) positron emission tomography-computed tomography scan is widely used for restaging of prostate cancer. We present a case where false-positive PSMA uptake was seen in metachronous carcinoma breast during restaging workup of carcinoma prostate.

Keywords: *Carcinoma breast, prostate-specific membrane antigen pitfall, prostate-specific membrane antigen positron emission tomography-computed tomography*

Anand Zade, Shishir Shetty[1], Asawari Ambekar[2], Makarand Karpe[1]

Departments of Nuclear Medicine, [1]Oncosurgery and [2]Pathology, Apollo Hospitals, Sector 23, CBD Belapur, Navi Mumbai, India

A 77-year-old gentleman with carcinoma prostate, post orchiectomy with raised serum PSA level of 39.1 ng/ml was referred for fluorine-18 prostate-specific membrane antigen positron emission tomography-computed tomography (PSMA PET-CT) scan as a part of restaging work up [Figure 1a-e]. Maximum intensity projected (MIP) image (a), axial CT (b), and axial fused images (c) showed increased tracer uptake in both lobes of prostate (arrows) consistent with disease recurrence. Increased PSMA uptake was also noted in the soft tissue mass in right breast parenchyma (arrowhead) in MIP (A), axial CT (d), and axial fused images (e). Considering the fact that breast metastasis from carcinoma prostate is rare and that PSMA is also expressed in neovasculature of nonprostatic malignancies, the possibility of metachronous carcinoma right breast was contemplated. Histology of biopsy from the right breast mass [Figure 2a-e] revealed infiltrating ductal carcinoma of intermediate nuclear grade (a). On immunohistochemistry, the tumor cells expressed Pan CK (B) and CK7 (a). The cells were immunonegative for CK20 (d) and PSA (e).

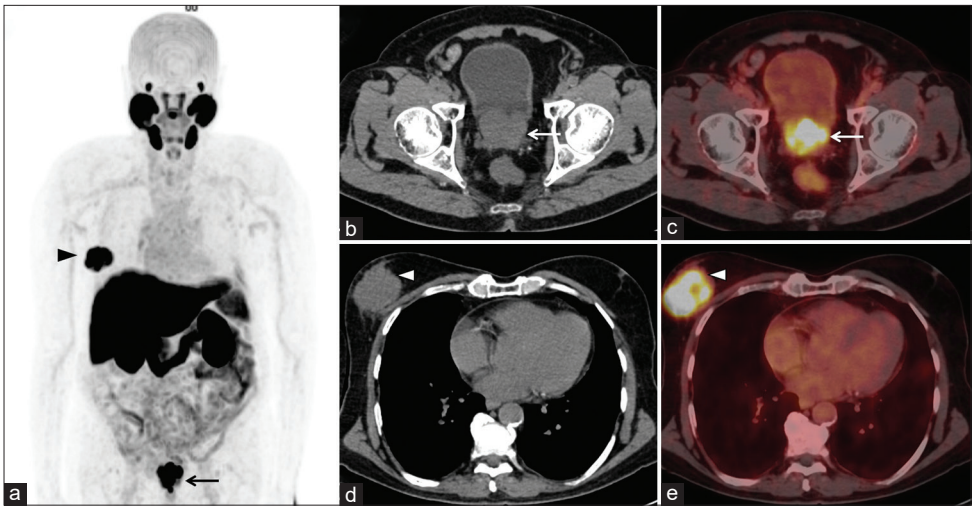

Figure 1: Maximum intensity projected image (a), axial computed tomography (b), and axial fused images (c) show increased tracer uptake in both lobes of prostate (arrows) consistent with disease recurrence. Increased prostate-specific membrane antigen uptake was also noted in the soft tissue mass in right breast parenchyma (arrowhead) in maximum intensity projected (a), axial computed tomography (d), and axial fused images (e)

Address for correspondence:
Dr. Anand Zade, Department of Nuclear Medicine, Apollo Hospitals, Sector 23, CBD Belapur, Navi Mumbai - 400 614, Maharashtra, India.
E-mail: dr_anandzade@yahoo.com

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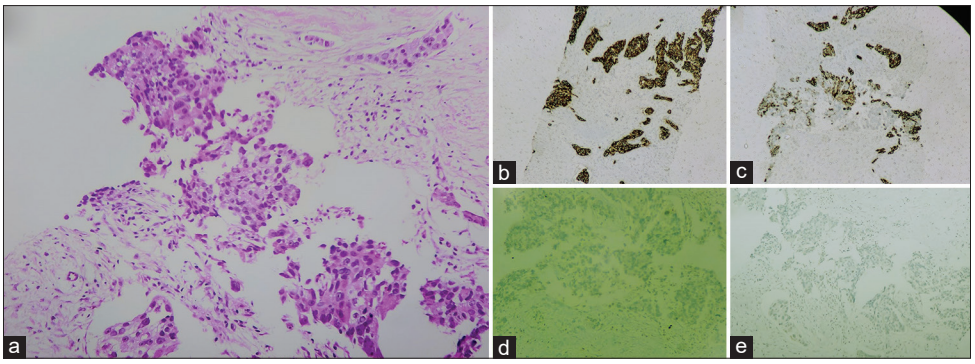

Figure 2: Histology of biopsy from the right breast mass revealed infiltrating ductal carcinoma of intermediate nuclear grade (a). On immunohistochemistry, the tumor cells expressed Pan CK (b) and CK7 (c). The cells were immunonegative for CK20 (d) and PSA (e)

Patients with prostate cancer who are on hormonal therapy often present with gynecomastia which may be unilateral or bilateral. It is important to differentiate unilateral gynecomastia from primary breast malignancy and metastasis of prostate cancer as it has implications in treatment as well as prognosis.[1-3] Since PSMA is expressed in gynecomastia as well as primary breast carcinoma, it is not always possible to differentiate these clinical entities noninvasively on a PSMA PET-CT scan.[4-8] Biopsy with immunohistochemistry (IHC) for hormonal receptor and PSA expression not only helps in diagnosis but also guides further hormonal treatment. PSA staining differentiates primary breast carcinoma from metastatic prostatic carcinoma.[9,10] In the present case, PSA staining was negative suggestive of metachronous breast carcinoma. The knowledge of this imaging pitfall is crucial to avoid misinterpretation and guide appropriate treatment.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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