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The resection of sellar region tumors with application of evoked visual potentials at children

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Introduction: Location of a tumor in immediate proximity to optic nerves and chiasm, to the formations of III ventricle, and also to internal carotid arteries and their main branches, causes the clinical picture of disease and exclusive complexity of surgical treatment of such patients.

Reduction or loss of visual functions after tumor removal is connected with a lot of possible mechanisms. Their understanding presumes to reduce risk of damage of optic nerves and chiasm during operation.

Application of monitoring during operation strengthens accuracy and attention of the neurosurgeon that, in turn, gives the early prevention of possible complications with the purpose of revealing of visual infringements before its irreversible damage.

Purpose: The purpose of our research is to estimate the role of intraoperative monitoring of the visual evoked potentials of brain by studying visual functions at tumors of sellar region.

Material and Methods: The work is based on results of treatment of 25 patients with tumors of sellar region, which were treated in the Republican scientific centre of neurosurgery of Uzbekistan since 2009. All patients were operated via cranial approaches under monitoring of visual evoked potentials.

Results: In our research the estimation of visual acuity at all patients before operation and in the early postoperative period was made. In connection with that, the difference in changes of visual functions has been revealed.

At studying results of research it has been noted, that the application of intraoperative monitoring of visual evoked potentials decrease the blindness or sharp reduce of visual acuity that is quite often observed at manipulations near optic nerves and chiasm. The value of monitoring consists in that during the dissection of tumor from the given structures the signs of irritation, arising from visual structures are increased on the monitor. Long irritation can lead to an ischemia of nerve and the further decrease of visual acuity; hence, at this stage it is necessary to stop manipulations until the normalization of parameters of visual potentials. In our supervision the deterioration of visual acuity in postoperative period was not marked.

Conclusions:

1. Intraoperative monitoring of the visual evoked potentials is considered an objective, adequate and most informative method for an estimation of functional condition of structures of the visual analyzer at removal tumors of sellar region.
2. Application of intraoperative monitoring of the visual evoked potentials allows preventing and lowering the quantity of visual infringements at tumors of sellar region.