

Special Feature:**Diuretic intervention improves accuracy of ¹⁸F-fluorodeoxyglucose PET-CT in bladder malignancies****M. Ranadheer,¹ S. Sarala,² Ravishwar Narayan,¹ A. Tyagi,³ T.C. Kalawat¹***Departments of ¹Nuclear Medicine, ²Radiodiagnosis, ³Urology,
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INTRODUCTION

¹⁸F Fluorodeoxyglucose ¹⁸F-FDG, positron emission tomography computed tomography (PET-CT) is a relatively new imaging modality which is increasingly being used in the diagnosis and management of patients suffering with different types of cancer in body. ¹⁸FDG tracer molecule, clears from body through urinary tract. Physiological presence of tracer activity in urinary bladder (UB) at the time of scanning may be a limitation for appropriate evaluation of patients suffering with UB cancer.¹ To overcome this limitation some investigators suggested the utility of a delayed scan after diuretic intervention to improve the diagnostic sensitivity of the test in this group of patients.^{2,3}

Diuretic intervention technique

After initial PET-CT data acquisition, following the standard protocol of patient preparation and scanning PET, CT and PET-CT fused images are interpreted as in patients with other malignancies in body. In addition to this, if scan reading requires a delayed image, patient may be prepared for diuretic intervention by advising oral fluid (800-1000 mL water) followed by intravenous diuretic

administration (frusemide 1 mg/kg body weight with maximum of 40 mg) and instructions to void urine frequently. After one hour, delayed image data acquisition can be performed with 2-3 bed position covering the lower part of abdomen and pelvis.

Representative case

A 70-year-old male diagnosed with transitional cell carcinoma of UB, was referred for ¹⁸F FDG PET-CT scan. His initial, axial images at the level of UB (Figure 1A, 1B and 1C) shows, physiological presence of tracer urine in UB with a small metabolically active focal lesion in right side of urinary bladder. Additional image, after diuretic intervention (Figures 1D, 1E, 1F) and shows, presence of a metabolically active lesion in posterior wall of UB and better appreciation of focal right side pelvic lesion.

In patients with genitourinary malignancies, undergoing ¹⁸F FDG PET-CT, an additional scan with diuretic intervention is highly useful for appropriate evaluation of intra-vesicular and adjacent pelvic lesions. This simple intervention can improve diagnostic sensitivity and accuracy of the test.

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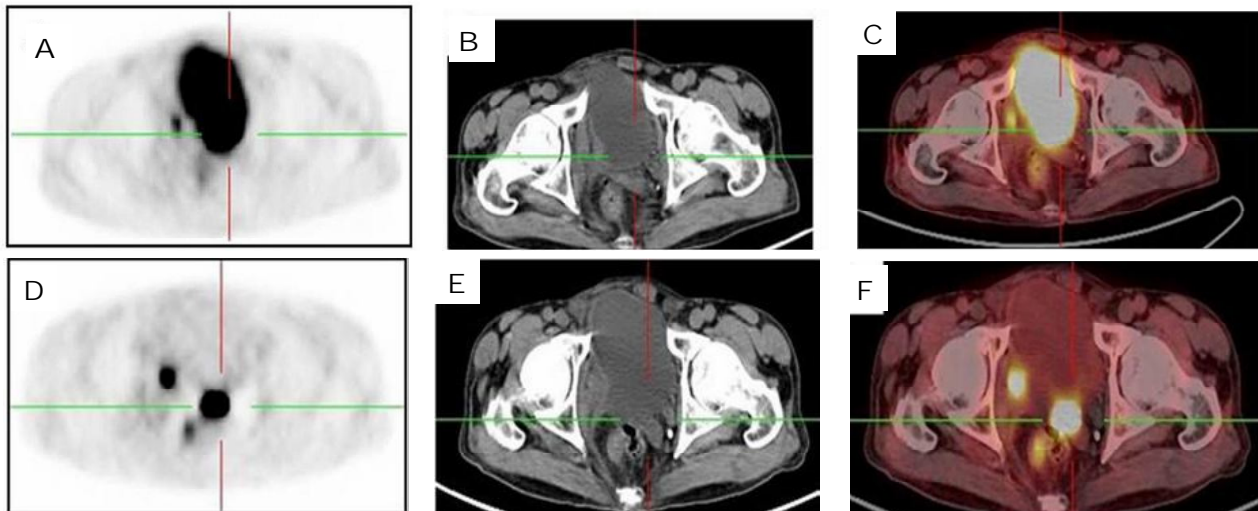


Figure 1: Pre-intervention PET (A), plain CT (B) and PET-CT (C) images. Images do not delineate the tumour. Post-intervention PET (D), plain CT (E) and PET-CT (F) images show clear delineation of tumour.

PET = positron emission tomography; CT = computed tomography; PET-CT - positron emission tomography computed tomography

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