High Accordance of Diffusion Weighted MRI and 18-FDG PET/CT in cervical cancer

G. Lin[1,2], Y. Wai[1], K. Ho[2,3], J. Wang[4], K. Ng[1], C. Lai[5], and T. Yen[2,3]

[1]Department of Diagnostic Radiology, Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taoyuan, Taiwan, [2]Molecular Imaging Center, Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taoyuan, Taiwan, [3]Department of Nuclear Medicine, Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taoyuan, Taiwan, [4]Medical Physics and Imaging Sciences, ChangGung University, Taoyuan County, Taiwan, [5]Department of Obstetrics and Gynecology, Division of Gynecologic Oncology, Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taoyuan, Taiwan

BACKGROUND The objective of the current study was to correlate the diffusion-weighted magnetic resonance imaging (DWI) and 18-FDG positron emission tomography/computed tomography (PET/CT) for detecting primary tumor extension and lymph node metastases in patients with cervical cancer.

MATERIALS AND METHODS   Six patients with cervical cancers who underwent both MRI and PET/CT before surgery were included in this study. Co-registration of DWI and T2-weighted MRI was correlated with PET/CT. To enable region-specific comparisons, primary tumor extensions were divided into 9 regions: the uterine cervix, upper vagina, lower vagina, uterine corpus, parametrium, both pelvic sidewalls, urinary bladder, and rectum; lymph nodes were evaluated in 8 regions: both common iliac areas, both external iliac areas, both internal iliac/obturator areas, and both inguinal areas. Apparent diffusion coefficient (ADC) decrement was defined as ADC difference between lesion and gluteal muscle.

RESULTS Figure 1a (PET/CT) and figure 1b (DWI/MRI) demonstrated cervical cancer involving the anterior lip without parametrial extension. Both DWMRI and PET/CT have 100% agreement in detection of the 54 regions of tumor extension and 48 lymph node regions. Good correlation of the ADC decrement and SUV value (R = 0.812) in linear regression.

CONCLUSIONS DWMRI has a high accordance with PET/CT both in lesion detection and measurement of tumor activity in cervical cancer, and can be considered as a useful biomarker in cervical cancer treatment.
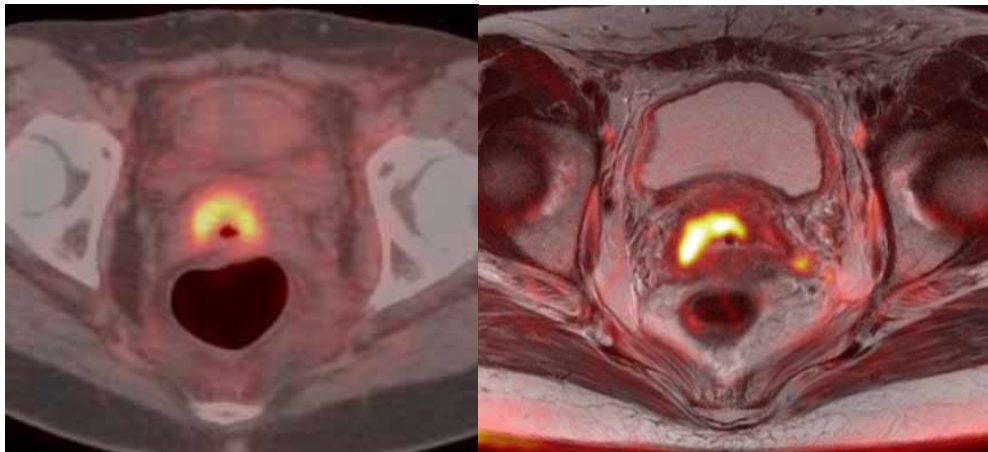
Fig 1a   Fig 1b