FEATURES OF SURGICAL TREATMENT OF BRAIN CANCER WITH PRIMARILY MULTIPLE POLYNEOPLASIAS

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Keywords: primarily multiple cancers, primarily tumor, biopsy

Abstract
The term «multiple malignant polyneoplasia» implies the absence of anatomic con-nections between histologically confirmed independent malignant tumors, where the subsequent tu-mor is not a continued growth or metastasis of the primary tumor. An increase in the contingent of long-term patients with oncological diseases increases the overall cumulative probability of a second tumor. The presence of multiple neoplastic lesions leads to a synergistic negative effect of each of the tumors on the patient's body and a reduction in the patient's chances to undergo treatment.

INTRODUCTION

Currently, there is a growing trend around the world in the number of patients with advanced stages of cancer. Multiple primary brain tumors with different histological types occurring in the same patient are rare. The coexistence of multiple primary brain tumors is an interesting state. The term "multiple malignant polyneoplasia" implies the absence of anatomical connections between histologically confirmed independent malignancies, where the subsequent tumor is not a continued growth or metastasis of the primary tumor. Increasing the number of longterm patients with oncological diseases increases the overall cumulative probability of the second tumor [12]. The presence of multiple neoplastic lesions leads to a synergistic negative effect of each of the tumors on the patient's body and a decrease in the patient's chances of undergoing treatment. Despite the fact that the primary multiplicity of human malignancies has been known for a long time, polyneoplasia is one of the least studied problems of modern oncology. According to the literature, the rate of primarymultiple tumors (PMT) is 0.34-0.52% of all oncological diseases [19]. The literature indicates that the risk of developing second and subsequent tumors in patients with malignancies already detected is approximately 1.3 times higher than in the general population [7,9]. Difficulties in diagnosing PMT are associated with the lack of study of their clinical course and the similarity of manifestation in localization in various organs. Due to subjective diagnostic misconceptions, the prevalence of the process can be established incorrectly when one of such tumors is mistakenly considered as the primary focus, the other as its metastasis. The decompensated stage of simultaneously existing multiple tumors, in particular when detecting a second neoplasm in the brain, leads to a tactical error in which an unjustified refusal of radical help is possible. Studies aimed at solving the problem of choosing adequate approaches to the treatment of patients with PMT, one of which is a brain tumor, are extremely relevant. Surgical treatment remains the main treatment method; malignant histology has a poor prognostic factor.

The aim of the study is to determine the role of neurosurgical intervention and its impact on further adequate treatment tactics for patients with PMT, one of which is a brain tumor.

MATERIAL AND METHODS

In RSSPMC neurosurgery MoH RUz for 2017-2020 50 pa-tients with brain neoplasms were treated, which were combined with previously treated malignant tumors of other organs and had clear PMT criteria in accordance with the IDC-10. Patients ranged in age from 17 years to 63 years (mean age 38.2 years); women domi-nated 36 (72%), and men - 14 (28%). Upon admission, the condition of 36 patients on the Karnovsky scale corresponded to 70 points, in 12 patients - 60 points, in 2 patients - 50 points. All patients underwent a comprehensive preoperative examination, including chest X-ray, abdominal ultrasound, MRT whole body, brain MRI and/or contrast enhancement. After that, surgical treatment of the brain tumor was performed with verification of the histological diagnosis. The morphological structure of the detected cerebral tumors was diverse; a different combination of types of benign and malignant tumors was noted.

RESULTS AND DISCUSSION

Malignant brain tumors were detected in 25 (50%) patients and benign - in 25 (50%). In 41 (82%) patients, two or more nodes were noted, of which one or two nodes were large, in 9 (18%) - multiple with small nodes. Benign multiple brain tumors were predominantly represented by meningiomas in 22 (44%) patients. Of these, only supratentorial location had meningiomas in 16 cases, subtentorial - in 1, supra- and subtentoreal - in 5. Meningiomas of the sphenoid

ISSN 2181-3175

ISSN 2181-3175

bone were observed in 10 (45.4%) patients, parasagittal - in 11 (50.0%), and sinus - in 1 (4.6%). Among benign cerebral neoplasms, fibromas (Neurofibromatosis type 1 or 2, Recklenhausen's disease) and pituitary macroadenoma (2%) were found in 10 (40.0%) cases. All meningiomas (except for the cavernous sinus men-ingioma, which was not resected) were re-moved totally (Simpson I and II), neurofibromas were also removed one- and multi-stage totally, and pituitary adenomas were removed subtotally. Malignant tumors had a different histological structure: glioblastomas were noted in 18 (36%) cases, B-cell lymphoma - in 1 (2%), astrocytomas - in 5 (10%), melanoma - in 1 (2%) case. Neoplasms were removed subtotally in all cases. The interval between the diagnoses of PMT ranged from 1 month up to 13 years (average interval - 4 years 6 months).

When analyzing the treatment regimens for PMT after morphological verification of a brain tumor and comparing them with the proposed and possible courses of therapy in case of refusal of surgical treatment of brain tumors, it was found that in all cases there was a discrepancy in the program of additional treat-ment. Moreover, with benign brain tumors (25 patients), adjuvant therapy after surgery was not required, so these patients did not undergo special treatment. In 2 (4%) patients, severe somatic pathologies suggested the refusal of adjuvant therapy, however, after surgical treatment and verification of the morphological structure of cerebral tumors, the patients underwent a full course of chemotherapy and/or radiation therapy at the place of residence. The reasons for the increase in the incidence of polyneoplasia are widely discussed in the literature [2, 3, 4, 5, 8, 14]. The risk of developing more than one malignant tumor in a person may be associated with the environment, genetic and immunodeficiency states [8]. The development of the second solitary neoplasm can be a spontaneous event, genetically determined or caused by common etiological factors with the first one [8]. The occurrence of the first mutation in the cell genome is controlled by three or more factors, such as the intensity of the mutagenic effect, the state of the cell membrane, and the state of the cell repair system [7].

From this point of view, there are three types of PMTs [7]:

I - PMT as an integral model of the effect of induced mutagenesis on individuals with a defective cellular repair system. The increase in the incidence of this group of patients with PMT is due to the intensity of environmental pressure;

II - PMT as a symptom complex of he-reditary syndromes, manifested both in hetero- and in homozygous state;

III - PMT because of the deletion of the suppressor gene (retinoblastoma, osteogenic sarcoma, bilateral and polyfocal nephro- and retinoblastomas).

The first group is of the greatest interest, since it accounts for 85–90% of all cases of PMT [7, 13].

The literature presents the results of studies, which indicate that intensive radiation therapy may be a factor causing the occurrence of a second tumor [10, 13, 16, 19].

At present, an increase in the life expectancy of the population as a whole, as well as in radically operated patients with oncological pathology, the use of more aggressive schemes of radiation, drug and targeted therapy, potentially having a carcinogenic effect, inevitably leads to an increase in the number of patients who develop malignant PMT [6 , 13].

CONCLUSION

PMTs are quite rare, but recently the fre-quency of their detection has been increasing. Patients with newly diagnosed oncological pathology are at risk of developing a second tu-mor and should be under the constant supervision of an oncologist for early diagnosis of multiple tumors.

Clinical cases of PMT should be registered, which will allow further analysis of their frequency, types, treatment outcomes and disease prognosis. Cases of detection of a second or subsequent neoplasm require a thorough neuroradiological examination using modern imaging techniques to confirm the diagnosis, in some cases a tumor biopsy may be performed.

Verification of the morphological structure of brain tumors is necessary in all cases, despite the oncological history; this allows you to determine the correct tactics for further treatment.

The choice of treatment for PMT depends mainly on the stage of the disease. The prognosis for PMT, although burdened, is not hopeless; in some cases, total removal of the neoplasm and a favorable outcome are possible.

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ISSN 2181-3175