

Introduction

Glioblastoma multiforme (GBM) is statistically the most frequent and most aggressive primary malignant brain tumor. However, despite its prevalence and ferocity, the cellular proliferation of this tumor has yet to be determined. Therefore, the purpose of this study is to evaluate the proliferative rate of GBM in various populations.

Methods

A retrospective analysis of all patients diagnosed with glioblastoma multiforme from 2006 – 2011 at LSU Health Science Center in Shreveport, LA was conducted. Inclusion criteria consisted of availability of MRI studies, availability of at least two consecutive studies completed within 2 – 30 days of each other, and imaging completed prior to obtaining tissue samples for pathological analysis. Patients were excluded on the basis of multiple lesions on imaging, and previous resection and/or biopsy prior to completion of both imaging studies.

Results

The search for patients diagnosed with GBM yielded 74 patients. Eleven patients were excluded due to lack of consecutive imaging before surgical intervention and eight patients were excluded due to multiple lesions on imaging. Of the 55 patients included in the study, 62% were male, 51% of the population were older than 60, 64% of the population were Caucasian. The average growth rate within the study population was 4.39cm³/wk. In those patients aged 60 and younger, the average growth rate was 4.0cm³/wk compared to those patients older than 60 with an average growth rate of 4.71cm³/wk. Females were found to have a significantly higher growth rate of 5.4cm³/wk compared to their male counterparts with 3.6cm³/wk. There was no racial difference in growth rates. Patients of lower socio-economic backgrounds were found to have an average growth rate of 4.6cm³ compared to their counterparts with 4.1cm³/wk.

Conclusions

The results of this study help to elucidate the growth behavior of GBM in various populations. Knowing how GBM operates in various situations can assist surgeons in tailoring surgical and treatment plans.

Learning Objectives

By the conclusion of this session, participants should be able to

1. Identify populations with higher GBM growth rates
2. Determine populations that require more aggressive treatment plans