PSMA PET/CT Dual-Time-Point Imaging: Nice to Have or Need to Have?

Lena M. Unterrainer1,2, Kathleen Ruchalski3, Martin S. Allen-Auerbach1, Jeremie Calais1, and Matthias R. Benz1,3,4

1 Ahmanson Translational Theranostics Division, Department of Molecular and Medical Pharmacology, UCLA, Los Angeles, California; 2 Department of Nuclear Medicine, LMU University Hospital, LMU Munich, Munich, Germany; 3 Department of Radiological Sciences, UCLA, Los Angeles, California; and 4 Department of Nuclear Medicine, University of Duisburg–Essen and German Cancer Consortium–University Hospital Essen, Essen, Germany

Few publications have investigated the diagnostic value of dual-time-point prostate-specific membrane antigen (PSMA) PET/CT imaging with a standard whole-body (WB) acquisition at 60 min after injection and an additional late acquisition at 160–180 min (1–3). Implementing a late PET/CT acquisition such as at 180 min after injection faces clinical challenges, including patient compliance, scheduling, and PET/CT workflows. Therefore, since 2019, the standard protocol for staging, assessment of biochemical recurrence, and treatment response monitoring at our institution has been a dual-time-point acquisition with postvoid WB [68Ga]Ga-PSMA-11 PET/CT 60 min after injection and additional late postvoid pelvic PET/CT 90 min after injection without forced diuresis using furosemide (Fig. 1). In our experience, postvoid pelvic imaging at 90 min after injection is feasible and improves lesion detection and characterization for several reasons: increased tumor [68Ga]Ga-PSMA-11 uptake on late PET/CT acquisitions, with an improved target-to-background ratio; decreased radiotracer uptake on late PET images in nontumoral lesions in the setting of nonspecific uptake on standard WB [68Ga]Ga-PSMA-11 PET/CT; and a CT urographic phase with optimal contrast medium enhancement of the collecting system, ureter, and urinary bladder. Typical clinical scenarios include the detection of local recurrence after radical prostatectomy, differentiation between a postinterventional defect and residual or recurrent tumor after high-intensity focused ultrasound or radiofrequency ablation, confirmation of pelvic lymph node metastases with low PSMA uptake on standard WB [68Ga]Ga-PSMA-11 PET/CT, and specification of nonspecific PSMA uptake on standard WB [68Ga]Ga-PSMA-11 PET/CT as false-positive.

In our experience, dual-time-point standard WB and additional short-interval late postvoid pelvic [68Ga]Ga-PSMA-11 imaging has added value in lesion detection and characterization in several clinical scenarios and should be considered. Further studies on larger patient cohorts are needed.

DISCLOSURE

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REFERENCES

FIGURE 1. (A) Histopathologically proven local recurrence after prostatectomy (arrow) with increased PSMA uptake on late pelvic imaging. (B) Sagittal [68Ga]Ga-PSMA-11 PET/CT after high-intensity focused ultrasound. Histopathologically proven local recurrence (green arrow) is better differentiated from high-intensity focused ultrasound defect (red arrow) on delayed imaging, which contains excreted intravenous contrast medium in urine. (C) Histopathologically proven pelvic lymph node metastasis (arrow) with increased [68Ga]Ga-PSMA-11 uptake on late pelvic imaging. (D) Histopathologically proven benign pelvic lymph node (arrow) with decreased [68Ga]Ga-PSMA-11 uptake on late pelvic imaging. AQT = acquisition time.