

Clinical Case of the Use of Mr Tractography in Patients with Optochiasmal Arachnoiditis

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Optochiasmal arachnoiditis (OCA) is one of the most severe diseases that leads to blindness or severe disability in young people. Optochiasmal arachnoiditis is a clinical syndrome of a chronic productive inflammatory process of the brain and its membranes with predominantly damage to the chiasm area and optic nerves. The disease is characterized by a variety of clinical manifestations and severe visual impairment.

Early diagnosis of optochiasmal arachnoiditis mainly depends on the ophthalmologist, because patients are the first to turn to him for decreased vision, and not only modern diagnosis, but also the correctness of treatment depends on his knowledge and skills.

Of particular interest to ophthalmologists and neurosurgeons is the modern method of magnetic resonance tractography (MR tractography), which allows non-invasive visualization of white matter pathways throughout the brain, in particular, to examine the state of the optic tract. The method is based on the determination of the degree of anisotropy and diffusion direction of water molecules using diffusion tensor MRI images (DTI), which is used as a marker of the orientation of the conductive tracts of the white matter. The use of the MR tractography method in optochiasmal arachnoiditis provides information about the disruption of the structure of the conductive fibers optic tract.

Despite the variety of works devoted to MR tractography, the literature does not sufficiently cover the issues of visualization of the visual tract in patients with optochiasmal arachnoiditis.

Below is a clinical case of MR tractography of a patient with optochiasmal arachnoiditis.

Patient B, born in 1969, applied to the neurosurgical department of the multidisciplinary clinic of Samara State Medical University with complaints of very low vision in both eyes, headaches, dizziness and general weakness. From the anamnesis it is known that the patient noticed decreased vision in the month of May 2020. The patient's vision loss began first in the left eye, then the vision loss moved to the right eye. According to the patient, she was treated for this disease in a private medical institution in the city of Navoi, 2020 in June in the eye department of the multidisciplinary clinic of SamSMU, 2020 in August at the private medical institution "Aqua Medline" in the city of Tashkent.

Upon admission to the neurosurgical department, visual acuity was OD-0.06; OS-0.05, uncorrectable. A significant concentric narrowing of the erenium field was discovered. In the fundus of both eyes, almost complete atrophy of the optic nerve head was noted. Otherwise, the retina was without visible changes.

After a clinical diagnostic examination, a diagnosis was made: Optochiasmal arachnoiditis.

In order to visualize the orientation and integrity of the pathways, the patient underwent an MRI of the brain with tractography on October 20, 2020. MRI tractography of the optic tract showed thinning of the optic nerve tracts on a 3D tractography map.

On October 24 and 28, 2020, pneumo-ozone tank therapy was performed with endolumbar administration of a nootropic.

Upon re-admission a year later in November 2021, ophthalmological examinations showed an improvement in visual acuity OD-0.07 OS-0.08 and an expansion of the visual fields along all meridians by 10-15 degrees. With a retinophoto of the fundus, partial atrophy of both visual discs was noted nerves.

Conclusions: With the help of pneumo-ozonocisternic therapy with endolumbar administration of a nootropic, as well as several courses of conservative therapy, we were able to stop the progressive atrophic process of the optic discs with subsequent improvement in visual acuity and expansion of visual fields.

It seems appropriate and promising to conduct MR tractography of the optic tract to assess the degree of damage to the visual tract and dynamic monitoring of patients during treatment.

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