ORIGINAL ARTICLE

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Diagnostic accuracy of FDG PET imaging for the detection of recurrent or metastatic gynecologic cancer

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Purpose: This study evaluated the diagnostic role and accuracy of positron emission tomography (PET) using 2-[F-18]fluoro-2-deoxy-D-glucose (FDG) for the detection of tumor foci in patients with suspected recurrent or metastatic lesions of gynecologic cancers. ***Materials and Methods:*** FDG PET imaging was performed on 51 patients with a previous history of gynecologic cancer who were referred for a clinical suspicion of recurrent disease. PET acquisition was started 50–60 min after the intravenous injection of 5–6 MBq/kg FDG in all patients. The PET images were interpreted visually, and tracer uptake was quantitated as the standardized uptake value adjusted to body weight (SUV) in the lesions showing FDG uptake. The accuracy of the PET results was assessed by a consensual verdict based on histology, cytology, other imaging and clinical follow-up. ***Results:*** FDG PET correctly diagnosed 33 of 36 patients with recurrent disease and 12 of 15 patients without recurrence. On patient-based analysis, the sensitivity, specificity and accuracy of FDG PET were 91.7%, 80.0% and 88.2%, respectively, depending on the selected scheme for visual scoring of the lesions. The area index in receiver-operating characteristic analysis was 0.95 for patient detection. Malignant lesions accumulated significantly more FDG than the benign ones (the mean SUVs were 3.7 ± 1.9 and 1.6 ± 1.1, respectively, $p = 0.004$). The sensitivity and specificity in correct identification of tumor recurrence or metastases using a threshold SUV 1.9 were 88.8% and 66.7% in contrast to the visual analysis (sensitivity 96.4%, specificity 50%) on a lesion-based analysis. The partial volume effect of SUV in a few small lesions and the presence of bone lesions in which FDG uptake was relatively low might be the reason for the lower sensitivity in SUV analysis. FDG PET was valuable when CT/MRI was negative or inconclusive, and in patients with elevated tumor marker levels as well as with normal tumor marker levels when recurrence was suspected clinically. However, PET failed to visualize some small metastatic lesions in lung and bone, and showed falsely high FDG uptake in some benign lesions. ***Conclusion:*** The results indicated that FDG PET is a reliable and accurate diagnostic method for detecting recurrent or metastatic gynecologic cancer particularly lymph node metastases. Although the sensitivity of PET for detecting small metastases was relatively limited, the overall sensitivity of FDG PET was significantly higher than morphologic imaging.

Key words: FDG PET, SUV, gynecologic cancer, recurrence, follow-up