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Original Article

Detection of brain metastases from small cell lung cancer†

Consequences of changing imaging techniques (CT versus MRI)

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KEYWORDS

lung cancer • small cell lung cancer • brain metastases • diagnostics • magnetic resonance imaging • computed tomography

ABSTRACT

BACKGROUND

The aims of this study were to show 1) the effect of changing from computed tomography (CT) to magnetic resonance imaging (MRI) on the prevalence of detected brain metastases (BM) in patients with newly diagnosed small cell lung cancer (SCLC); 2) the difference in survival between patients with single and multiple BM; and 3) the effect of the change in patient labeling on eligibility for prophylactic brain irradiation.

METHODS

From 1980 to 2004, 481 consecutive patients with SCLC were enrolled. Brain imaging was routinely performed after diagnosis of SCLC. At the start of 1991, MRI replaced CT in almost all patients. All patients were regularly examined by a neurologist.

RESULTS

The prevalence of detected BM was 10% in the CT era and 24% in the MRI era. In the CT era, all detected BM were symptomatic, whereas in the MRI era, 11% were asymptomatic. In both periods, patients labeled as single BM survived longer than those labeled as multiple BM. For patients labeled as single BM or multiple BM, survival was longer in the MRI era than in the CT era. The proportion of patients who were eligible for prophylactic cranial irradiation was lower in the MRI era.

CONCLUSIONS

The estimated prevalence of BM increases when MRI is used instead of CT. Patients with a

detected single BM survive longer than patients with multiple BM. The apparently increased survival in the MRI era can be attributed to the "Will Rogers phenomenon". The use of MRI makes fewer patients eligible for prophylactic cranial irradiation. Cancer 2008. ©2008 American Cancer Society.

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