

MP20-15

Background & Objectives

Since the prostate-specific membrane antigen (PSMA) is highly expressed in the cell surface of the solid tumor microvasculature including renal cell carcinoma (RCC), PSMA PET/CT imaging has been a promising method for RCC diagnosis, especially for clear cell RCC (ccRCC) patients. ¹⁸F-FDG PET/CT of whole body imaging is widely used as a valuable method for evaluating metastatic or recurrent lesions in patients with RCC. The aim of this study was to compare the diagnostic value of ccRCC between ⁶⁸Ga-labelled PSMA PET/CT and traditional ¹⁸F-FDG PET/CT.

Methods

Twelve patients with ccRCC were involved in the study in which 8 patients suffered from metastasis. All patients underwent both ⁶⁸Ga-PSMA PET/CT and ¹⁸F-FDG PET/CT. SUV_{max} was calculated for both primary RCCs and PET-positive metastatic lesions. We compared the SUV_{max} of same lesions between ⁶⁸Ga-PSMA PET/CT and ¹⁸F-FDG PET/CT images. Metastatic bone, lymph node and lung lesions as well as the primary tumor were evaluated respectively.

Results

Primary ccRCC lesions were found in 7 patients. The SUV_{max} value of primary lesions in ⁶⁸Ga-PSMA and ¹⁸F-FDG PET/CT were 15.34 ± 3.82 and 8.62 ± 3.11 , respectively ($P=0.012$, Fig.1). ⁶⁸Ga-PSMA was much more sensitive than ¹⁸F-FDG in bone (SUV_{max}: 35.64 ± 5.78 vs. 3.52 ± 1.63) and lymph node (SUV_{max}: 43.26 ± 8.53 vs. 16.79 ± 4.68) lesions. However, PSMA based PET/CT was not sensitive for lung metastatic lesions compared to ¹⁸F-FDG PET/CT (Fig.2).

Figure 1

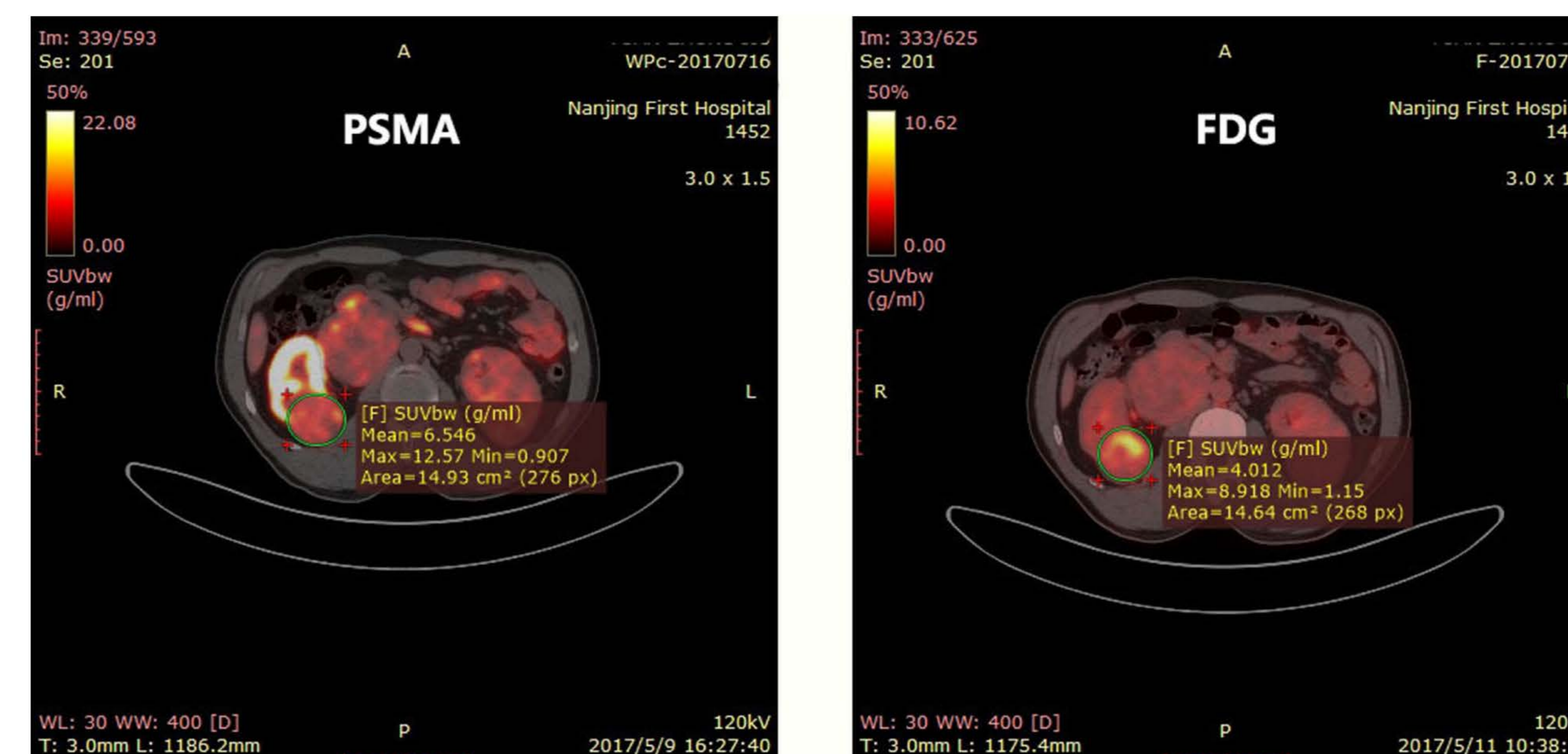


Fig.1 Image of ccRCC primary lesions in ⁶⁸Ga-PSMA and ¹⁸F-FDG PET/CT, respectively.

Figure 2

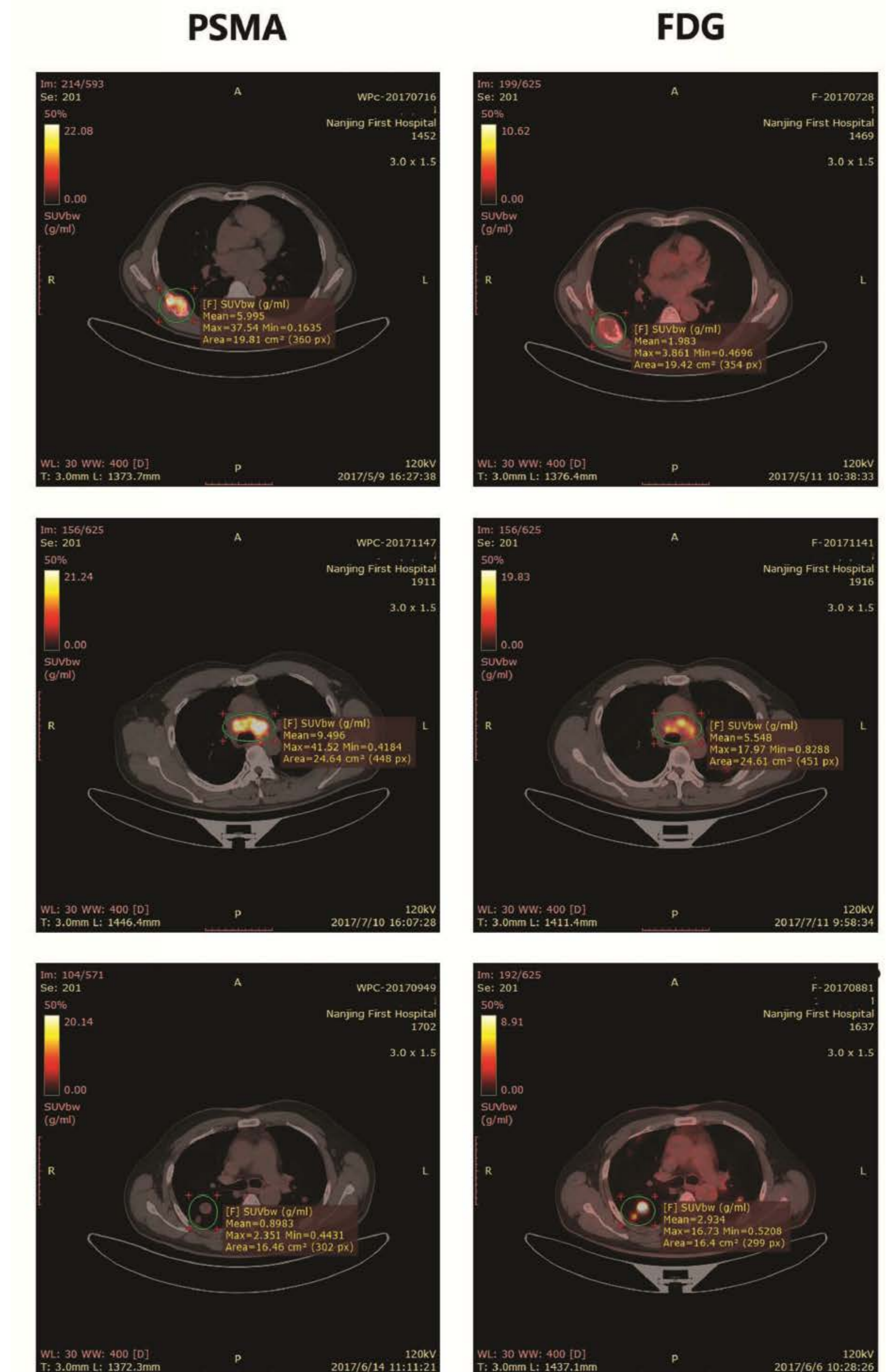


Fig.2 Image of bone, lymph nodes and lung metastatic lesions in ⁶⁸Ga-PSMA and ¹⁸F-FDG PET/CT, respectively.