A histopathological diagnostic marker for human spinal astrocytoma: expression of glial fibrillary acidic protein-δ.

Heo DH, Kim SH, Yang KM, Cho YJ, Kim KN, Yoon do H, Kang TC.

Department of Neurosurgery, College of Medicine, Chuncheon Sacred Heart Hospital, Hallym University, Chuncheon, Korea.

Abstract

Although histopathological diagnosis of spinal cord astrocytomas is important for postoperative treatment planning and prognosis, there is a lack of reliable immunohistochemical markers. The purpose of our study was to assess the expression pattern of GFAP-δ in spinal cord astrocytomas in human patients and to evaluate the utility of GFAP-δ as an immunohistochemical diagnostic marker. A total of 22 patients with spinal cord astrocytic tumors were included in this study. Patients were classified according to the WHO designation of human astrocytic tumors; three patients had grade 1 astrocytomas, 14 had grade 2, and five had Grade 3. Normal control spinal cord tissues were obtained at autopsy from the cervical spinal cords of ten patients with no history of cervical trauma or neurological disease. We evaluated BRAF, IDH1, GFAP, and GFAP-δ immunoreactivity in control tissues and astrocytomas. In normal control tissues, GFAP immunoreactivity was detected in astrocytes whereas GFAP-δ immunoreactivity was observed in very few astrocytes adjacent to the subpial layer of the spinal cord. GFAP-δ immunoreactivity was significantly correlated with spinal cord astrocytoma grade in astrocytomas compared to that in normal control tissues. The optical density of GFAP-δ increased significantly with astrocytoma grade (correlation coefficient, R (2) = 0.680). Also, BRAF and IDH1 immunoreactivity were detected in astrocytoma. We suggest that GFAP-δ may be an additional, reliable histopathological diagnostic marker for spinal cord astrocytomas.