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Prognostic Value of Free DNA Quantification in Serum and Cerebrospinal Fluid in Glioma Patients.

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Abstract

Unlike uniformly truncated DNA released from apoptotic nondiseased cells, free DNA released from dead tumor cells varies in size. Free DNA has been considered as a candidate biomarker for malignant tumors. We obtained serum samples from 70 patients with glioma and 22 healthy volunteers as control and cerebrospinal fluid (CSF) samples from 20 patients with glioma and eight nonneoplastic controls with hydrocephalus or arachnoid cyst and performed preoperative analysis of free DNA concentration and integrity by a quantitative polymerase chain reaction. With two primers sets amplifying short and long free DNA fragments (ALU115 and ALU247), free DNA integrity was determined by ratio of the concentration of ALU247 over ALU115 (ALU247/115). Our results indicate that free DNA integrity and the ratio of long fragments to short fragments may be a useful diagnostic assay for glioma. In summary, the CSF-free DNA concentration and integrity may serve as a new marker for the diagnosis of glioma.

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