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The Role of Clinical Picture of Supratentorial Glioma on the Outcome of Surgery

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Abstract: Supratentorial gliomas are one of the primary brain tumors that arise from glial cells. The main objective is to identify the role of clinical picture of supratentorial gliomas on the outcome of surgery. A prospective study of 30 cases of supratentorial gliomas was collected in the neurosurgical department in Ibn Sina hospital in Mosul city from June 2008 to October 2009. All patients were studied thoroughly regarding age, sex, side of tumor drowsiness, papilloedema, facial nerve plasy, seizure, memory loss, and hemiparesis; each parameter effect on the outcome of each patient at the first week, first month & sixth month. Our study reveal that memory loss was associated with the least mortality, and the loss was only 25% after six months. While hemiparesis was the worst one & the loss was up to 80% after six months. The best prognosis was seen in those patients associated with memory loss, and the worse one was seen in patients with hemiparesis.

Keywords: Supratentorial glioma, Brain tumors, Papilloedema, Facial nerve palsy, Drowsiness, Seizure.

INTRODUCTION

The World Health Organisation (WHO) classification of Brain astroma recognizes four grades of neoplasm. Grade 1 is assigned to the pilocytic astrocytoma, which is biologically distinct from the diffuse astroctomas; which are classified as astrocytoma (WHO grade II), anaplasitic astrocytome (WHO grade III) and glioblastoma multiforme (WHO grade IV) [American Cancer Society, 2005; Walker, D.G. *et al*., 2003]

Astrocytoma originates in the brain, mainly from glial cells. The glial cell types in the normal brain include astrocytes, oligodendrocytes, and ependymal cells, and the tumors that arise from each of these are known as astrocytomas, oligodendrogliomas, and ependymomas, respectively. Some tumors may involve a mixture of astrocytes and oligodendrocytes, and these are known as oligoastrocytomas. [Nicolato, A. *et al*., 1995; Pignatti, F. *et al*., 2002; Keles, G.E. *et al*., 2001]

Proper identification of turnor type is important in choosing the best treatment. In contrast to primary brain tumors, secondary brain tumors (brain metastases) are cancers that have started elsewhere in the body and spread (metastasized) to the brain. [Nabavi, A. *et al*., 2001; Nimsky, C. *et al*., 2000]

The advances in neurological localization and the addition of aseptic surgery made possible the beginnings of neurological surgery. Lister initiated antisepsis in surgery. A few early post-listerian pioneers of neurological surgery began to exploit the benefits of antiseptic surgery with the limited knowledge of brain function. During the last part of the nineteenth country, neurological surgery was performed by a handful of general surgeons who had become interested in diseases of the nervous system. Sir victor Horsley, of London, was prepared to develop surgery of the nervous system by virtue of his training in antiseptic neurosurgery, neuroanatomy, neurophysiology, and neuropathology. He may properly be regarded as the first specialist. Neuroloyical surgeon. [Nimsky, C. *et al*., 2000; Roth, Y. *et al*., 2004; Liu, Y. *et al*., 2004]

In 1884, Bennett and Gdlee performed the first successful removal of a brain tumour that had been localized by neurological examination; the lesion was astrocytoma. Although Sir Victor Horsley was greatly fascinated by this case, he was soon discouraged by his inability to save his own patients with malignant gliomas. [Kress, B. *et al*., 2004; Kleihues, P. *et al*., 1993; Mori, S. *et al*., 2002] At present, there is no satisfactory treatment for malignant cerebral glioma, anaplastic astrocytoma, and glioblastoma multiform. [Witwer, B.P. *et al*., 2002; Talos, I.F. *et al*., 2003; Nimsky, C. *et al*., 2004] The median survival following surgery is approximately 17 weeks, and when radiation therapy is used as an adjuvant, the median survival is approximately 37 weeks. Chemotherapy for high-grade gliomas has been disappointing, and the best results with surgery, radiation therapy, and chemotherapy consistently show a median survival time of less than one year [Gering, D.T. *et al*., 2001; Zou, K.H. *et al*., 2003]. This paper aims to study the role of clinical picture of supratentorial glioma on the outcome of surgery.

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PATIENTS AND METHODS

This is a prospective study; we collected 30 cases of epidural gliomas from Ibn Sina Hospital in Mosul in the Department of Neurosurgery from June 2008 to October 2009.

All cases were thoroughly studied in terms of age, sex, tumor side, somnolence, papilloedema, facial nerve paralysis, seizure, amnesia, and paraplegia—the influence of each parameter on the outcome of each patient.

This study relied on the application of a questionnaire for 30 patients, ages ranging from 20 to 60 years, in Ibn Sina Hospital.

The study criteria were included on the basis of the effect of supratentorial gliomas after surgery in the period of the first week and after the first month and the sixth month for both males and females. Besides the tumor, this study divided the tumor into three aspects and included the right, left, and midline on both sexes during the three periods the first week, the first month, and the sixth month.

In this study, memory loss was evaluated to be positive and negative for the post-operation period according to one week, one month, and six months and the data were analyzed statistically according to the IBM soft spss program to know the percentages and find the frequency in this study. [Nimsky, C. *et al*., 2003; Schneider, J.P. *et al*., 2001; Kelly, P.J. *et al*., 1993]

RESULTS

Table 1: Distribution of sex groups based on Age

Post-Operative Period	Sex Groups	Total Number	Outcome					
			good	%	same	%	worse	%
1st week	-20	4	2	20	0	0	2	25
	21-40	18	8	80	8	66.7	2	25
	41-60	8	0	0	4	33.3	4	50
	total	30	10	100	12	100	8	100
1st month	-20	4	2	12.5	0	0	2	20
	21-41	18	12	75	4	100	2	20
	41-61	8	2	12.5	0	0	6	60
	total	30	16	100	4	100	10	100
6 th month	-20	4	0	0	0	0	4	20
	21-42	18	6	75	2	100	10	50
	41-62	8	2	25	0	0	6	30
	total	30	8	100	2	100	20	100

Table 2: Distribution of operative period of group based on sex

Post-Operative Period	Sex Groups	Total Number	Outcome					
			good	%	same	%	worse	%
1st week	male	10	2	20	4	33.3	4	50
	female	20	8	80	8	66.7	4	50
	total	30	10	100	12	100	8	100
1st month	male	10	6	37.5	0	0	4	40
	female	20	10	62.5	4	100	6	60
	total	30	16	100	4	100	10	100
6 th month	male	10	4	50	0	0	6	30
	female	20	4	50	2	100	14	70
	total	30	8	100	2	100	20	100

Table 3: Outcomes of the operative period based on side of the tumor

Post-Operative Period	Side Of Tumour	Total Number	Outcome					
			good	%	same	%	worse	%
1st week	Right	16	6	60	4	33.3	6	75

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	Left	12	4	40	8	66.7	0	0
	Midline	2	0	0	0	0	2	25
	total	30	10	100	12	100	8	100
1st month	Right	16	10	62.5	0	0	6	60
	Left	12	6	37.5	4	100	2	20
	Midline	2	0	0	0	0	2	20
	total	30	14	100	4	100	10	100
6 th month	Right	16	4	50	0	0	12	60
	Left	12	4	50	2	100	6	30
	Midline	2	0	0	0	0	2	10
	total	30	8	100	2	100	20	100

Table 4: Evaluation of cases after post-operative based on drowsiness

Post-Operative Period	**Drowsiness**	**Total Number**	**Outcome**					
			good	%	same	%	worse	%
1st week	positive	10	4	40	2	16.7	4	50
	negative	20	6	60	10	83.3	4	50
	total	30	10	100	12	100	8	100
1st month	positive	10	6	37.5	0	0	4	40
	negative	20	10	62.5	4	100	6	60
	total	30	16	100	4	100	10	100
6 th month	positive	10	4	50	0	0	6	30
	negative	20	4	50	2	100	14	70
	total	30	8	100	2	100	20	100

Table 5: Evaluation of the post-operative period based on Papilloedema

Post-Operative Period	**Papilloedema**	**Total Number**	**Outcome**					
			good	%	same	%	worse	%
1st week	positive	18	6	60	8	66.7	4	50
	negative	12	4	40	4	33.3	4	50
	total	30	10	100	12	100	8	100
1st month	positive	18	10	62.5	4	100	4	40
	negative	12	6	37.5	0	0	6	60
	total	30	16	100	4	100	10	100
6 th month	Positive	18	6	75	2	100	10	50
	negative	12	2	25	0	0	10	50
	total	30	8	100	2	100	20	100

Table 6: Evaluation of the post-operative period based on facial nerve palsy

Post-Operative Period	**Facial Nerve Palsy**	**Total Number**	**Outcome**					
			good	%	same	%	worse	%
1st week	positive	8	4	40	2	16.7	2	25
	negative	22	6	60	10	83.3	6	75
	total	30	10	100	12	100	8	100
1st month	positive	8	4	25	2	50	2	20
	negative	22	12	75	2	50	8	80
	total	30	16	100	4	100	10	100
6 th month	positive	8	2	25	0	0	6	30
	negative	22	6	75	2	100	14	70
	total	30	8	100	2	100	20	100

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Table 7: Evaluation of the post-operative period based on Seizure

post-operative period	seizure	total number	outcome					
			good	%	same	%	worse	%
1st week	positive	20	6	60	10	83.3	4	50
	negative	10	4	40	2	16.7	4	50
	total	30	10	100	12	100	8	100
1st month	positive	20	10	62.5	4	100	6	60
	negative	10	6	37.5	0	0	4	40
	total	30	16	100	4	100	10	100
6 th month	positive	20	8	100	2	100	10	50
	negative	10	0	0	0	0	10	50
	total	30	8	100	2	100	20	100

Table 8: Evaluation of the post-operative period based on memory loss

Post-Operative Period	Memory Loss	Total Number	Outcome					
			good	%	same	%	worse	%
1st week	positive	8	6	60	2	16.7	0	0
	negative	22	4	40	10	83.3	8	100
	total	30	10	100	12	100	8	100
1st month	positive	8	6	37.5	2	50	0	0
	negative	22	10	62.5	2	50	10	50
	total	30	16	100	4	100	10	100
6 th month	positive	8	4	50	2	100	2	10
	negative	22	4	50	0	0	18	90
	total	30	8	100	2	100	20	100

Table 9: Evaluation of the post-operative period based on Hemiparesis

Post-Operative Period	Hemiparesis	Total Number	Outcome					
			good	%	same	%	worse	%
1st week	positive	10	4	40	4	33.3	2	25
	negative	20	6	60	8	66.7	6	75
	total	30	10	100	12	100	8	100
1st month	positive	10	4	25	4	100	2	20
	negative	20	12	75	0	0	8	80
	total	30	16	100	4	100	10	100
6 th month	positive	10	0	0	2	100	8	40
	negative	20	8	100	0	0	12	60
	total	30	8	100	2	100	20	100

DISCUSSION

This study is presented patients less than 20 years; we found that age doesn't make effete on the outcome at the first week & first month, but it had a worse prognosis at 6th month & this is similar to Gregory Malhalm & Sameera Moneesingh at Aackland hospital.

In those patients who are between 21-41 years, we found that the age had a good result at the first week & the first month, but it becomes worse at six months & this is also bcause of the high grade of tumar in this age categony. In those patients who are between 41-60 years, we found that the age had 25% of patients develop a good outcome while others remain worse.

According to sex effect, this study found that both the male & female sex had a good prognosis at the first month, especially the male sex, while after six months, the female become worser than the male, so the male sex had a good prognostic factor & this is similar in Gregay Malhalm & sameera Mooneeingh at Audkland hospital. [Pathology

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and genetics of tumours of the nervous system, 2000; Chang, S.M. *et al*., 2005]

In the side of the tumour, this study is shown that the Rt-sided tumor had a good prognosis over the left one in the first & first month, but after six months, both had a worse outcome; this is because of high grade of tumor & growth of its residual part & in the early period, the dominant hemisphere had a worse prognosis. We found similar results in the study of Margret Wrench & yoriko Minn at Texas university.

The final outcome of the presence of drowsiness at the six months was worse. This is because two patients who had poor outcomes at is week increase to 3 at six months (40-60%) & this is because of the recurrence of the tumor. This is seen in the study of yorko Minn & Maret Wrech at Texas university. In the side of papilloedema, the presence of papilloedema had a worse outcome (22%-55%) in comparison with those who don't have papilloedema because of intracranial pressure. This is similar to the study of Gregory Malhalm & Sameera Moneesirgh. [Walker, M.D. *et al*., 1980; Stewart, L.A. *et al*., 2004; Westphal, M. *et al*., 2003]

The outcome of patients who had facial palsy was not changed at the first week & in the first month, but it become two times (25%-75%) worse at six months & this is seen in the study of Margret Wrench & yariko Minn at Texas univ. [Hau, P. *et al*., 2003]

The results showed that the presence of seizure had a worse outcome because the percentage of worsening increased from 20% at the first week to 50% at the sixth month. This is similar to the study of Magret wrech & yoriko Minn at Texas university. The presence of memory loss had increased the motality from 5% at the first week to 25% of patients at the sixth month & this is the least difference in the outcome, so the presence of memory loss is the least to affect the prognosis. [Brem, H. *et al*., 1995; Kaye, A.H, 1997; Teddy, P.J, 1996]

In addition, the presence of Hemimparesis is the worst prognostic parameter because the percentage of worse outcomes increased from 20% at the first week to 80% at the sixth month & this is because of the recurrence of high-grade tumors & this is similar to the study of Gregory Malhalm & sameera Moneesingh. [Green, J.R, 1990]

CONCLUSION

This study presented specialized data for tumor patients of both sexes between the ages of 20 to 60 and was classified according to the evaluation of the patient's condition after surgery in periods (a week, a month, and six months).

These cases were diagnosed at Ibn Sina Hospital in Baghdad-Iraq for 30 patients, and the diagnosis included (Age, sex, tumor, drowsiness, Papilloedema, facial nerve palsy, Seizure, memory loss, and Hemiparesis).

The best prognosis was seen in those patients with memory loss, and the worst one was seen in the patient with hemiparesis.

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