Factors predicting progression of low-grade diffusely infiltrating astrocytoma

Manish Ranjan¹, Vani Santosh², Ashwini Tandon², B Anandh¹, S Sampath¹, B Indira Devi¹, BA Chandramouli¹
¹Department of Neurosurgery, NIMHANS, Bangalore, India
²Department of Neuropathology, NIMHANS, Bangalore, India

Correspondence Address:
Vani Santosh
Department of Neuropathology, NIMHANS, Bangalore - 560 029
India

Background: Low-grade diffuse astrocytoma (DA) is considered benign tumor (World Health Organization [WHO] grade II), but it has an inherent tendency for malignant progression, which is quite variable. Aim: To identify malignant progression in an individual case of DA, we studied the clinico-radiological and immunohistochemical factors and correlated with progression of DA at a dedicated tertiary level neurosciences centre NIMHANS, Bangalore, India. Patients and Methods: Consecutive adult patients who had undergone tumor decompression for lobar supratentorial DA at our institute from 1994 to 1998 were retrospectively selected and followed up for clinico-radiological progression. The clinico-radiological and histomorphological features were studied. With the use of immunohistochemistry, proliferation index [MIB-1 labeling index (LI)], p53 protein expression, microvessel density (MVD) count [assessed using anti-CD34 antibody] were analyzed and correlated with progression-free survival (PFS) Results: There were 13 patients. Mean age was 34 years. The most common presenting symptom was seizures. The median follow-up was 54 months. There were four recurrences, with median interval of 75 months. Eight patients received radiotherapy. Younger patients (<40 years), seizure as the presenting symptom and postoperative radiotherapy were associated with longer PFS, while gemistocytic morphology (>20% gemistocytic cells), MVD value >20 correlated with shorter PFS, albeit statistically insignificant. MIB1 LI did not correlate with recurrence pattern. Moreover, p53 LI > 10% correlated with early progression (P = 0.04). Conclusion: Our study highlights some of the clinical, histological and immunohistochemical parameters that predict progression on DA. Validation on a larger sample may be useful to plan appropriate treatment in an individual case.

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