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Original article

## High grade glioma: Imaging combined with pathological grade defines management and predicts prognosis

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Received 17 May 2007; revised 24 September 2007; accepted 3 October 2007.

Available online 26 November 2007.

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### Abstract

#### Introduction

There is ambiguity in pathological grading of high grade gliomas within the WHO 2000 classification, especially those with predominant oligodendroglial differentiation.

#### Patients and methods

All adult high grade gliomas treated radically, 1996–2005, were assessed. Cases in which pathology was grade III but radiology suggested glioblastoma (GBM) were classified as 'grade III/IV'; their pathology was reviewed.

#### Results

Data from 245 patients (52 grade III, 18 grade III/IV, 175 GBM) were analysed using a Cox Proportional Hazards model. On pathology review, features suggestive of more aggressive behaviour were found in all 18 grade III/IV tumours. Oligodendroglial components with both

necrosis and microvascular proliferation were present in 7. MIB-1 counts for the last 8 were all above 14%, mean 27%.

Median survivals were: grade III 34 months, grade III/IV 10 months, GBM 11 months. Survival was not significantly different between grade III/IV and GBM. Patients with grade III/IV tumours had significantly worse outcome than grade III, with a hazard of death 3.7 times higher.

## Conclusions

The results highlight the current inconsistency in pathological grading of high grade tumours, especially those with oligodendroglial elements. Patients with histological grade III tumours but radiological appearances suggestive of GBM should be managed as glioblastoma.

**Keywords:** Glioma; High grade; Imaging; Pathology; Prognosis



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