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IMAGE OF THE MONTH

Pseudoprogression on PSMA PET imaging of a mCRPC patient under anti-PD1 treatment

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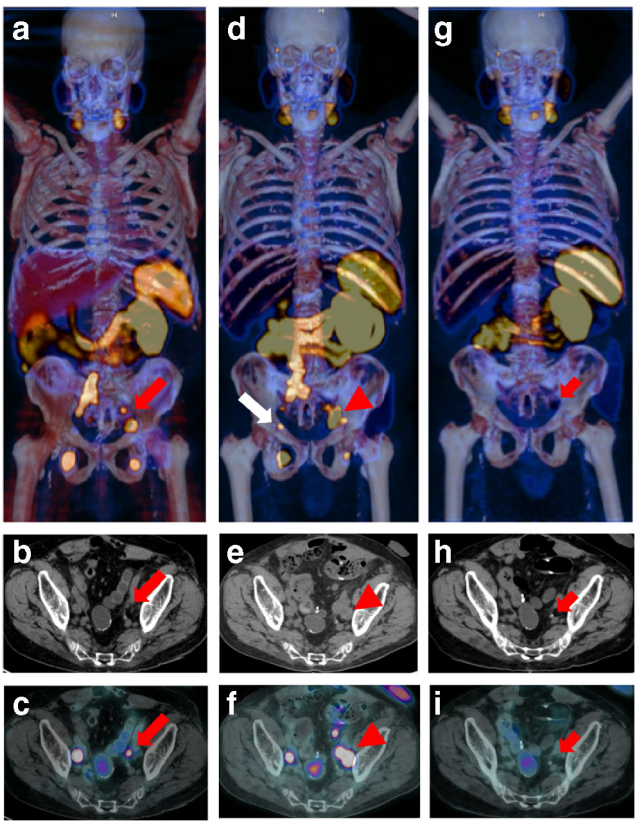
^{68}Ga-radiolabeled ligand with high affinity for prostate-specific membrane antigen PET/CT (PSMA-PET) is an emerging modality for therapy response assessment in prostate cancer (PCa), accurately detecting nodal, bone and visceral metastases better than conventional imaging [1]. Therapy monitoring after treatment remains troublesome, especially when evaluating response to chemotherapy and androgen-deprivation therapy (ADT). Immunotherapy has recently become available for metastatic PCa, notably in cases of multiple point mutations and high level of microsatellite instability (MSI-H) [2, 3]. We display here an 85-year-old Gleason 10 PCa patient initially treated with brachytherapy (13 years previous), followed by salvage prostatectomy (5 years previous) and ADT for the previous 3 years (bicalutamide, abiraterone and goserelin). The first set of PSMA-PET images (PSA: 16.0 ng/mL) diagnosed metastatic pelvic nodal disease (*long arrows* in (**A**) PET 3D volume rendering; (**B**) Axial CT; (**C**) Axial fused PET-CT). The patient underwent a biopsy of an MSI-H tumor—leading to the beginning of anti-PD1 therapy (Pembrolizumab 200 mg, 8 cycles). Two subsequent sets of PSMA-PET images (2 months, PSA: 0.03 ng/mL; and 4 weeks afterwards, PSA: 0.007 ng/mL) confirmed pseudoprogression after the appearance of new lesions (*white arrow* in **D**), along with a transient increase of disease burden, also reflected by increasing TL-PSMA and TV-PSMA notwithstanding substantial reduction of PSA levels (*arrowheads* in (**D**), (**E**), (**F**); *short arrows* in (**G**), (**H**), (**I**)). Two major hypotheses might be raised considering previous reports of ADT for PCa and immunotherapy for other cancers: (a) upregulation of PSMA molecular expression and (b) increased vascular permeability induced by the recruitment of activated T cells as a first response to treatment [4, 5]. Hence, the different patterns of response to checkpoint inhibitors—including pseudoprogression—require careful evaluation to avoid premature cessation of an effective immuno-oncology agent.



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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Informed consent was obtained from all individual participants included in the study.

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