Case Report

Solitary Metastasis of Prostatic Adenocarcinoma to the Testicle Detected by ^{68}Ga-Prostate-Specific Membrane Antigen Positron Emission Tomography/Computed Tomography

Abstract

We present a case of a 79-year-old man with prostate cancer with biochemical recurrence after radical prostatectomy and hormonal therapy. ^{68}Ga-prostate-specific membrane antigen positron emission tomography/computed tomography (PSMA PET/CT) was performed to look for recurrent disease, and a solitary metastasis to the left testicle was detected. This case report highlights the importance of ^{68}Ga-PSMA PET/CT in detecting unusual metastatic lesions from prostate cancer in patients with biochemical recurrence.

Keywords: *68Ga-prostate-specific membrane antigen, positron emission tomography/computed tomography, prostate cancer, testicular metastasis*

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Introduction

^{68}Ga-prostate-specific membrane antigen positron emission tomography/computed tomography (PSMA PET/CT) has proved superiority compared to other modalities; both regarding sensitivity and specificity for detecting lesions in patients with a biochemically recurrent prostate cancer,[1] this, in turn, has prompted a significant change in management of these patients.[2]

Case Report

We present a case of a 79-year-old man with prostate cancer who initially presented with prostate-specific antigen (PSA) level of 7 ng/ml, suspicious digital rectal examination, and positive transrectal ultrasound biopsy. The patient underwent radical prostatectomy 17 years ago, and histopathologic evaluation showed Gleason's score 7 (4 + 3) adenocarcinoma. PSA level had dropped following surgery to 0.02 ng/mL, and the patient was maintained on hormonal therapy with triptorelin.

The patient presented with rising PSA levels from 0.47 ng/ml to 3.9 ng/ml in a span of 3 months, in keeping with biochemical recurrence.

^{68}Ga-PSMA PET/CT was performed and showed a single abnormal radiotracer-avid focal area localized to the left testicle with maximum standardized uptake value 9.3, and a concern for metastasis was raised [Figure 1]. This was further evaluated with ultrasound and magnetic resonance imaging examinations, confirming the presence of focal lesion [Figure 2].

The patient underwent bilateral orchiectomy, and histopathologic evaluation revealed metastatic prostatic adenocarcinoma to the left testicle.

Discussion

Metastatic disease to testicles from solid tumors is very rare; a retrospective autopsy study of 738 patients with solid malignant neoplasms found metastasis to testicles in 0.68% of patients.[3] Prostate cancer is the most common culprit, which was found in 35.4% of these patients as per Haupt *et al*.[4]

Excluding autopsy cases and incidental tumors in therapeutic orchiectomies, metastatic carcinomas to the testicles are usually solitary and unilateral, which may simulate primary neoplasms.[5]

Prolongation of the course of prostate cancer due to progressive hormonal therapies may have increased the incidence

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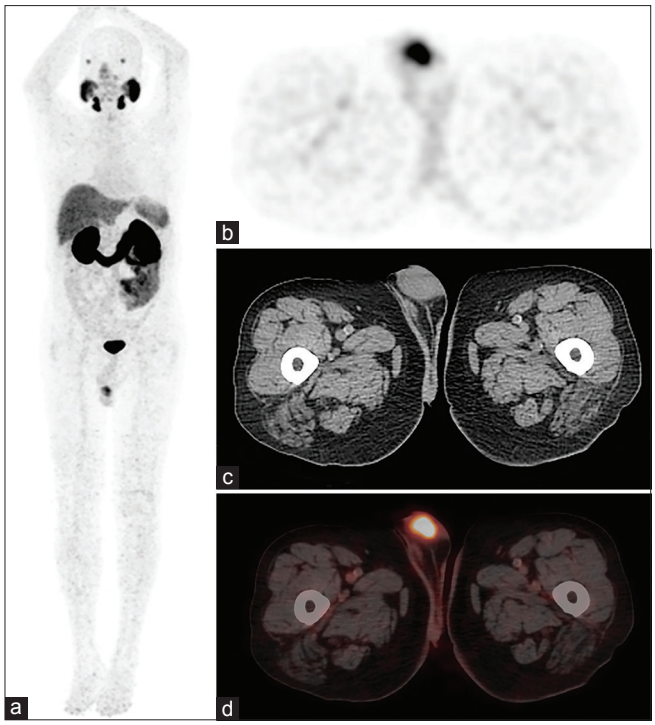

Figure 1: Images demonstrating focal increased radiotracer uptake in the left testicle, no abnormality is seen on the nonenhanced computed tomography scan. (a) Positron emission tomography maximum intensity projection of the whole body, (b) axial positron emission tomography image at the level of the testicles, (c) axial nonenhanced computed tomography scan component of the positron emission tomography/computed tomography at the level of the testicles, (d) fused positron emission tomography/computed tomography image at the level of the testicle

of metastatic disease to the testicles because they have more time to develop.[6]

To the best of our knowledge, there are only two cases of solitary metastatic prostate cancer to the testicle diagnosed by ^{68}Ga-PSMA PET/CT and reported in the literature.[7,8]

This case report highlights the importance of ^{68}Ga-PSMA PET/CT in detecting unusual metastatic lesions from prostate cancer in patients with biochemical recurrence.

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.

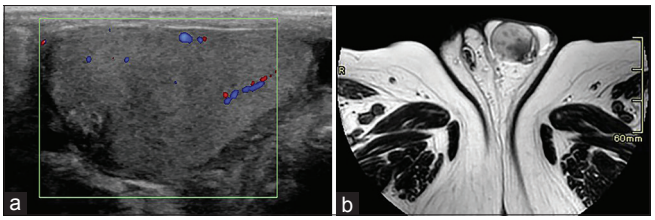

Figure 2: (a) Ultrasound examination with color Doppler showing a focal ill-defined lesion with calcificationsin the upper pole of the left testicle with no intralesional blood flow, (b) axial T2-weighted image at the levelof the left testicle showing a poorly defined hypointense left testicular lesion

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Conflicts of interest

There are no conflicts of interest.

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