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Serum YKL-40 is a marker of prognosis and disease status in high-grade gliomas.

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Abstract

The objective of this study was to evaluate whether longitudinal levels of serum YKL-40 correlate with disease status or survival in adults with gliomas. Patients with histologically confirmed gliomas were eligible for this longitudinal study. Serum samples were collected prospectively and concurrently with MRI scans at multiple time points during the course of the disease. YKL-40 levels determined by ELISA were correlated with radiographic disease status and survival. We performed a multivariate survival analysis including well-known prognostic factors such as age, performance status, and extent of surgical resection. Three hundred and forty-three patients with gliomas (41 low-grade, 105 anaplastic, and 197 glioblastoma) were accrued. Two-year survival from registration was 29% for glioblastomas, 62% for anaplastic gliomas, and 83% for low-grade gliomas. A total of 1740 serum samples were collected, and 95.6% of samples had matching MRI scans. Serum YKL-40 level was significantly lower in patients with no radiographic disease compared with patients with radiographic disease in both the anaplastic glioma ($P = .0008$) and the glioblastoma ($P = .0006$) cohorts. Serum levels of YKL-40 in patients with low-grade gliomas were not associated with radiographic disease status. Increases in YKL-40 were independently associated with worse survival in anaplastic gliomas (hazard ratio [HR] = 1.4, $P = .01$) and glioblastomas (HR = 1.4, $P < .0001$). Longitudinal increases in serum YKL-40 are associated with increased risk of death in patients with glioblastomas and anaplastic gliomas. YKL-40 is also a putative indicator of disease status in these patients.

PMID: 21831900 [PubMed - as supplied by publisher]

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