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Timing of diagnosis of central nervous system neoplasms in Stavropol Krai based on Stavropol Krai Clinical Hospital database

Abstract: Neoplasm of the nervous system is analyzed in order to clarify the timing of diagnosis of the most common tumors in this location in Stavropol Krai.

Keywords: neoplasm, nervous system, metastases of tumors.

Background and aim

Neoplasm of the nervous system is a serious health problem throughout the world and in Russia in particular. Primary tumors of the central nervous system account for about 1.5% of all cancers. In absolute values the incidence increases with age. Brain tumors account for 85–90% of all tumors of the central nervous system (Levin V. A., Leibel S. A., Gutin P. H., 2001). According to estimates from the National Cancer Institute, there are over 22,000 new cases of brain cancer and about 13,000 brain cancer deaths each year in the United States, with an annual incidence and mortality rates (per 100,000 population) being 6.6 and 4.7, respectively. In Russia the rates are lower and account for 4.9 and 4.6 per 100,000 population, respectively (Chissov V. I., Starinskiy V. V., Petrova G. V., 2011). The early diagnosis of tumors is essential in the case of aCNS lesions. The review of the available scientific literature revealed that there are no accurate data on the timing of diagnosis of central nervous system tumors from the onset of symptoms to the diagnosis. The duration of the neurological deficit affects the quality of life in patients with tumors of the nervous system and is the most important medical and social problem of modern neuro-oncology, because the disease usually has a progressive course, leads to a life limitation, disability and very often to death (Gorbunova E. V., 2011, Parkin DM, Bray F, Ferlay J, 2010) [17, 1–2]. The speed of providing a specialized neurosurgical care depends on the speed of the detection of CNS space-occupying lesions, which requires the improvement in the timing of CNS tumors diagnosis and treatment.

The aim of the study is to specify the dates of central nervous system neoplasms diagnosis on the basis of the data obtained in the neurosurgery department of the Stavropol Krai Clinical Hospital (SKCH) in 2013.

Materials and Methods

We performed a retrospective analysis of 327 medical records of hospitalized patients in SKCH neurosurgical department to identify the timing of the diagnosis of CNS neoplasms in 2013. The results obtained are processed in Excel and IBM SPSS Statistics.

Results and Discussion

The study considers patients with the confirmed diagnosis of CNS space-occupying lesions. In 2013 327 patients with neoplastic processes in the CNS were hospitalized in SKCH neurosurgical department. Out of all the cases registered, 144 (44%) were males and183 (56%) — females, including children — 22 (6.7%). The median age of patients was 49,6 ± 16,2 years.

All medical records were grouped in accordance with the WHO classification of tumors of the CNS types and the classification of tumors in terms of morphological structure.

We identified 73 (22.3%) cases of meningiomas in different areas. Meningiomas account for 14,3–19% of all primary intracranial tumors [10, 440]. The study showed that the mean time to diagnosis of meningiomas was 11 months.

In one case, meningioma in temporoparietal area was diagnosed incidentally in a patient without neurological deficit. The patient was hospitalized and had a planned surgery within 1 week period. In two other cases, meningiomas in cerebellopontine angle manifested with dizziness and a slowly progressive hearing loss, due to which the time from the onset of neurological deficit to the diagnosis was 6 years.

The study revealed metastases of tumors in other CNS areas in 51 (15.6%) patients. The average time to metastasis diagnosis was 3 month. Metastatic CNS tumors (predominantly in the brain) develop in 10–30% of patients with malignant tumors of other organs and tissues. The occurrence of CNS metastases should be most expected in patients younger than 35 years old with encephalophilic tumors: small cell lung cancer, breast cancer, testicular cancer, melanomas [6, 25–29]. The selected group included 19 (37.3%) cases of metastases of lung cancer in the nervous system, 6 (11.8%) cases of breast cancer, 5 (9.8%) cases of kidney cancer and 4 (7.8%) cases of melanoma.

20 (6.1%) patients were hospitalized for pituitary adenomas. Up to 95% of pituitary tumors are benign and relatively slow-growing ones (Gaidar B. V. et al. 2002, Renehan A. G. et al. 2000). Pituitary tumors clinically manifest with endocrine disorders or mass effect. In most cases the mean time to diagnosis of pituitary adenoma was 18 months. In one case,

the period of diagnosis was 1 week (patient complained of eyelid ptosis and amblyopia). In another clinical case the diagnosis delay was 7 years (major symptom in this case was acromegaly).

Glial tumors predominantly in cerebral hemispheres were diagnosed in 27 patients (8.3%). These tumors are more common in younger patients and children and are often diagnosed based on the presence of seizures [10, 423]. The mean time to diagnosis was 6 months. In 4 (15%) patients with astrocytoma, located in the frontal lobe of the cerebral hemispheres was clinically accompanied by epileptic seizures, the differential diagnosis of which was based on a computed tomography performed in a short time. The frontal lobe space-occupying lesion was diagnosed on CT findings. The maximum period of glial tumors diagnosis was 5 years (in this clinical case, the patient complained only of a headache, which has long been associated with concomitant hypertension and treated with antihypertensive drugs before the onset of neurological deficit in the form of unsteadiness of gait caused by cerebellar hemisphere glioblastoma).

We found 9 (2.9%) cases of vascular tumors, mainly in the spinal cord. The average time to diagnosis was 1.3 years. Spinal cord angioma manifested with disorders of surface sensitivity (paresthesia, causalgia).

It took the hospital about 7 months to diagnose neuromas — 6 (1.8%) — of the cochlear nerve and cauda equina. Tumors manifested with progressive hearing loss, headache, dizziness, ataxia (in the case of destruction of the cochlear nerve), and radicular pain associated with lesions of the cauda equina.

CNS cysts, mostly localized to the cerebral hemispheres (75%), were found in 4 (1.2%) patients. The mean time to diagnosis of cysts was 10 months. The prevalent clinical manifestations included cerebral symptoms such as headaches and dizziness.

In 4 (1.2%) cases the medulloblastoma of the cerebellum was detected, with manifestations including ataxia, dizziness, vomiting, and headache. The mean time from the onset of symptoms to the diagnosis was 2.3 months.

Craniopharyngioma in suprasellar region was diagnosed in 3 (0.9%) patients within 1.6 years. Clinical manifestations included hemianopsia, amblyopia, nausea and vomiting. It has been observed that patients with this diagnosis had been on surgical treatment at an eye clinic for some time without recourse symptoms after treatment.

Diagnosis of angioreticuloma in different locations was found in 3 patients (0.9%) and took 10 months. Complaints included severe headache and in one case, cerebellar ataxia with cerebellar hemisphere lesion.

Diagnosis of neurofibromatosis — 3 (0.9%) cases- took an average of 4 years. In one clinical case it was diagnosed within 2 weeks (patient's overall well-being was accompanied with ataxia, unbearable headache, dizziness, nausea and vomiting that made the patient immediately seek medical help).

Meningeal carcinomatosis was diagnosed in 1 (0.3%) case. The patient complained of convergent strabismus, diplopia and headache. The diagnosis was made within 1 week.

In 1 (0.3%) case of parietal lobe ependymoma neurological deficit manifested with hemiparesis. The diagnosis was made within 3 months.

116 people (35.5%) were hospitalized with a general diagnosis of "central nervous system tumors of different locations".

In this diverse group total period of diagnosis of CNS tumors was about 6 months. We have noted that many patients complained of cerebral signs and symptoms in the form of headaches, dizziness and nausea, but the fact of seeking medical care was associated with the appearance of focal symptoms indicating the level of the CNS damage.

Conclusions

1. Timing of CNS neoplasms diagnosis directly depends on the severity of neurological deficit and its growth rate.

2. The average time to diagnosis of CNS neoplasms in the Stavropol region was 8 months, tumors types not being taken into account.

3. The most common sources of nervous system metastases are lung cancer, breast cancer and kidney cancer, which suggests that some of these tumors are encephalophilic.

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Features of debut of pediatric multiple sclerosis

Abstract: This article is devoted to study of children's multiple sclerosis (MS), which is an urgent problem of modern medicine. In recent years MS incidence among children increased significantly all over the world including Russia. A lot of causes of MS remain unexplored but there already have been done a great breakthrough in discovery of pathogenic mechanisms of development of inflammatory and destructive process.

Keywords: multiple sclerosis, children.

Topicality: Until recent time multiple sclerosis was considered to be an adult disease only. But now it is established that in last decades children's cases of the disease are being recorded more often; moreover, in recent years the incidence of MS has increased significantly all over the world and, particularly, in Russia.

Purpose of the article: Analysis of the debut of multiple sclerosis in children.

Results: Due to the fact, that in childhood multiple sclerosis is usually monosemeiotic, diagnosis is significantly complicated. After long attack comes long remission, that's why diagnosis is mostly retrospective, when there is aggravation of multifocal lesions of the nervous system. Among the risk factors of MS in children a special attention is paid to structural changes in the white matter of the brain, that are found in newborns with hypoxic encephalopathy [6]. By the age of six months the amount of healthy children's antibody titers is almost equal to normal limit of adults, and, at the same time, 12% of 2–3 year children are being identified