

Preliminary study of whole body short T1 inversion recovery diffusion weighted imaging in staging of prostate cancers

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Purpose

To evaluate the value of whole body short T1 inversion recovery diffusion weighted imaging (STIR-DWI) in diagnosing and staging of prostate cancers.

Materials and Methods

152 consecutive patients suspected prostate diseases were examined with whole body diffusion weighted imaging. Whole body STIR-DWI axial examinations were performed in 3.0T MRI(GE Medical Systems, Signa Excite™, HD) with body coil. 8 stations were used to complete the examination. The parameter of STIR-DWI sequence as followed: TE 74.6ms, TR 5500ms, TI 200ms, FOV 36mm, slice thickness 8mm, spacing 0, matrix 96×96, b value 800mm²/s,. MIP images were reconstructed from the data set of axial image. All the high signal intensities in the whole body STIR-DWI were examined by conventional T1 and fat saturation T2 weighted images to determine the existence of bone metastasis and lymph nodes.

Results

32 patients were diagnosed as prostate cancers by biopsy, and 2 patients were found whole body metastasis, 6 patients were found to have 26 high signal intensity of bone on whole body DWI, most of which(25 of 26 high signal intensities) were confirmed to be bone metastasis on conventional MRI, and 4 patients were detected 27 enlarged lymph nodes, which also showed high signal intensity on whole body DWI. In addition, one patient with biopsy proved benign prostate hyperplasia was also found 5 bone metastasis, and a soft tissue tumor in right lung field and one lymph node with diameter of 1.7 cm (Fig1)were detected in the other patient with normal prostate but elevated carcinoembryonic antigen(CEA) , which was confirmed as lung cancer on CT.

Conclusions

Whole body DWI can be useful in detecting bone metastasis and swelling lymph nodes in prostate cancers, which may aid in further diagnosing and staging of prostate cancer. Additionally, it also can find other tumor diseases in the whole body, which may be used for tumor screening with decreased medical cost and no radiation compared with PET.

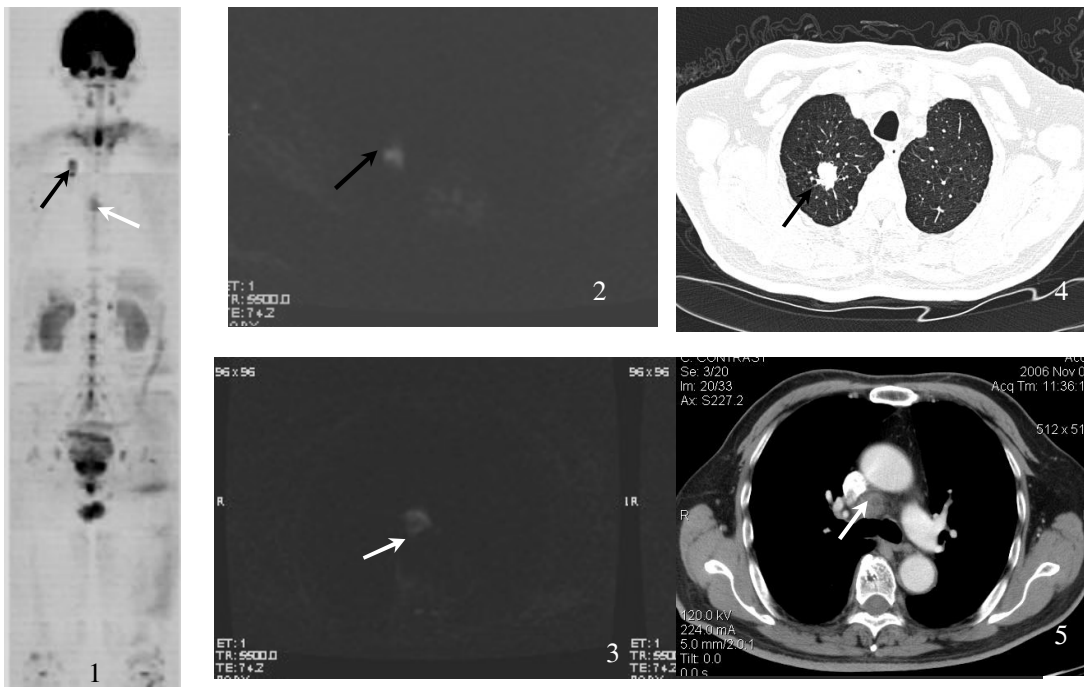


Fig1 high signal intensities in right lung(black arrow) field and anterior of thoracic vertebra(white arrow) on reconstructed MIP image of STIR-DWI in a patient with normal prostate and elevated CEA, Fig2 showed high signal intensity in right lung field , Fig3 demonstrated an enlarged lymph node in mediastinum in axial STIR-DWI image, Fig4 and 5 showed right lung tumor and swelling lymph node respectively