Impact of tyrosine kinase inhibitors on the incidence of brain metastasis in metastatic renal cell carcinoma.

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Abstract

BACKGROUND: This study was designed to evaluate the impact of tyrosine kinase inhibitors (TKIs) on incidence of brain metastasis (brain metastasis) and overall survival (OS) in patients with metastatic renal cell cancer (mRCC).

METHODS: All patients who presented with mRCC but no brain metastasis in the intervals 2002 to 2003 and 2006 to 2007 were identified using the institutional tumor registry. The following data were collected: age, sex, Fuhrman grade, disease sites, nephrectomy, systemic therapy including TKIs (sorafenib or sunitinib), Memorial Sloan-Kettering Cancer Center risk category, brain metastasis treatment, and vital status. Statistical analysis was performed using the Cox proportional hazards model and the Kaplan-Meier method.

RESULTS: Of the 338 patients who were identified; 154 (46%) were treated with a TKI before brain metastasis, and 184 (54%) were not. There were no significant differences in age, histology, nephrectomy, involved sites of disease other than lung, or Memorial Sloan-Kettering Cancer Center risk category between the groups. Median OS was longer in the TKI-treated group (25 months vs 12.1 months, P < .0001). In multivariate analysis, TKI treatment (hazard ratio [HR], 0.53; 95% confidence interval [CI], 0.38-0.74; P < .001) was associated with improved OS. Forty-four (13%) patients developed a brain metastasis, including 29 (15.8%) of the non-TKI group and 15 (9.7%) of the TKI group. The 5-year actuarial rate of brain metastasis was 40% versus 17%, respectively (P < .001). TKI treatment was associated with lower incidence of brain metastasis in Cox multivariate analysis (HR, 0.39; 95% CI, 0.21-0.73; P = .003). Lung metastasis increased the risk of brain metastasis in Cox multivariate analysis (HR, 9.61; 95% CI, 2.97-31.1; P < .001).

CONCLUSIONS: Treatment with TKI agents reduces the incidence of brain metastasis in mRCC. Lung metastasis is a risk factor for brain metastasis development. Cancer 2011; © 2011 American Cancer Society.