

Comparative Evaluation between 1.5T vs 3.0T MRI in Brain Metastasis According to its Size

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목적 : The purpose of this study was to compare the detection rate of brain metastasis according to size of nodule between 1.5T and 3.0T MRI

대상 및 방법 : We reviewed 44 patients with primary tumors and clinical symptoms suggesting brain metastasis. After administration of double dose gadolinium-DTPA, MR imaging was performed with 3D SPGR sequence by 3.0T MRI and then with T1 SE sequence by 1.5T MRI. Consequently, comparison was done in 1.5T T1 SE sequence and 3.0T 3D SPGR sequence. With use of the signal intensity (SI) measurements in the metastatic nodules and adjacent tissue, metastatic nodule-to-adjacent tissue SI ratio were calculated. In each patient, the number of metastatic lesions detected in 1.5T and 3.0T, and their size were assessed qualitatively by three blinded readers.

결과 : Ten of 44 patients had apparent metastatic nodules on brain at either 1.5T or 3.0T MR imaging. Primary tumor of ten patients was consistently lung cancer. However, the total number of nodules was different. 30 nodules in ten patients were seen at 3.0T, whereas 23 nodules were seen at 1.5T. The number of metastatic nodules, which were detected only in 3.0T, was five and the size of nodules was from 4 to 5.4 mm in greatest dimension (mean size= 4.7mm). Nodule-to-adjacent tissue SI ratio of detected metastatic lesions was 0.16~3.57 at 1.5T MR (mean value=1.90), and 1.41~8.1 at 3.0T MR (mean value=3.47). The difference between 3.0T and 1.5T was statistically significance ($p=0.04$).

결론 : In our study, 3.0T MR was superior to 1.5T MR in detection of small metastatic nodules, and we concluded this result was due to higher SI ratio of 3.0T MRI than that of 1.5T MRI.