

Patellar Metastasis from Prostate Adenocarcinoma Detected on Whole-Body Ga-68 PSMA PET/CT

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Abstract

Patellar metastasis is an exceptionally rare manifestation of skeletal metastasis, attributed to the patella's limited red marrow content and sparse vascularity. Patellar metastases have been most frequently reported in lung and renal carcinomas, whereas patellar involvement from prostate adenocarcinoma is exceedingly uncommon. Recognition of such unusual sites is important, as delayed diagnosis may result in pain, restricted mobility, and pathologic fracture. This case adds to the limited literature on patellar metastasis from prostate adenocarcinoma and highlights the value of whole-body Ga-68 PSMA PET/CT in detecting rare sites of skeletal metastasis that may influence staging, prognosis, and clinical management.

Keywords: prostate adenocarcinoma, patellar metastasis, Gallium-68 PSMA PET/CT.

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A 73-year-old man with castration-resistant metastatic prostate adenocarcinoma and raised prostate-specific antigen level (343 ng/mL) underwent whole-body Gallium-68 prostate-specific membrane antigen (Ga-68 PSMA) PET/CT for disease

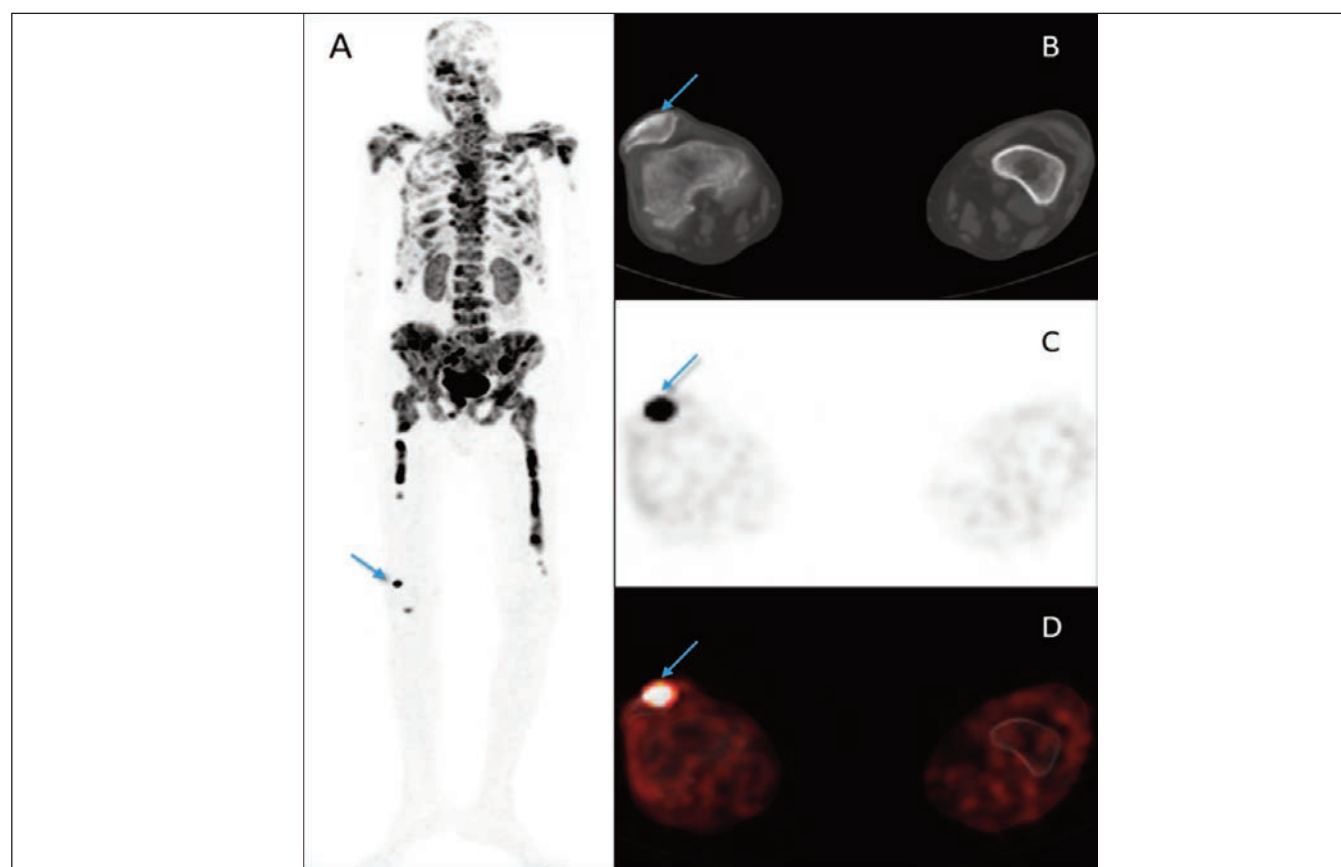


Figure: Whole-body Ga-68 PSMA PET-CT maximum intensity projection (A) demonstrates widespread skeletal metastases with unusual right patellar uptake. Axial PET only and fused PET-CT (C, D) images confirm intense PSMA uptake with SUV max 17.2 corresponding to a subtle sclerotic area in the patella on axial CT image (B).

reassessment which demonstrated extensive PSMA-avid skeletal metastases involving the axial and appendicular skeleton. An additional focus of intense tracer uptake was identified in the right patella. Corresponding CT images revealed a subtle sclerotic focus without cortical destruction or pathological fracture (Figure 1).

The combination of significantly higher PSMA uptake compared to the reference physiologic right parotid gland uptake, concordant CT findings, and known metastatic prostate cancer strongly supports metastatic involvement rather than a false-positive finding.¹ The patella is a sesamoid bone with a limited vascular supply derived from the genicular arteries. This relatively poor blood supply reduces the likelihood of haematogenous tumour cell seeding, making patellar metastasis uncommon.² Lung carcinoma followed by renal cell carcinoma, breast cancer and malignant melanoma, are the commonly reported primary malignancies, whereas metastatic involvement from prostate adenocarcinoma has been described only rarely.^{2,3} Anterior knee pain is the most common presentation of patellar metastasis, but clinically silent lesions may only be identified on whole-body imaging. Early recognition is clinically important because progressive patellar involvement may result in anterior knee pain, impaired ambulation, extensor mechanism dysfunction, and pathological fracture.^{3,4}

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