

A rare case of isolated lung metastases in prostate cancer

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Abstract

We present a case that illustrates the very rare occasion of isolated pulmonary metastases in a prostate cancer patient, confirmed in the prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT), along with the rapid rise of the prostate specific antigen (PSA), following cessation of Darolutamide.

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Case Report

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Prostate cancer (PCa) is the second most frequently diagnosed cancer in men globally, with the highest rates observed in North and South America, Europe, and Australia [1]. The most common sites for distant metastases are the bones (accounting for 84%), followed by distant lymph nodes (10.6%), the liver (10.2%), and the lungs (9.1%) [2]. Isolated metastasis to the lungs is uncommon, occurring in fewer than 4.6% of metastatic cases [3].

We report a case of a 71-year-old male, who was diagnosed with prostate adenocarcinoma, Gleason Score (4+4=8), in 2018, with PSA=14.09ng/mL. Conventional staging, with computed tomography (CT) and bone scan, at the time of the diagnosis, revealed pelvic lymphadenopathy and a few pulmonary nodules with maximum diameter 8mm. The patient underwent radical radiotherapy in pelvis and brachytherapy of the prostate gland in a medical center abroad, where he also received stereotactic radiation therapy (SBRT) in a few pulmonary nodules, according to the medical notes from the center, without prior biopsy of the pulmonary nodules. He continued therapy back in his country, where he was set under androgen deprivation therapy (ADT) by a medical oncologist. A prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT) was performed in 07/2020 with prostate specific antigen (PSA)= 0.1ng/mL, showing no visceral or lymph node metastases. In 07/2023, while on hormone therapy, biochemical recurrence was noted with PSA=0.77 ng/mL and a PSMA PET/CT was ordered, which revealed new pulmonary nodules, up to 6mm in diameter, with low PSMA uptake (maximum standardized uptake value (SUVmax)=1.9). Subsequently, Darolutamide was added to ADT, with biochemical response (PSA nadir=0.007 in 01/2025). In 03/2025 with PSA=0.012ng/mL, the discontinuation of Darolutamide was decided, in the rational of equivocal pulmonary nodules, which were only a few and measured up to 2mm in a chest CT in 04/2025. Since the discontinuation of Darolutamide in 03/2025, the PSA rose rapidly, with PSA=2.941ng/mL in 06/2025 and PSA=8.4ng/mL in 08/2025. A new PSMA PET/CT was performed in 08/2025 for restaging purposes, which showed the increase in size of the pulmonary nodules compared to the chest CT 04/2025 and the appearance of some new pulmonary nodules, with max diameter 1.1cm and focal PSMA uptake (SUVmax=4.1). No other suspicious lesions were noted elsewhere in the body in the PSMA PET/CT in 08/2025, confirming disease progression with isolated pulmonary metastases.

This case illustrates the very rare occasion of isolated pulmonary metastases, confirmed in the PSMA PET/CT, along with the rapid rise of the PSA, following cessation of Darolutamide.

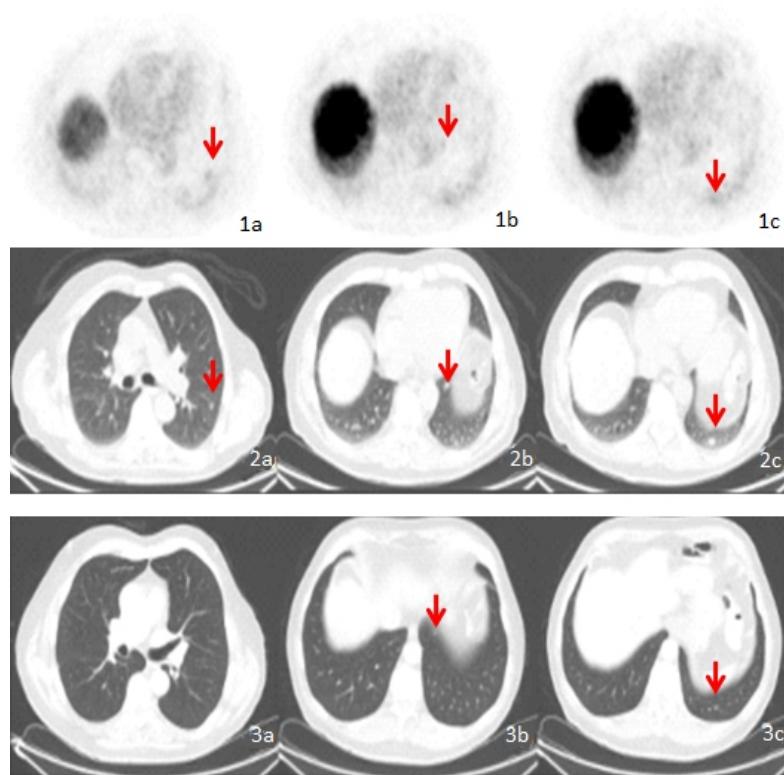


Figure 1a,b,c & 2a,b,c. Axial images from PSMA PET/CT in 08/2025 showing increase in size of the two nodules in LLL ($d_{max}=1.1\text{cm}$) and a new one in LLL (red arrows), with focal PSMA uptake.

3a,b,c: Axial images from chest CT 04/2025 showing 2 nodules in LLL up with $d_{max}=0,2\text{cm}$ (red arrows).

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