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Basic and Translational Investigations

Plasma IGFBP-2 levels predict clinical outcomes of patients with high-grade gliomas

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▶ Abstract

Insulin-like growth factor binding protein-2 (IGFBP-2) is a malignancy-associated protein measurable in tumor and blood. Increased IGFBP-2 is associated with shortened survival of advanced glioma patients. Thus, we examined plasma IGFBP-2 levels in glioma patients and healthy controls to evaluate its value as a plasma biomarker for glioma. Plasma IGFBP-2 levels in 196 patients with newly diagnosed glioma and 55 healthy controls were analyzed using an IGFBP-2 ELISA kit. Blood was collected before surgery, after 2 cycle-adjuvant chemotherapy and at recurrence. Plasma IGFBP-2 levels were correlated with disease-free

survival using Cox regression analyses. We found that preoperative plasma IGFBP-2 levels were significantly higher in high-grade glioma patients (n = 43, 72 for grade III glioma and glioblastoma multiforme [GBM], respectively) than healthy controls (n = 55) ($p < 0.001$) and low-grade (grade II) glioma patients (n = 81) ($p < 0.001$). No significant differences in preoperative plasma IGFBP-2 levels were observed between grade III glioma and GBM patients or between grade II glioma patients and healthy controls. After recurrence, plasma IGFBP-2 levels were significantly increased in GBM patients (n = 26) ($p < 0.001$). Preoperative plasma IGFBP-2 levels were significantly correlated with disease-free survival in GBM patients (hazard ratio, 1.404; 95%CI, 1.078–1.828; $p = 0.012$). We conclude that preoperative plasma IGFBP-2 levels are significantly higher in high-grade glioma patients than in low-grade glioma patients and healthy subjects, and are significantly correlated with recurrence and disease-free survival in patients with GBM. Longitudinal studies with a larger study population are needed to confirm these findings.

Key Words: glioma, IGFBP-2, plasma surrogate biomarker, prognosis, recurrence

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