Unenhanced whole-body MRI versus PET-CT for the detection of prostate cancer metastases after primary treatment.


Abstract

OBJECTIVE: The aim of this study was to evaluate the accuracy of unenhanced whole-body MRI, including whole-body Diffusion Weighted Imaging (DWI), used as a diagnostic modality to detect pathologic lymph nodes and skeletal metastases in patients with prostate cancer (PCa) undergoing restaging after primary treatment.

PATIENTS AND METHODS: 152 male patients with biochemical recurrence after radical prostatectomy (RP) or external beam radiation therapy (EBRT) underwent MRI at a 1.5 Tesla magnet with whole spinal sagittal T2-weighted, sagittal T1-weighted, sagittal STIR images, axial T1 and T2-weighted and STIR images of the pelvis and whole-body. 18Fcholine-PET/CT exam was used as the reference standard.

RESULTS: MRI protocol including whole-body combined T1-weighted+T2-weighted+STIR+DWI showed a sensitivity (Se) of 99%, a specificity (Spe) of 98%, a positive predictive value (PPV) of 98%, a negative predictive value (NPV) of 96%, an accuracy of 98% and an area under the receiver operating characteristic curve (AUC) of 0.971 for identification of bone metastatic lesion. The same protocol, displayed a Se of 98%, a Spe of 99%, a PPV of 97%, a NPV of 98%, an accuracy of 98% and an AUC of 0.960 in the detection of pathologic lymph nodes.

CONCLUSIONS: Unenhanced whole-body MRI, including whole-body-DWI, is an accurate and cost-effective diagnostic tool which is able to detect lymph node involvement and bone metastases in patients with biochemically recurrent PCa after RP or EBRT. Thanks to its lack of ionizing radiation, excellent soft tissue contrast, high spatial resolution, no need of contrast agent, high Se and Spe, it could play a role in the restaging procedure of such patients.