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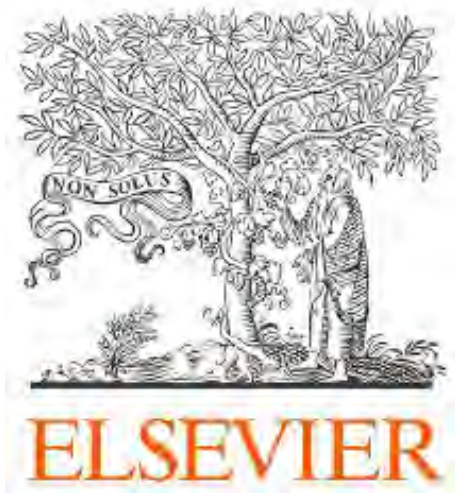
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Studies in the Modern World”**



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distinct necessity of psychological consultation and therapy, as well to social assistance. The care for quality of life with those patients is reflection of reached maturity of society and health care system.

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Efficacy potential of combined treatment of metastatic brain tumors

The average incidence of metastatic brain tumors (MBT) – 14-16 cases per 100 000 of population [1, 2, 3]. It is known that MBT develop almost 5 times more frequently than primary brain tumors [1]. Growth in incidence of MBT may be connected with development, introduction and wide implication of modern method of tumors diagnosis and treatment [4, 5]. MBT develop in any age group, but more frequently – in an age of highest professional qualification, 40 years and more [2].

Neurosurgical method together with radiation therapy is one of leading in MBT treatment in general and method of choice in case of tumor's radiation resistance. In conditions of modern level of technical equipment it became possible to conduct neurosurgery even regarding small metastases [1].

Main aim of neurosurgery operation in MBT is their removal as maximal as it is possible with minimal risk of patient's stable invalidization пациента [1, 4]. Tactics

and technics of MBT removal is similar to such for other tumors of appropriate localization [2, 4, 5].

Among estimation integral parameters applicable to cases of MBT, some of most widely used are Karnofsky scale (Karnofsky D. A., Burchenal J. H., 1949) and ECOG scale (Zubrod C. G., Schneiderman M., Frei III E. et al., 1960) [6].

General trend in MBT combined treatment effectiveness improving is strict coordination of neurosurgical, radiological and chemotherapeutical approaches, and also symptomatic treatment [7].

All represented above indicate the topicality of the problem of effectiveness increase of patients with MBT combined treatment.

Aim of research – improving the efficacy of patients with MBT treatment by combined approach using radiation and chemotherapy in post-operational period.

Materials and methods. 68 patients with MBT were included in the research on the clinical base of the Department of neurosurgery of Kharkiv National Medical University — Kharkiv Regional Clinical Hospital – Center of Emergency Medical Care and Disaster Medicine. There were 31 (45.6±6.04 %) males, 37 (54.4±6.04 %) femails. Mean age of patients – 54.4±1.34 years, mainly they were at age of 50–59 years (33 persons, 48.5±6.06 %); 19 (27.9±5.44 %) persons were aged 60 and more; 14 (20.6±4.90 %) persons were 30–49 years old, and 2 (2.9±2.05 %) patients were younger than 30. No gender features of MBT incidence was revealed.

As an accompanying pathology there were mostly cardiological (arterial hypertension of 1st-2nd stages, ischemic heart disease: stable exertional stenocardia of 1st-3rd functional class and diffuse cardiosclerosis without heart failure) and gastroenterological (ulcer disease, chronic hepatitis, cholecistitis, pancreatitis in phase of remission) diseases, in one case – diabetes mellitus.

General severity of cases was mostly moderate, general brain symtomatics dominated in neurological status. Metachronous (after the diagnosis of primary tumor) character of brain metastasis revealing was in 33 cases. Mean value of the period between diagnosis of primary tumor and its metastasis was 35.7±5.92 months. Maximal duration of oncological anamnesis was in cases of tumors of breast (41.9±11.51 moths) and skin (39.7±16.48 months), minimal — in cases of pulmonary adenocarcinoma (18.8±9.47 months).

Solitary character of metastases was stated in 39 (57.4±6.00 %) cases, multiple – in 29 (42.6±6.00 %) cases. Distribution of patients by location of solitary MBT was as follows: in 4 (10.3±4.86 %) cases tumor was localized in frontal lobe, in 2 (5.1±3.53 %) patients — in temporal lobe, in 9 (23.1±6.75 %) patients – in parietal lobe, in 6 (15.4±5.78 %) cases — in occipital lobe, in 11 (28.2±7.21 %) persons – in cerebellum hemisphere, in 3 (7.7±4.27 %) persons — in skull bones (in temporal and parietal bones with subaponeurotic and epidural distribution), 2 (5.1±3.53 %) case — near hypophysis, by 1 (2.6±2.53 %) — in brain tunics and frontal sinus accordingly.

Thus, in 28 (59.0±7.88 %) patients solitary metastases were located in cerebral hemispheres. No predominance of right, left or central localization was revealed ($p \geq 0.40$).

Pathomorphological evaluation of tumor metastasis was conducted in 48 cases. By histological structure there were revealed: adenocarcinoma (37 cases, 77.1±6.07 %), melanoblastoma (10 cases, 20.8±5.86 %) and sarcoma (in 1 patient, 2.1±2.06 %).

Primary source of metastasis was revealed in 50 patients: in lungs (adenocarcinoma) — 12 (24.0±6.04 %) persons, in breasts — 14 (28.0±6.35 %) cases, in skin (melanoma) — 13 (26.0±6.20 %) patients, in kidneys (clear-cell carcinoma) — 5 (10.0±4.24 %) patients, by 2 cases (4.0±2.77 %) — in gastrointestinal tract (sigmoid colon), uterus (leiomyosarcoma), ovary; by 1 case (2.0±1.98 %) in thymus (malignant thymoma of anterior mediastinum), external genitals (pronaus cancer).

In those patients who underwent adjuvant (radiation or chemotherapy) they were conducted on the base of State Institution “Grigoriev Institute for Medical Radiology of National Academy of Medical Science of Ukraine” on linear accelerator “Clinac 600 C”, Ef-6 MeV by standard scheme; single focal dose was 1.8–2.4 Gy; summary focal dose – 50–60 Gy. For chemotherapy – Temodal was used in the dosage of 75 mg/m² per day by standard protocol.

Positive results of distribution normality visual check allowed to apply parametric statistical methods. Central trend was described by arithmetic mean, parameter variation was characterized by standard error of mean. Difference between groups was validated using Student’s t-criterion. Critical p-value was 0.05. All patients agreed to participate in the research.

Results and discussion. All 68 patients were distributed in two cohorts comparable by gender, age, character and location of MBT, general severity: 48 patients which underwent neurosurgical operation and 20 patients who refused.

Operative removal of metastatic tumor was conducted in 48 patients radically (in 32 persons, 66.7±6.80 %), subtotally (in 13 cases, 27.1±6.41 %) or partially (in 2 patients, 4.2±2.88 %), only in one (2.1±2.06 %) patient because of peculiarities of the case only decompression trepanation and biopsy were performed. Repetitious operations regarding relapse of metastasis were made in 6 (12.5±4.77 %) patients. One patient was discharged from the research because of lethal outcome in early post-operational period (pulmonary artery thromboembolism); thus, post-operational lethality was 2.1±2.06 %.

Aiming on evaluation of efficacy of different methods of treatment of MBT the rest of 67 patients were distributed into following five groups: 1st group — patients

who after operation underwent only radiation therapy (9 persons, 13.4 ± 4.17 %); 2nd group — patients who after operation underwent only polychemotherapy (8 persons, 11.9 ± 3.96 %); 3rd group — patients who after operation underwent combined treatment (5 persons, 7.5 ± 3.21 %); 4th group — 25 (37.3 ± 5.91 %) persons who after operation didn't have any adjuvant therapy by different reasons; 5th group — 20 (29.9 ± 5.59 %) persons who didn't undergo neurosurgical operation because they refused by private reasons, but had a course of radiation therapy.

Among 67 patients a lethal outcome in 1–3 months after operation was in 8 (11.9 ± 3.96 %) patients, in 4–6 months — 6 (9.0 ± 3.49 %) persons, in 7–9 months — 5 (7.5 ± 3.21 %) cases, in 10–12 months and more — 6 (9.0 ± 3.49 %) patients, fig. 1.

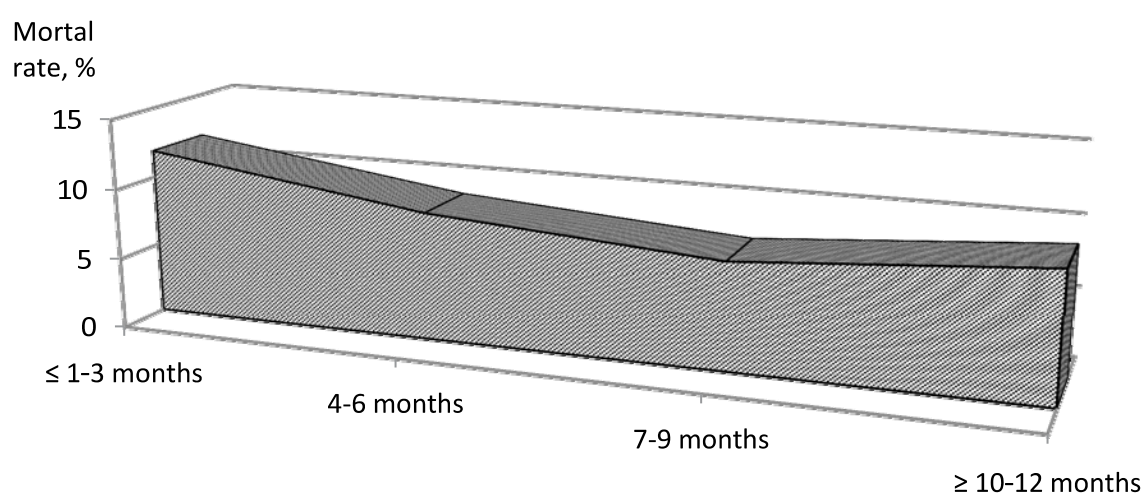


Figure 1. Mortal rate in patients revealed by dynamic follow-up

Mean life duration among those who dead was 7.7 ± 1.33 months. In 9 ($53,2 \pm 7,28$ %) cases patients survived for more than 2 years. Information about 8 (11.9 ± 3.96 %) patients is unknown.

By catamnestic follow-up it was revealed that survival rate of patients for 1 year in 3rd group was highest — 100 % (5 from 5 persons), while in 1st group it was 77.8 ± 13.86 % (7 from 9 persons), in 2nd group — 62.5 ± 17.12 (5 from 8 patients); in 5th group — 45.0 ± 11.12 % (9 from 20 persons); in 4th group — 32.0 ± 9.33 % (8 from 25 patients), fig. 2.

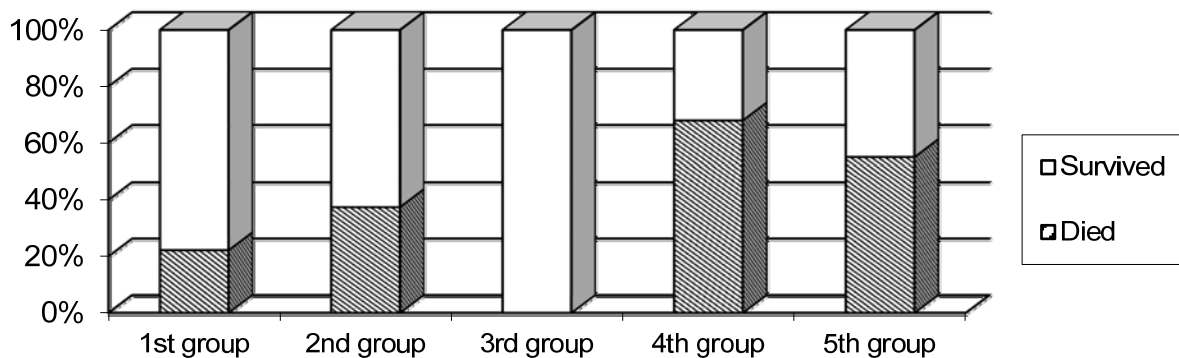


Figure 2. One-year survival rate depending on type of treatment

Conclusion. 1. Combined radiation and chemotherapy in MBT after operation is the best tactical approach to improve treatment effectiveness comparing with any of approaches alone (neurosurgery with following radiation therapy or neurosurgery with chemotherapy or radiation therapy without neurosurgery).

2. Consequent radiation and cytostatic therapy in MBT after operation is characterized by 100-percent survival.

3. The perspective of further researches — comparison of approaches mentioned in the article as opposite to radiation with chemotherapy together with study of patients with MBT health-related quality of life on different phases of treatment and in delayed period with detecting of factors influencing on these patients survival and quality of life level.

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