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THE PROGNOSTIC INDICATORS OF HIGH GRADE GLIOMA-GBM : ANALYSIS OF 50 PATIENTS

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ABSTRACT

Background- The GBM is malignant glioma.GBM is diffusely infiltrative, involving large portions of the brain. MRI characteristically shows vasogenic edema and ring enhancement around central necrotic regions. The prognosis for patients with GBM is poor with median survival time of approximately 14 months in highly selected patients receiving contemporary treatment. Pretreatment patient and tumor characteristics such as age at diagnosis, tumor histology, and Karnofsky performance status (KPS) are the best predictors of outcome. Extent of resection, duration of neurologic symptoms, and radiographic response to treatment have also been suggested as predictors of survival. **Material & Method-** This study was done in 50 patients with GBM who were diagnosed from 2019 to 2022.They all underwent surgery followed by radiotherapy 60gy in 30# with tab temozolamide 75 mg/m2 and after completion of radiation tab temozolamide 150mg /m2 added in adjuvant setting further. **Results-** After analysis of 50 patients 9 patients were female and remaining were male. During the study period 6 out of 50 patients died during course of radiation. 7patients died with in 2 months after completion of radiation. Remaining patients had progression free survival minimum 3 month and maximum 24 months. **Conclusion-** The patients with gross total resection, good KPS score and younger age group had better survival and quality of life.

KEYWORDS

INTRODUCTION-

Malignant or high-grade gliomas account for approximately half of all primary brain tumors in adults. They are rapidly growing tumors that directly invade the brain parenchyma but almost never metastasize outside the CNS. They present in any age group, although most occur in late adulthood. Malignant gliomas correspond to anaplastic gliomas (WHO grade III) and GBM (WHO grade IV). Molecular genetics results from clinical series have shown these to be two distinct diseases with unique behavior, response to treatment, and prognosis. GBM accounts for approximately 75% of all high-grade gliomas. The histopathologic features of GBM include nuclear atypia, mitotic activity, vascular proliferation, and necrosis; any three of these suffice to make the diagnosis. GBM is diffusely infiltrative, involving large portions of the brain. MRI characteristically shows vasogenic edema and ring enhancement around central necrotic regions. The prognosis for patients with GBM is poor with median survival time of approximately 14 months in highly selected patients receiving contemporary treatment. Pretreatment patient and tumor characteristics such as age at diagnosis, tumor histology, and Karnofsky performance status (KPS) are the best predictors of outcome. Extent of resection, duration of neurologic symptoms, and radiographic response to treatment have also been suggested as predictors of survival. Glioblastoma may arise de novo (primary) or from a low-grade glioma that has transformed into a higher-grade tumor (secondary). Secondary GBM arise in younger patients and are associated with a more favorable prognosis than those with primary GBM. The more favorable prognosis may be related to the impact of younger age and better performance status of this group.

Standard treatment consists of maximal safe surgical resection followed by radiotherapy with concurrent TMZ chemotherapy and subsequent adjuvant TMZ chemotherapy.

A Canadian-led phase III trial demonstrated improvement in progression-free and overall survival with the addition of TMZ during and as monthly maintenance doses following short-course radiotherapy (40 Gy in 15 fractions) in elderly (65 years or older) patients with newly diagnosed glioblastoma. Median age of patients was 73 years, and two-thirds were older than 70 years. TMZ prolonged median overall survival from 7.6 months to 9.3 months and increased 1-year survival rate from 22.2% to 37.8%. This survival benefit was most marked in patients with MGMT promoter methylation where median survival was extended from 7.7 to 13.5 months, and for the MGMT unmethylated patients, the survival difference did not reach statistical significance. Quality of life analyses demonstrated no difference in functional domains but noted more nausea, vomiting, and constipation in patients receiving TMZ. Therefore, in the elderly, and poor performance status, in the absence of statistically significant survival improvement, and the increase in toxicity, the use of TMZ for the unmethylated patient needs to be questioned.

MATERIAL & METHOD-

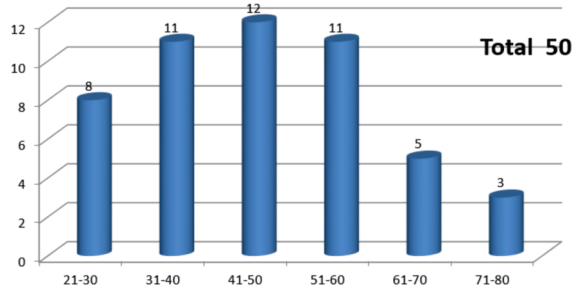
This study was done in patients with GBM who were diagnosed from 2019 to 2022.They all underwent surgery and radiotherapy 60gy in 30# with tab temozolamide 75 mg/m2 and after completion of radiation tab temozolamide 150mg /m2 added in adjuvant setting further.

RESULTS-

After analysis of 50 patients defferent results found.

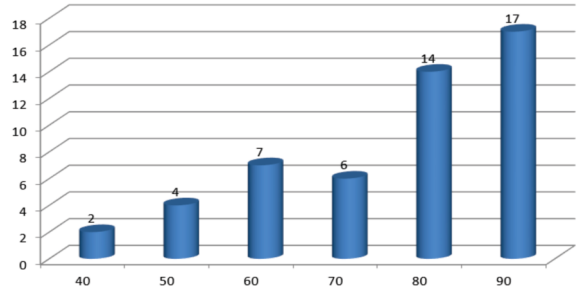
- Out of 50 patients 9 patients were female and 41 patients were male.
- They were in age group between 20 years to 80 years.

Distribution of patients according to age



- Maximum patients were in age group 41-50 years

Distribution Of Patients According To KPS Score



- During the study period 6 out of 50 patients died during course of radiation.
- 7 patients died with in 2 months after completion of radiation. Remaining patients had progression free survival minimum 3 months and maximum 24 months.
- The patients with gross total resection performed better with treatment and good survival .The patients with KPS score more than 70 well tolerated the treatment with good survival benefit. The patient with very low KPS score (50 or less) could not complete the treatment. The patients in younger age group got better survival after treatment.

DISCUSSION-

The more favorable prognosis may be related to the impact of younger age and better performance status of this group. Radiation therapy oncology group recursive partitioning analysis of malignant glioma concluded that age was the most important predictor of survival with patients <50 years faring best ,KPS 70 or more was the next most significant prognostic factor. Taking into account these and other variables, patients could be divided into groups with similar outcomes with 2 year overall survival ranging from 4% to 76% and median survival ranging from 2.7 to 58.6 months. Emerging data suggest that promoter methylation of the PTEN gene in low-grade gliomas may be causally linked to secondary malignant transformation to GBM. Secondary GBM usually have a mutation in the isocitrate dehydrogenase (IDH1) gene and often have p53 mutations. Several key proliferation and survival signaling pathways appear to be important in GBM. The vascular endothelial growth factor (VEGF), epidermal growth factor (EGF), platelet-derived growth factor (PDGF), hepatocyte growth factor (HGF), and insulin-like growth factor (IGH) pathways are thought to be particularly relevant in the growth and proliferation of GBM. These pathways are characterized by receptors associated with tyrosine kinase activities and share common mechanisms of pathway activation and intracellular signaling. Over expression or mutations of receptors and intracellular downstream effectors have been identified in GBM, leading to constitutive activation of signaling pathways, resulting in uncontrolled cellular proliferation, survival, and invasion. At the present time, the VEGF pathway inhibitor bevacizumab is the only targeted agent approved for GBM. The efficacy of others has been overwhelmingly disappointing in GBM. Two large randomized trials utilizing the antiangiogenic agent bevacizumab for the treatment of newly diagnosed GBM improved progression-free survival but failed to improve overall survival. Because approximately a third of GBMs express an aberrant EGFR surface receptor, small molecule inhibitors, antibodies, and vaccine-mediated approaches to this have been undertaken.

CONCLUSION-

The prognosis for patients with GBM is poor with median survival time of approximately 14 months in highly selected patients receiving contemporary treatment. Pretreatment patient and tumor characteristics such as age at diagnosis, tumor histology, and Karnofsky performance status (KPS) are the best predictors of outcome. Extent of resection, duration of neurologic symptoms, and radiographic response to treatment have also been suggested as predictors of survival

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