Diagnostic value of ^{68}Ga-labelled prostate-specific membrane antigen (PSMA) PET/CT imaging for renal cell carcinoma

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MP36-02

Background & Objectives

As the prostate-specific membrane antigen (PSMA) is overexpressed in tumor with neovasculature including renal cell carcinoma (RCC), our study evaluated the diagnostic value of Ga-labelled PSMA PET/CT imaging for RCC.

Methods

38 patients were involved in this study, in which 18 patients underwent ^{68}Ga-PSMA PET/CT before robot-assisted laparoscopic radical or partial nephrectomy while 20 were diagnosed with metastases after ^{68}Ga-PSMA PET/CT scan. SUVmax was calculated for both primary RCCs and PET-positive metastatic lesions.
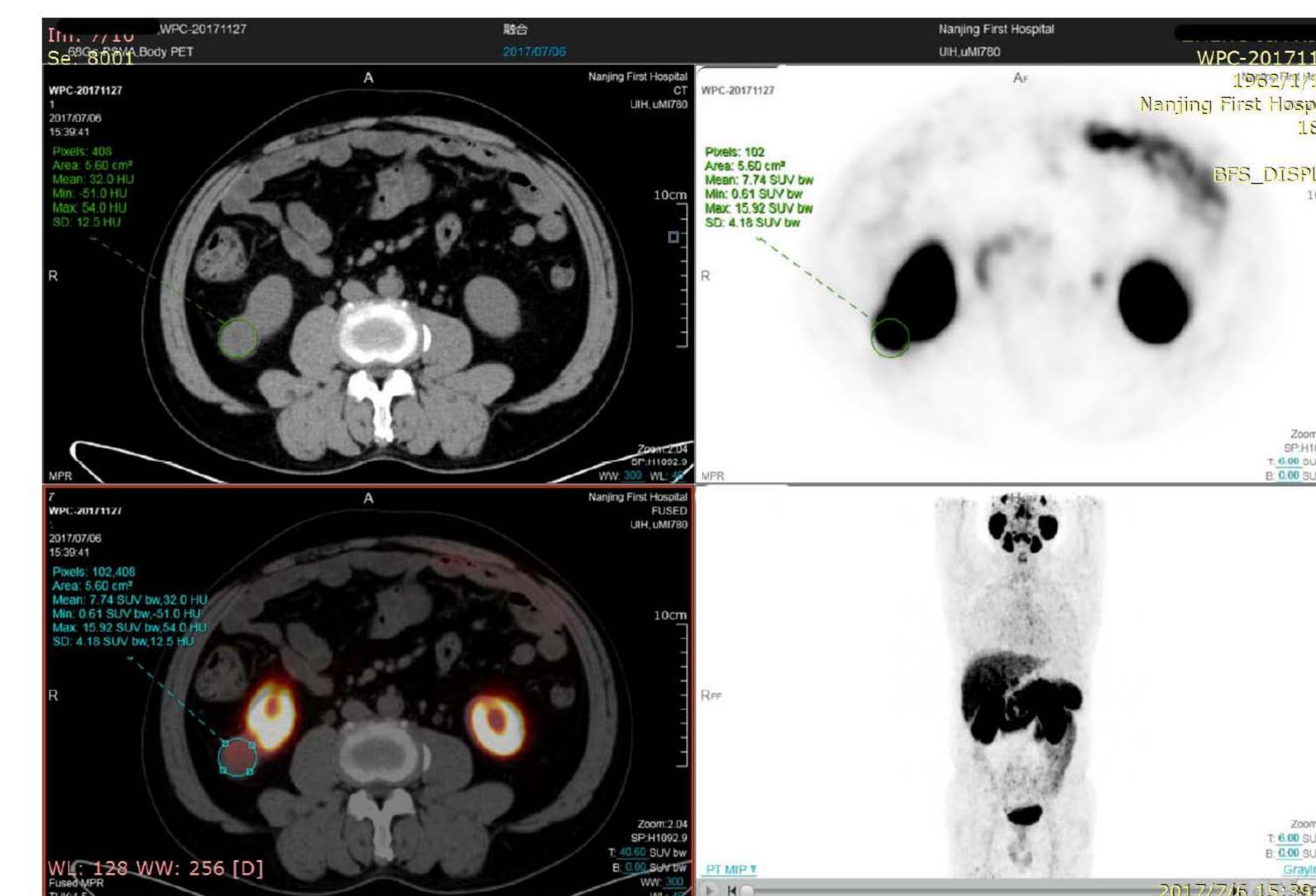
Results

The mean SUVmax of the primary RCCs was 9.46±7.82 (Range 1.2-26.79). Clear cell RCC presented higher PSMA uptake (SUVmax: 16.68±5.90) while other pathological types displayed a low SUVmax value (less than 10). Additionally, for clear cell RCC metastatic patients, ^{68}Ga-PSMA PET/CT image showed intense uptake in bone and lymph node metastatic lesions. Small lung metastases were PET-negative. ^{68}Ga-labelled PSMA PET/CT was not sensitive for metastatic lesions of non-clear cell RCC.

Conclusion

PSMA based PET/CT imaging provided great diagnostic value on RCC. It could not only identify pathological pattern for primary lesions but detect metastases. Therefore, ^{68}Ga-labelled PSMA PET/CT has been proved as a promising method for RCC diagnosis.

Figure 1

Figure 2