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学位論文の題名	Increases in the number of brain metastases detected at frame-fixed, thin-slice MRI for gamma knife surgery planning. (ガンマナイフ治療計画用 MRI 精密画像における脳転移個数の変化)  Neuro-Oncology 12:1187-1192, 2010
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**Background:** For gamma knife planning, 2.4-mm-slice MRIs are taken under rigid frame fixation, so tiny tumors become visible. This study evaluated differences in the numbers of brain metastases between conventional contrast-enhanced MRI ( $6 \pm 1$  mm slice thickness) taken before patient referral and contrast-enhanced MRI for gamma knife planning.

**Methods:** The numbers of metastases on the 2 images were counted by at least 2 oncologists. For gamma knife planning, spoiled gradient-recalled echo images were obtained after 0.1 mmol/kg gadolinium administration using a 1.5-T system. Images from 1045 patients with an interval between the 2 MRI studies of 6 weeks or less were analyzed.

**Results:** Increases in the number of metastases were found in 33.7% of the 1045 patients, whereas the number was identical in 62.3%. In 4.0%, the number decreased, indicating overdiagnosis at conventional MRI. These proportions did not differ significantly by the interval before gamma knife. An increase from single to multiple metastases was found in 16.0%. Meningeal dissemination was newly diagnosed in 2.3%. On planning images, the proportions of patients with 1, 2, 3, and 4 or more lesions were 37.6%, 19.3%, 9.3%, and 33.8%, respectively. In cases of colorectal cancer and hepatoma, the proportions of patients with a single metastasis (32 of 61 [52%] and 5 of 6 [83%], respectively) were higher than that of patients with other malignancies.

**Conclusions:** In about one-third of the patients, an increased number of metastases were found on the thin-slice images. This should be kept in mind when deciding the treatment strategy for brain metastases.