



Predictors of Long Term Survival in Progressive Anaplastic Astrocytoma
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Introduction

Anaplastic astrocytoma (AA) can be either denovo or arise from the progression of low grade glioma (1), the Progressive Anaplastic Astrocytoma (PAA). These tumors invariably recur and prognosis is quite variable (1,2). Our study is intended to assess the utility of clinical and routine immunohistochemical factors, in predicting long term survival in a subset of patients of PAA.

Methods

Consecutive 25 adult patients operated at NIMHANS, Bangalore, India from 1994 to 1998, for lobar anaplastic astrocytomas, also having histological low grade areas within the tumor, were retrospectively selected and followed up for clinico-radiological progression. The clinico-radiological variables and focal differential expression of IHC markers like MIB-1, p53 protein expression, and Microvessel Density (MVD) [assessed using antiCD34 antibody] were analyzed and correlated with the progression free survival (PFS).

Results

There was 60% recurrence with the median time of 49 months in follow-up period extending up to 136 months. Seizures as presenting symptom was associated with longer PFS [p=0.003, fig:1], while younger age (< 40 years), non enhancement of tumor, gross total resection (GTR) and post op radiotherapy had survival advantage albeit statistical insignificance. Progression was noted focally in all tumors and reflected by increased MIB-1 LI, p53 LI and MVD values [fig:2]. MIB1 LI <7%, a focal difference of MIB1 LI between high and low grade areas < 3 and MVD value <20 in preexisting low grade precursor areas, predicted longer PFS [p= 0.001, p= 0.03 and p=0.03 respectively, fig: 3,4,5]. In multivariate analysis MIB-1 LI and MVD emerged as independent prognostic markers for longer PFS (p=0.009 and 0.039 respectively), with a cutoff values of 7% and 20 respectively.

Conclusions

Seizure as presenting symptom, MIB-1LI < 7% and MVD < 20 predicts long term survival in a subset of AA patients.

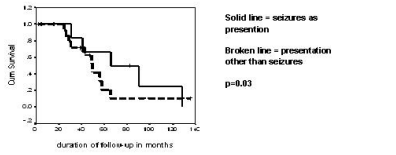
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Learning Objectives

Strategic stratifying the progressive anaplastic astrocytoma patients in to different biological behavior group using routine tests. It addresses the issues not only to identify different prognostic group but also the need of simple tools in characterization of these tumor in developing country, where facilities are sparse.

Figure 1: Kaplan-Meier survival curve depicting effect of seizure on PFS



Better survival in patients with seizure presentation; p=0.03

Figure 2: Panel showing the various immunohistochemical markers

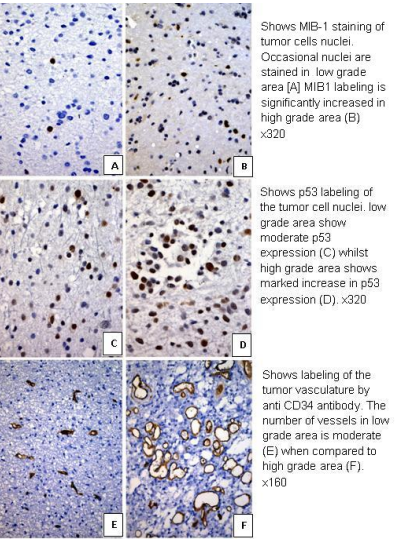
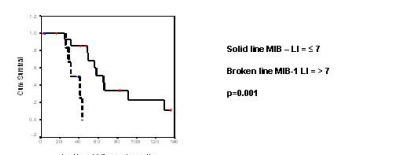
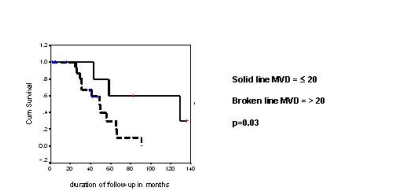


Figure 3: Kaplan-Meier survival curve depicting effect of MIB-1 LI on PFS



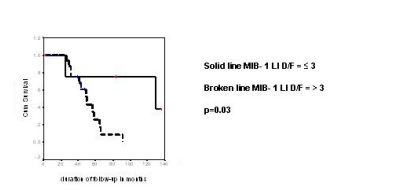
MIB 1LI < 7 associated with better survival: p=0.001

Figure 5: Kaplan-Meier survival curve depicting effect of MVD on PFS



Better survival associated with low MVD in low grade area; p=0.030

Figure 4: Kaplan-Meier survival curve depicting effect of difference of MIB-1 LI in low and high grade area on PFS



Better survival in homogenous tumors (MIB 1 LI difference <3); p=0.03