



Outcome of High grade Glioma Patients - A Single institution Experience



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INTRODUCTION

High Grade Gliomas include all grade III/IV primary brain tumors of Astrocytic, Oligodendroglial, and mixed cellular lineage as per WHO classification and are associated with poor prognosis.The standard of care for high grade Glioma is concomitant chemoradiation and temozolomide with median survival of 12 to 15 months in Glioblastoma and approximately 2-5 years with newly diagnosed anaplastic gliomas. Prognosis is poorer with a median survival of 3–9 months at first recurrence, which drops to few weeks for more than 90% of the patients at second or subsequent recurrence. Malignant gliomas are usually highly vascular tumors and expresses vascular endothelial growth factor (VEGF). Bevacizumab, a humanized monoclonal antibody binds to and inhibits the activity of VEGF. It has demonstrated synergy with cytotoxic chemotherapy when used in combination. Favorable results have been published in some studies showing durable response rate using a combination of bevacizumab and irinotecan in patients with recurrent high-grade glioma.

To date no published data is available regarding high glioma patients outcome from Pakistan. In this study outcome of patients with high grade glioma has been reported.

OBJECTIVE

To determine Overall survival and Progression free survival after first and second line of treatment in patients with high grade glioma at a tertiary care center in Pakistan.

METHODS

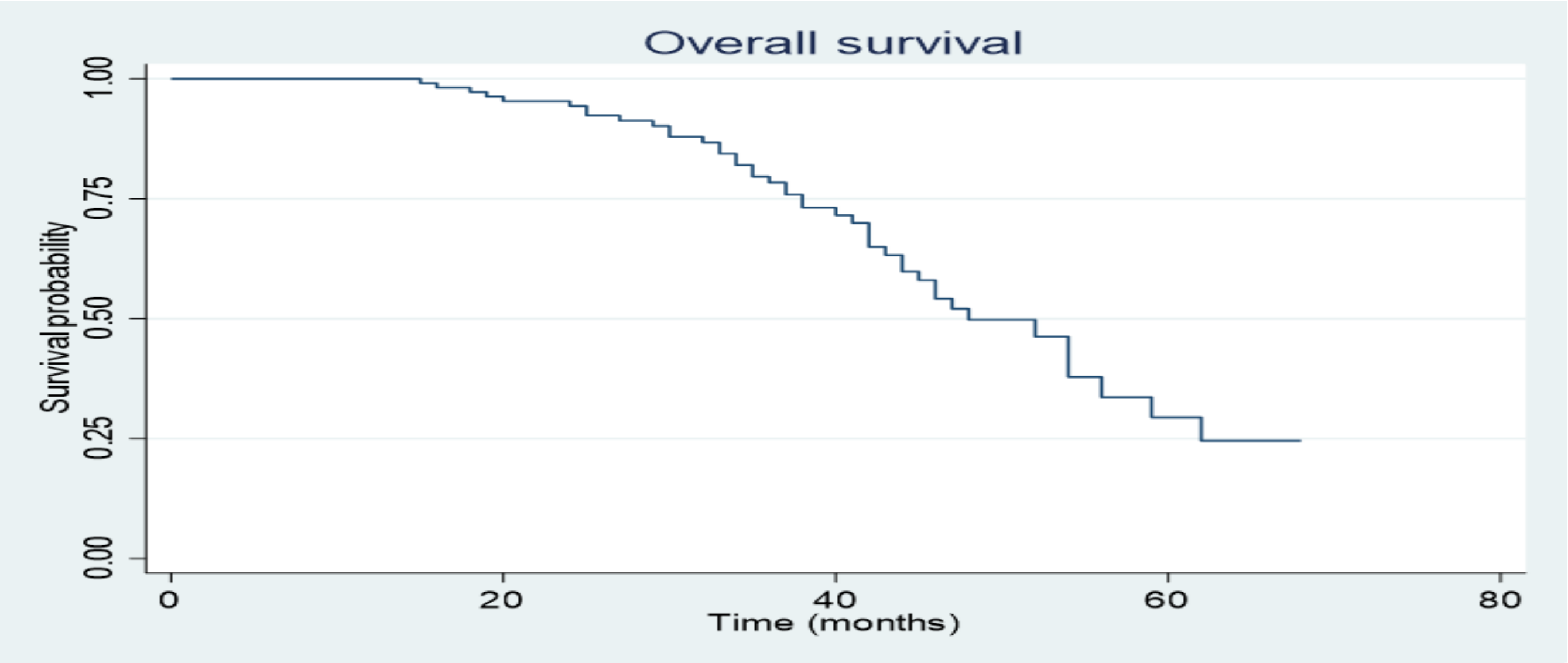
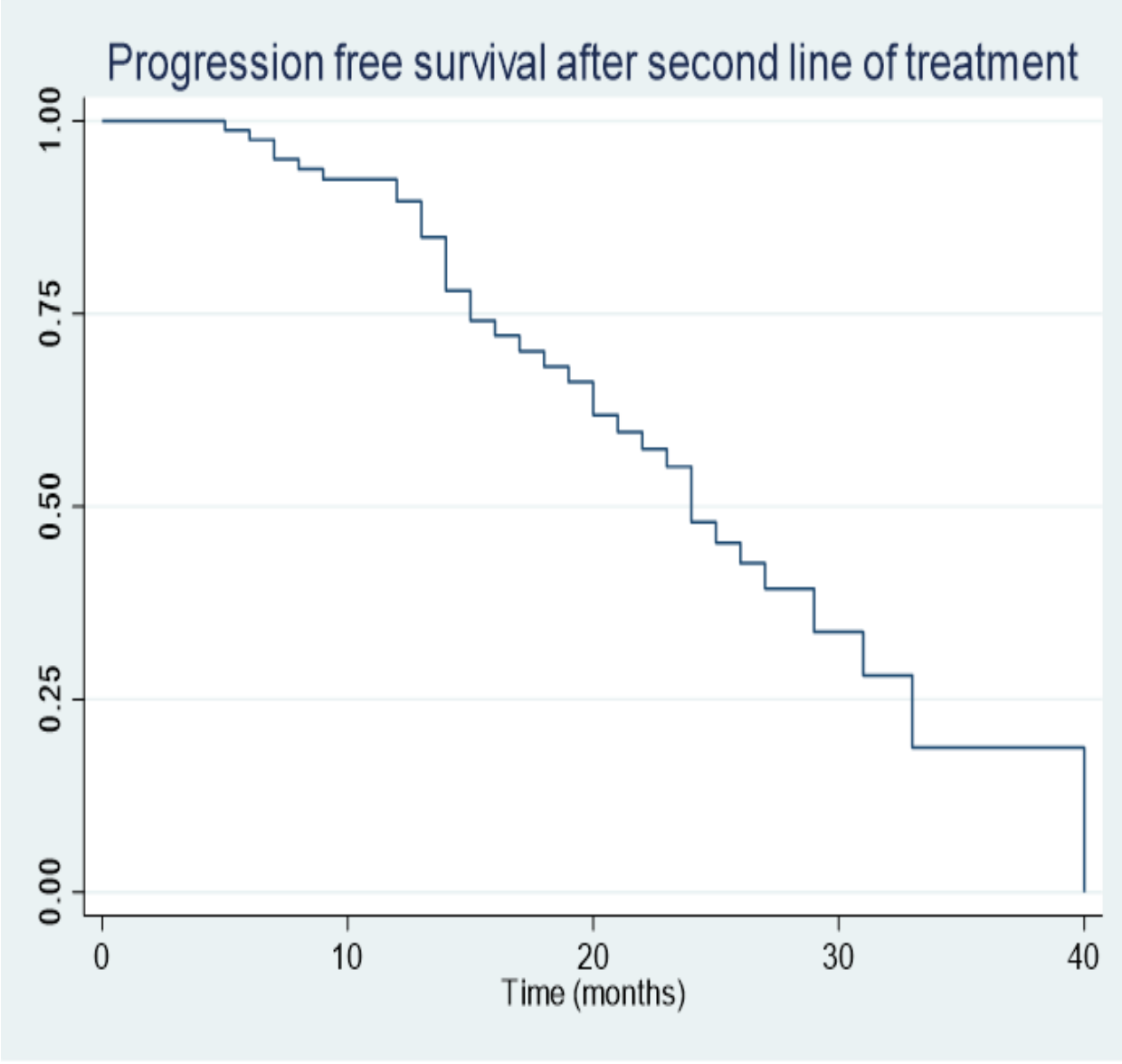
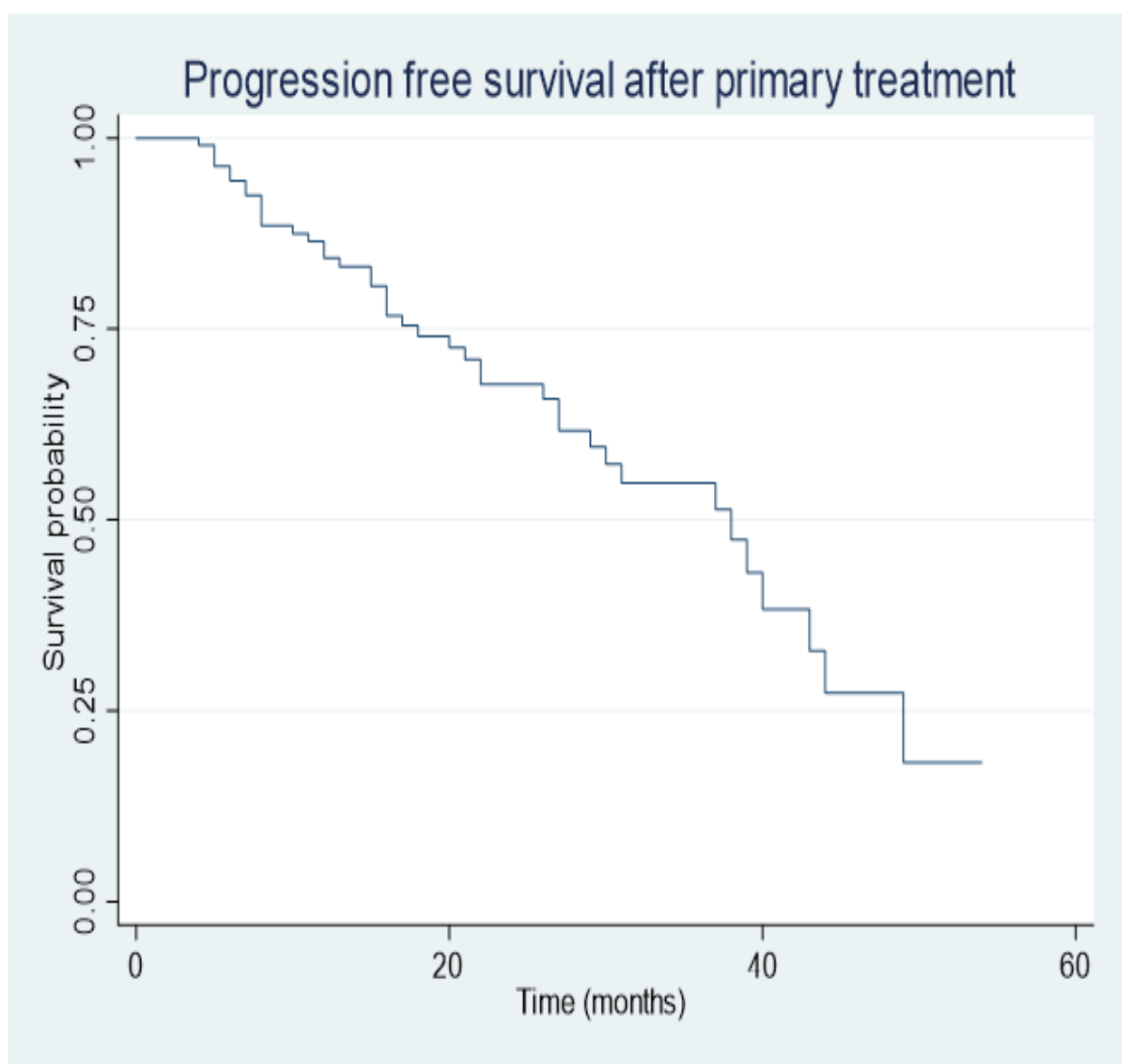
Patients with newly diagnosed High Grade Glioma presented at Aga Khan University Hospital from 2016 to 2021, who recieved standard treatment i.e concomitant chemoradiation and temozolomide and on recurrence treated with Bevacizumab with or without Irinotecan were included.

RESULTS

From 2016 to 2021, total of 117 newly diagnosed patients with High grade Glioma were included. Majority were male 80 (68.38) and the median (IQR) age was 51 (41-60%). Among high grade glioma majority have GBM (66%). 64% underwent subtotal resection, 23% and 11% had Gross total resection and biopsy respectively. Most of the patients 87 (74.3%) recieved concomitant chemoradiation followed by Temozolomide until disease progression as a systemic treatment. Moreo-ver 75 (64.10%) patients recieved Irinotecan and Bevacizumab as a second line treatment. The median (IQR) progression free survival after primary treatment was 18 (11-29) months and 14 (12-24) months after second line treatment. Two third of the patients were dead at the end of follow up 74 (63.25%). The median (IQR) overall survival was 37 (26-46) months.

Characteristic	n (%)/ Median (IQR)
Age (years)	51 (41-60)
Sex	
Male	80 (68.38)
Female	37 (31.62)
Karnofsky performance score (KPS)	80 (80-90)
Site of tumor	
Frontal	44 (37.61)
Temporal	33 (28.21)
Parietal	39 (24.79)
Thalamic	04 (3.42)
Occipital	07 (5.98)
High Grade Glioma	
GBM (Glioblastoma multiforme)	
Anaplastic Oligodendroglioma (Grade III)	78 (66.67)
Anaplastic Astrocytoma (Grade III)	30 (25.64)
Anaplastic Oligoastrocytoma (Grade III)	06 (5.13)
	03 (2.56)
Primary treatment: Surgical resection	
GTR	28 (23.93)
STR	75 (64.10)
Biopsy	14 (11.97)
Systemic treatment	
CCRT with Adjuvant Temozolomide (for 6 months)	19 (16.24)
CCRT with Adjuvant Temozolomide (for 12 months)	10 (8.55)
CCRT followed by Temozolomide until PD	87 (74.36)
Only Temozolomide	01 (0.85)
IDH mutation	
No	08 (6.96)
Yes	10 (8.70)
Not done	97 (84.35)
1p19q co-deletion	
No	10 (8.55)
Yes	14 (11.97)
Not done	93 (79.49)
Second line of treatment	
Irinotecan (125mg/m2) + Bevacizumab (10mg/kg)	75 (64.10)
Irinotecan (125mg/m2)	22 (18.80)

RESULTS	Median (IQR)
PFS after primary treatment	18 (11-29) months
PFS after 2nd line treatment	14 (12-24) months
Overall survival	37 (26-46) months



PFS & OS (as per histological subtype)	PFS- (1 st line) (Median, IQR)	PFS- 2 nd Line (Median, IQR)	OS (Median, IQR)
GBM (Glioblastoma multiforme)	16.5 (10.5-27)	14.5 (12-24)	36 (25-44)
Anaplastic Oligodendroglioma (G III)	22 (13-32)	13 (7-19)	37.5 (30-53)
Anaplastic Astrocytoma (G III)	9.5 (7-33)	19 (7-28)	43 (38-47)
Anaplastic Oligoastrocytoma (G III)	14 (5-14)	23 (12-32)	29 (28-51)

CONCLUSION

Our data reveals that the combination of Bevacizumab and Irinotecan improves the outcome in high grade glioma when compared to historical results. Survival rates were high as reported in international studies. Should be used as standard of care in recurrent high grade glioma.