

ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN—POLONIA

VOL. XXXVIII, 43

SECTIO D

1983

Klinika Neurochirurgii. Instytut Chorób Układu Nerwowego. Akademia Medyczna w Lublinie
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The Remote Results of Operative Treatment in Supratentorial Gliomas

Odległe wyniki leczenia operacyjnego glejaków nadnamiotowych mózgu

Отдельные результаты операционного лечения глиобластом мультиформы

MATERIAL AND METHOD

Material consists of 55 patients from the total number of 71, who underwent surgical treatment in the Department of Neurosurgery of Medical Academy in Lublin in 1973—1975, because of supratentorial gliomas. Those 55 patients, after satisfactory postoperative treatment, were either sent home or transferred to other hospital wards. Data of their death were obtained from Vital Statistics Departments of Municipal Offices. The quality of survival of 16 patients was estimated on the ground of Neurosurgical Ambulatory cards.

The statistical analysis was carried out on the basis of *t*-Student test. Results with a risk error smaller than 5% were regarded as statistically significant.

RESULTS

In evaluation of the remote results of surgical treatment, the length of survival of patients after operation, and the degree of their return to normal social and family life were considered.

The average time of survival of all operated patients was 7.5 months. It included also patients who died during the postoperative period. The average time of survival of 55 patients who were sent home or to other hospital wards ranged from 0.6 to 56.5 months, the average time being 9.7 months. 75% of patients survived during the first 3 months, while almost half of the operated patients — during 6 months. None of the patients survived 5 years (Fig. 1).

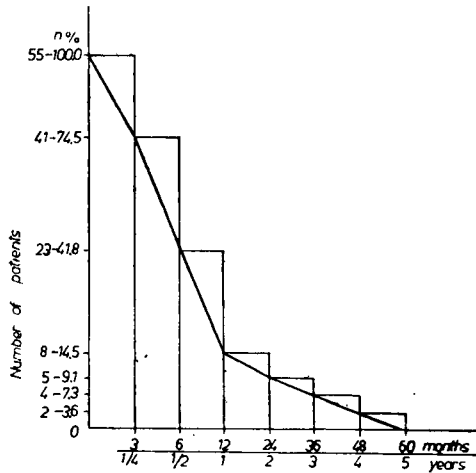


Fig. 1. Survival of patients in various time after operation

The dependence of the period of survival of patients on various clinical factors was then analyzed (Table 1). No statistically significant dependence of the period of survival on preoperative clinical state of the patients was observed. Nevertheless, this period was more than 50% shorter in patients who were in severe clinical state.

Table 1. The remote results of operative treatment and its dependence on some clinical features

Remote results	Total	Preoperative clinical state			Completeness of resection		Extent of resection			Localization		Histopathological sort	
		good	average	severe	total	partial	extensive	narrow	superficial	deep	glioblastoma	astrocytoma	
Average time of survival /months/	9.7	11.5	10.7	4.6	9.7	9.6	11.7	6.7	10.1	9.4	5.1	15.8	
Significance		no significance			p < 0.9		p < 0.25			p < 0.9		p < 0.01	
Number of patients	55	21	22	12	22	33	32	23	27	28	32	23	

There was no statistically significant dependence of duration of survival on the completeness and extent of resection of gliomas, although the average time of survival after narrow resection was more than half shorter than in patients with extensive operation. No statistically significant dependence of the time of survival on the location of gliomas was found although it was observed that this time was longer in patients with superficial than with profound gliomas.

There was found a high statistical significance in the dependence of duration of survival on the histopathological character of gliomas. This time was three times shorter in patients with multiform glioblastomas than in those with astrocytomas (Fig. 2).

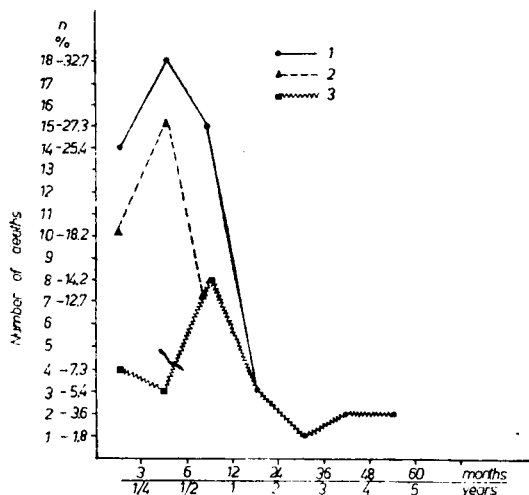


Fig. 2. Mortality rate in relation to histopathological character of gliomas; 1 — supratentorial gliomas, 2 — multiform glioblastomas, 3 — astrocytomas

The peak of mortality in multiform glioblastomas was between 3 and 6 months after operation, while in astrocytomas between 6 and 12 months. None of the patients with multiform glioblastomas survived longer than one year, while those with astrocytomas survived 5 years.

In 16 operated patients the level of psycho-motoric activity and the degree of return to social and family life was estimated (Table 2). 12.5% of patients who left the hospital took a job, 68.7% stayed at home doing various home work, while 18.7% remained in bed.

Table 2. Social activity of patients

Activity of patients	Number of patients	
	n	%
Took professional job	2	12.5
Active at home	11	68.75
Bed-ridden, require permanent care	3	18.75
Total	16	100.0

DISCUSSION

The average time of survival of patients operated because of supratentorial gliomas ranged from 5 to 12 months (2, 11, 12, 15). According to other authors (3, 4, 6, 9, 12), some patients survived for many years after operation. Elvidge et al. (4) claim that a complete removal of tumor allows the patients to survive for many years. Gullota et al. (6) think that long-time survival of patients with multiform glioblastomas is connected with an improper estimation of the degree of histopathological malignancy of the tumor. Everson and Cole (5) point also to some factors which may influence the regression of tumors. These may be: endocrinological factors, unusual sensitivity to radiation or chemotherapy, high temperature, infections, allergic or immunological reaction, changes in nutrition of the tumor, or elimination of the carcinogenic factor.

Despite survival for many years after operation, the percentage of living patients decreases with time, which depends on the degree of histopathological malignancy of the tumor.

The lack of influence of preoperative clinical state of patients on the duration of postoperative survival was sometimes stressed (14, 15). Nevertheless, analysis of our material and observations of other authors indicate that patients in a severe clinical state live shorter (12). Roth et al. (13) maintain that prognosis of patients with disorder of consciousness is worse. The majority of authors underline a positive influence of a complete removal of tumor during operation on the longer survival of patients (4, 9). Kunicki et al. (10) claim that completeness results in a better quality of survival. Other authors do not see such dependence (12, 15). Nevertheless, all authors claim that the length of survival depends on the extent of operation (9, 10).

The length of survival was also found to depend on the location of gliomas (3, 7, 9, 10, 11). Survival was longer in superficial than in deep-located gliomas (7, 14). Bigelow et al. (3) reported that even extensive resection in profound gliomas did not result in longer survival. According to some authors (3, 9, 13) longer survival was observed in polar gliomas of minor hemisphere. Kunicki et al. (10) observed that location of tumor in frontal or temporal lobes results in longer and better survival. Kurzaj (11) found longer survival in parietal gliomas. Netsky et al. (12) and Weir (15) neglect the influence of tumor location on the length of survival of patients.

The majority of authors found the dependence of the length of survival on the degree of histopathological malignancy of tumor (9, 10, 14). This view was confirmed by our results. Kunicki et al. (10) claim that

histopathology of gliomas is the basis for prognosis and for evaluation of the time of a possible regression. Nevertheless, some authors maintain that the histopathological character of the tumor has no effect on the length of postoperative survival (12, 15). They postulate that the degree of malignancy of removed and examined part of tumor does not necessarily correspond to the part which can be to source of recidivation. It can also undergo further malignancy. Weir (15) pointed out, on the basis of statistical analysis of several clinical factors, that experience and the surgical technique has no significant effect on the length of survival of patients with gliomas.

According to some reports estimation of the quality of survival is complicated because of the difficulty to trace the remote state of patients. Besides, the quality of survival is an indication on which operation itself has no such influence as on the length of survival (8). J e l s m a et al. (9) estimated the state of survival 3 months after operation. K u n i c k i et al. (10) found in the group of nonmalignant gliomas full ability to undertake work in 72.5%, partial ability in 23.7%, permanent invalidity in 3.7% of cases. The analysis of malignant gliomas carried out by H i t c h c o c k et al. (7) indicated that 36.4% patients returned to their jobs, out of which 27.3% for longer period than 6 months. 38.6% of patients lived relatively normal life without ability to undertake a job (useful survival). 25% of operated patients required permanent care. B e t t a g (1) found that in the group of patients with multiform glioblastomas, whose survival lasted for more than 2 months, 17.2% of patients returned to their jobs, 26.5% took only partial jobs, 28.5% remained unemployed while 27.8% required permanent nurse care. In the group of supratentorial gliomas analyzed by B e t t y (2) 15% of patients took jobs, 63.2% remained home doing various home work, 21.8% of patients stayed in bed. Similar results were obtained in this paper. P e n m a n et al. found 62% of useful survivals in the group of patients with gliomas who lived for longer than one year after operation.

C o n c l u s i o n s

1. The average time of survival of all operated patients was 7.5 months, while for patients who left hospital it was 9.7 months.
2. No statistically significant dependence of the time of survival on preoperative clinical state, kind of operation and location of gliomas was found.
3. A statistically significant dependence of the time of survival on histopathological character of gliomas was found. The survival of patients

with multiform glioblastomas was three times shorter than of patients with astrocytomas. The peak of mortality in multiform glioblastomas was between 3 and 6 months, while in astrocytomas between 6 and 12 months after operation. None of the patients with multiform glioblastomas survived for longer than one year while in those with astrocytomas the survival period reached up to 5 years.

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Otrzymano 28 I 1983.

STRESZCZENIE

Dokonano oceny średniego czasu przeżycia pooperacyjnego i jego zależności od niektórych cech klinicznych 55 chorych leczonych w Klinice Neurochirurgii AM w Lublinie z powodu glejaków nadnamiotowych. Średni czas przeżycia pooperacyjnego wynosił 7,5 mies. Stwierdzono statystycznie istotną zależność długości poope-

racyjnego przeżycia od rodzaju histopatologicznego glejaków. Szczyt śmiertelności w glejakach wielopostaciowych wystąpił między 3 a 6 mies., w gwiaździakach zaś między 6 a 12 mies. Żaden z chorych z glejakiem wielopostaciowym nie przeżył roku, natomiast z gwiaździakiem 5 lat. Nie stwierdzono istotnej statystycznie zależności czasu pooperacyjnego przeżycia od przedoperacyjnego stanu klinicznego, lokalizacji glejaka i rodzaju zabiegu operacyjnego. Do pracy powróciło 12,5% operowanych, 68,7% wykonywało zajęcia domowe, 18,7% wymagało stałej opieki.

Р Е З Ю М Е

Оценено среднее время послеоперационного выживания и его зависимость от некоторых клинических черт у 55 больных леченных от глиобластомы мультиформы в Нейрохирургической клинике Медицинской академии в Люблине. Среднее время послеоперационного выживания — 7,5 мес. Установлено статистически существенную зависимость продолжительности послеоперационного выживания от гистопатологического вида глиом. Самая высокая смертность при многообразных глиомах выступила между 3 а 6 мес., а при астроцитомах между 6 а 12 мес. Никто из больных с многообразными глиомами не прожил года, зато с астроцитомами жили 5 лет. Не определено статистически существенной зависимости послеоперационного времени выживания от дооперационного клинического состояния, размещения глиом и рода операционного вмешательства. Из оперированных больных 12,5% вернулось к прежним занятиям, 68,7% занималось домашними работами, а 18,7% требовало постоянной заботы.

