Opinion

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Blockage of the visual analyzer in oncological disease

Summary

The functioning of the visual analyzer is very energy-consuming. In the case of decompensation of systemic diseases (including oncological ones), the brain blocks the work of the visual apparatus (sensory and motor parts). The saved resources allow the brain to ensure the continuation of human life for a certain period.

It is proposed to artificially disable the visual analyzer (one eye) in the early stages of the oncological process. This should reduce the risk of blindness and irreversible changes in the body in the future. Indications for ophthalmological intervention should be established experimentally.

Keywords: visual analyzer, oncology, compensatory reactions, atropine, botulinum toxin

Volume 15 Issue 1 - 2025

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Received: February 07, 2025 | **Published:** February 18, 2025

Introduction

It is known that the visual analyzer provides a person with 80%-90% of information about the surrounding world. It is not surprising that the functioning of the visual analyzer is very energy-intensive (approximately 50% of the brain's resources), since its work is provided by 6 pairs of cranial nerves (half of the 12 available pairs).

The final stages of severe systemic diseases - oncology, diabetes, hypertension - are often characterized by the shutdown of the visual apparatus (its sensory and motor parts). We consider this fact as a compensatory reaction of the brain, aimed at saving its resources to prolong human life for a certain period.[1]

Let's consider this hypothesis using the example of cancer. When a malignant tumor develops in the body and threatens a person's life (most often it is lung, breast or kidney cancer), metastases to the choroid occur. Choroidal metastases are the most common type of intraocular malignant neoplasms.[2–6] In 2/3 of cases, choroidal metastases are unilateral, in 1/3 - bilateral. Since the epicenter of choroidal metastases is most often the macula, vision drops sharply; also, with metastases to the optic nerve, there is a significant decrease in vision (block of the sensory part).[7–9] The motor part of the visual analyzer also suffers: the III, IV, VI, VII cranial nerves are selectively blocked.[7,10–13] With orbital metastases, there is often a generalized impairment of motor skills of both eyes.[9,13]

The prognosis for ocular and orbital metastases is typically poor.[8,9,12] We explain this fact as follows: blocking the visual analyzer during decompensation of the oncological process in the body is an "act of desperation". The brain tries to save resources to maintain the work of other vital organs and systems and at least slightly prolong the functioning of the body. But, unfortunately, this reaction is late. Irreversible changes have already occurred in the body. The survival rate of patients after blocking the visual analyzer is low - the count goes into months.[7–9,12]

How can we use knowledge of the laws of the functioning of the human body?

We suggest that at the stage of the pathological process preceding the decompensation period, the visual analyzer be switched to an "energy-saving mode". Since metastases to the eye and orbit in systemic malignant tumors are more often unilateral, temporary occlusion of one eye (blocking the sensory part of the visual system) will probably be sufficient. In order to avoid concomitant reactions from the open paired eye, it is necessary to do the following: cause accommodation paralysis - with atropine instillations; cause paralysis of the extraocular muscles - with injections, for example, botulinum toxin. It is advisable to start immobilization of the eye withm. rectus lateralis, as it is most often involved in the metastatic process first.[7,10–12]

Modeling the natural compensatory reactions of the visual analyzer at earlier stages of the disease should improve the patient's general condition (activation of reparative processes in the body) and reduce the risk of blindness in the future.

The best time for ophthalmological intervention, its volume and duration of action should be established experimentally under the control of physiological and neurophysiological indicators.

Bilateral hearing loss in metastatic breast cancer has been described in the literature,[7] so it may be useful to partially temporarily block the auditory analyzer.

An interesting fact in support of our hypothesis: in multiple sclerosis, if the visual analyzer is blocked (vision loss due to retrobulbar neuritis), the general symptoms of the disease are more "milder" than in cases of multiple sclerosis without ophthalmopathology.[14]

Also telling is the fact that in intraocular and orbital metastases, when visualizing the skull, as a rule, there are no intracranial formations, hemorrhages, or infarctions,[6] i.e., the brain does not suffer. This confirms the compensatory nature of the reaction to block the visual analyzer, aimed at "untying the hands" of the brain (by saving its resources) to improve reparative processes in the exhausted organism and prolong the patient's life for a certain period.

In light of the above, it becomes clear why cancer (like other diseases) has rapidly "rejuvenated" in recent years. We live in an era of digitalization. Uncontrolled use of gadgets causes prolonged strain on the visual analyzer. This depletes brain resources. The controlling function of the brain weakens, and "breakdowns" occur in the body faster than usual.[15]

Conclusion

The functioning of the visual analyzer is very energy-consuming. Therefore, blocking the visual analyzer frees up significant resources for the brain to support the body's vital functions in a critical situation for it - in the stage of decompensation of the disease.

It is proposed to simulate a temporary block of the visual analyzer (sensory and motor parts) at earlier stages of the pathological process.

This should reduce the risk of blindness and irreversible changes in the body, and prolong the patient's life.

Indications for ophthalmological intervention in severe systemic pathology (including oncology) should be established experimentally.

Acknowledgments

None.

Conflict of interests

The authors declare that there are no conflicts of interest.

Funding

None.

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