EFFECT OF RESECTION OF GLIOBLASTOMA MULTIFORMAE ON THE SURVIVAL OF THE PATIENT

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ABSTRACT

Objective: To study the effect of resection of Glioblastoma multiformae on the survival of the patient.

Methods: This is a retrospective descriptive study. 86 patients were included and were operated during June 2016 and May 2018 (2 years). All patients operated for Glioblastoma multiforme were included. Data was collected from Performa made for the patients. Patient were fallowed for a period of one year.

Results: Total number of patients 86: Male 54(62%) Female 32(38%), age-range: 30-40 years number of patients were 15(17.4%), 40-60 years number of patients were 40(46%), 60-80 years number of patients were 31(36%). Karnofsky performance scale: 70-100 number of patients were 56(65%), 40-60 number of patients were 30(34%). Total resection of the tumour number of patients were 39(45%), subtotal resection number of patients were 47(55%). Overall survival rate: Total resection with radiotherapy and chemotherapy K.P.S score 70-100 age range 30-60 years 1-year survival rate number of patients were 28(72%) 6 months survival number of patients were 6(15.3%).

Conclusion: Extent of the tumour removal with good K.P.S score younger age associated with radiotherapy and chemotherapy, one-year survival is achievable.

Keywords: Glioblastoma multiformae, Prognostic factor, Survival, Radiotherapy.

INTRODUCTION

Glioblastoma multiforma annual incidence is 3 to 5.26 cases per 100,000 people.[1,2] Glioma is the most common and aggressive primary brain tumour in the adults. The number of patients is expected to increase with the ageing of the population, the peak incidence being within the 4th to the 6th decade of the life.[2] The most common symptoms of G.B.M include headache, focal neurological deficit, alter mental state, gait disturbances and fits.[3,4]

The classification of glioma has been largely based on the concept of histogenesis that labels the tumours according to their microscopic appearance. G.B.M may arise through two distinct pathways of neoplastic progression. Tumours that progress from low grade (2 or 3) astrocytic tumours termed secondary or type 1 G.B.M, typically display both well differentiated foci. Secondary G.B.M develops in younger patients. In contrast, primary type G.B.M develop in older individuals have a short clinical history (less than 3 months) and arise denovo without any evidence of low grade precursor.[5]

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Primary and secondary G.B.M harbour distinct molecular genetics abnormalities. Primary G.B. M's are characterised by relatively high frequencies of E.G.F.R amplifications, P.T.E.N deletions and C.D.K.N2A(P-16) loss. Whereas, in seconbdary G.B.M often contains TP53 mutations, especially those involving codeons 248 and 273 or G:C»A:T mutations at C.P.G sites.[6,7]

Maximal safe surgical removal of the tumour followed by adjuvant radiotherapy and chemotherapy remains the standard treatment of G.B.M. Thus, beyond establishing the histological diagnosis and decompressing the tumour mass effect, microsurgical resection of the G.B.M remain controversial. However, in the past decade mounting evidence suggests that surgical extent of resection is associated with better patient survival and outcome.[8,9]

METHODS

This is a retrospective descriptive study of 86 patients with Glioma were admitted and operated between June 2016 and May 2018 (2 years) in the department of neurosurgery Hayatabad Medical Complex Peshawar. The following data was collected from the Performa for the patient like the age, sex, karnofsky performance status, tumour characteristics like size of the tumour and location of the tumour on the basis of M.R.I and C.T scan. Presenting signs and symptoms of the patients were also recorded. Patients were followed after surgery up to 1 year depending upon the survival of the patient. The study was conducted with the approval by the institute's ethical committee.

Data Collection

Inclusion Criteria

Patients of either gender and age with high grade glioma diagnosed on C.T and M.R.I and confirmed by the histopathological diagnosis were included in the study.

Exclusion Criteria

Patients whose histopathological diagnosis other than G.B.M were excluded from the study.

Procedure

After aseptic measures craniotomy was done according to the location of the tumour and maximal safe resection of the tumour was done up to the gliotic zone taking care of the allocant area of the brain where subtotal resection was done.

Data Analysis

Data analysis was done through excel and percentages were calculated.

RESULTS

Total number of patients 86: Male 54(62%) Female 32(38%), age-range: 30-40 years number of patients were 15(17.4%), 40-60 years number of patients were 40(46%), 60-80 years number of patients were 31(36%). Karnofsky performance scale: 70-100 number of patients were 56(65%), 40-60 number of patients were 30(34%). Tumour location: patients having tumour in right side of the brain were 47(54%), patients having tumour in left side of the brain were 28(32%), patients having tumour in midline were 11(12.7%). Lobar distribution: frontal lobe 33(38%), parietal 25(29%), occipital 18(21%), temporal 4(4.6%), Mixed 6(7%). Size of the tumour: smaller than 4cm number of patients were 53(61%), greater than 4cm number of patients were 33(38%) **Table (1)**. Total resection of the tumour number of patients were 39(45%), subtotal resection number of patients were 47(55%). Radiotherapy received number of patients were 73(84%), radiotherapy not received number if patients were 13(15%). Chemotherapy received number of patients were 30(34%), chemotherapy not received number if patients were 56(65%) **Table (2)**. Overall survival rate: Total resection with radiotherapy and chemotherapy K.P.S score 70-100 age range 30-60 years 1-year survival rate number of patients were 28(72%) 6 months survival number of patients were 6(15.3%). Total resection without radiotherapy chemotherapy K.P.S 40-60 age range 60-80 number of patients with one-year survival were 2 (5.1%), patients with 6-month survival were 3(7.6%). Sub-total resection with radiotherapy and chemotherapy K.P.S 70-100 age range 30-60, patients having one-year survival were 23(48%), patients having 6-month survival 15(31%). Sub-total resection without chemotherapy and radiotherapy K.P. S 40-60 age range 60-80, patient having

Table 1: Variable

Variable	Number of patients	Percentage
Number of patients	86	100%
Male	54	62%
Female	32	37%
Age		
30-40	15	17.4%
40-60	40	46%
60-80	31	36%
K.P.S		
70-100	56	65%
40-60	30	35%
Tumour Location		
Right side	47	54%
Left side	28	32%
Midline	11	12.7%
Lobar distribution		
Frontal	33	38%
Parietal	25	29%
Occipital	18	21%
Temporal	4	4.6%
Mixed	6	7%
Size of tumour		
Smaller than 4cm	53	61%
Larger than 4cm	33	38%

Table 2: Treatment

Treatment	Number of patients	Percentage (%)
Total resection	39	45%
Sub-total resection	47	55%
Radiotherapy received	73	84%
Radiotherapy not received	13	15%
Chemotherapy received	30	34%
Chemotherapy received	56	65%

Table 3: Overall survival rate

Tumour removal	1-year survival	6-month survival
Total resection (Patients 39)	28 (72%)	6 (15.3%)
with radiotherapy and chemotherapy		
with K.P.S = 70-100		
and age 30-60 years		
Sub-total resection(Patients 47)	23 (48%)	15 (31%)
With radiotherapy and chemotherapy		
With K.P.S = 70-100		
And age 30-60		
Total resection (patients 39)	2 (5.1%)	3 (7.6%)
Without radiotherapy and chemotherapy		
With K.P.S = 40-60		
And age 60-80		
Sub-total resection (patients 47)	3 (6.3%)	6 (12.7 %)
Without radiotherapy and chemotherapy		
With K.P.S = 40-60		
And age 60-80		

one year survival are 3(6.3%), patients having 6 month survival are 6(12. 7%).Table **(3)**.

DISCUSSION

Glioblastoma multiforme is the most malignant and aggressive brain tumour and it mostly occurs in the older age group patients.[2,3] The main stay of the treatment is the maximal safe surgical removal of the tumour followed by radiotherapy and chemotherapy (temozolomide).[10]

In glioma management various factors like age, condition of the patient (i.e. karnofsky performance status), tumour location, size of the tumour and the extent of surgical tumour removal which affect the survival of the patient. In various studies G.B.M usually occur in older age group of the patient i.e. 50-60 years, but in our study the younger age group range from 30-40 years and the number of patients were 15(i.e. 17.4%) and between 40-60 years number of patients were 40(i.e. 46%). The cause is unknown, maybe because of environmental factors or shorter lifespan in our country and the younger population is higher than the old population.[11,12]

Studies have reported decrease survival with poor K.P.S score older age group, subtotal removal of the tumour without chemotherapy and radio therapy as in lutterback et al and lackroix et al studies.[12,13] Median of survival was 6-8 months, but in our study similar was the case 6-month survival with older age group poor K.P.S score without chemotherapy and radiotherapy and total and subtotal resection 9 patients survived (i.e. 10.4% from total number of patients 86). While in our study the total resection was done in 39 patients (i.e. 45%) and subtotal resection number of patients were 47(i.e. 55%). While in Stupps study 83% sub total and 40% total excision was done, median survival for complete excision was 8 months and 7.2 months or subtotal excision. While in Sanai et al review 28 high grade glioma in terms of quality of data evidence suggests that more extensive surgical resection is associated with longer life expectancy, as is the case in Slotman et al study. In our study, total excision of the lesion with good K.P.S score age 40-60 with chemotherapy and radiotherapy the overall survival was number of patients 28(72%) for one year and number of patients 23(48%) with subtotal excision with radiotherapy and chemotherapy.[13,14]

CONCLUSION

Extent of the tumour removal with good K.P.S score younger age associated with radiotherapy and chemotherapy, one-year survival is achievable.

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