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TUMOURS OF THE CENTRAL NERVOUS SYSTEM: THEIR CHARACTERISTICS AND METHODS OF TREATMENT

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A CNS tumour is an unnatural or abnormal growth of cells in the brain or spinal cord. The most common symptoms of CNS tumours include increased intracranial pressure, manifested by headache, vomiting, and altered mental status. Depending on the tumor location, patients may have motor weakness, sensory changes, seizures or cranial nerve neuropathies. In addition to the neurological examination, the standard diagnostic plan may include biochemical and blood coagulation tests, MRI and CT to detect the exact location of neoplasms and provide better visualization of the tumour distribution, a lumbar puncture and histologic and molecular genetic analysis of the tumour tissue sample. In case of CNS tumours neurosurgery is the best principal treatment. Chemotherapy and radiation therapy may be used as supplementary or palliative treatment.

According to various data, CNS tumours occur with a frequency of 2-6 cases per one thousand people. Of these, about 88% are cerebral tumours and only 12% are spinal. In the structure of children's oncology, CNS tumours account for 20 per cent, 95 per cent of which are brain tumours.

To date, the factors that trigger tumor transformation of cells remain under study. There is known oncogenic action of radioactive radiation, some infectious agents (herpes virus, HPV, certain types of adenovirus), genetic and chemical compounds. Brain and spinal injuries, viral infections, occupational hazards and hormonal changes are considered factors that cause or accelerate tumour growth. A number of studies have confirmed that normal electromagnetic waves, including those coming from computers and mobile phones, are not among the above triggers.

One of the diseases that occurs in more than 30% of children is medulloblastoma. Medulloblastoma (MB) is the primary cancerous embryonic tumor of the brain. It occurs in the cerebellum, in the area of the posterior fossa, and can spread through the spinal fluid to other areas of the brain and spinal cord. Typically, children develop symptoms of medulloblastoma within months, and sometimes weeks. This is due to the relatively rapid growth of malignant neoplasm. The clinical picture may include signs of cerebellar pathology and increased intracranial pressure: headaches accompanied by nausea and vomiting, irritability, sleepiness, behavioural changes; visual impairment - «blurring» and double vision.

The prognosis of survival varies greatly depending on histologically and genetically defined tumour type, the extent of the tumour process and the degree of CNS lesion at the time of diagnosis; possibilities of total neoplasm resection; patient age. While 95% of benign tumours are successfully cured, malignant neoplasms have favorable prognosis only in 50% of cases.

In conclusion it is necessary to emphasize that even the worst prognosis is not conclusive: with constantly developing therapies survival rates are constantly improving.