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Modern Diagnostics and Treatment of Opticochiasmal Arachnoiditis

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Abstract:

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 and effective treatment of a patient with optochiasmal arachnoiditis. Objective: to analyze the effectiveness of using MR tractography in the diagnosis and treatment of opticochiasmatic arachnoiditis.

Key words:

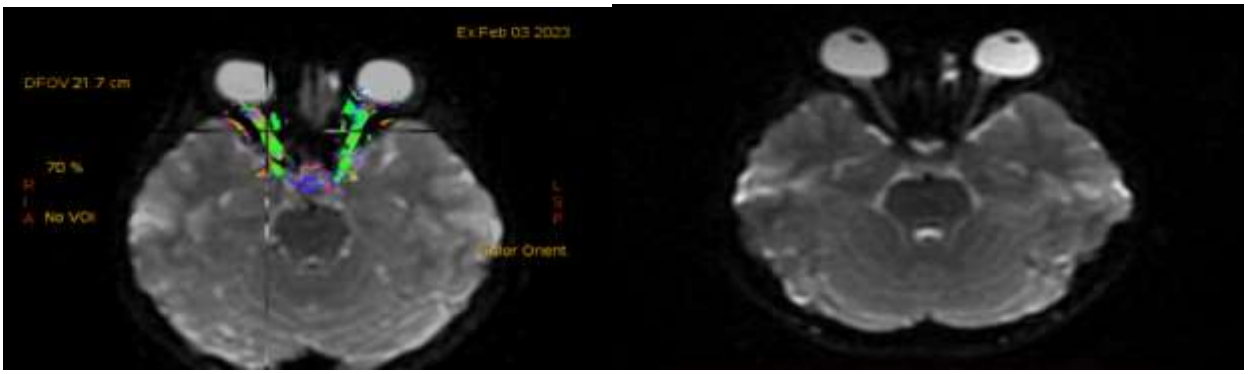
opticochiasmatic arachnoiditis, MR tractography, myelination, nootropic, pneumo-ozonocisternic therapy.

Optohiasmal arachnoiditis (OA) is one of the most serious diseases that lead to blindness or severe disability in young people. Optohiasmal arachnoiditis is a clinical syndrome of chronic productive inflammation of the brain and its membranes with predominant damage to the chiasmal area and optic nerves. The disease is characterized by a variety of clinical manifestations, a severe degree of visual impairment.

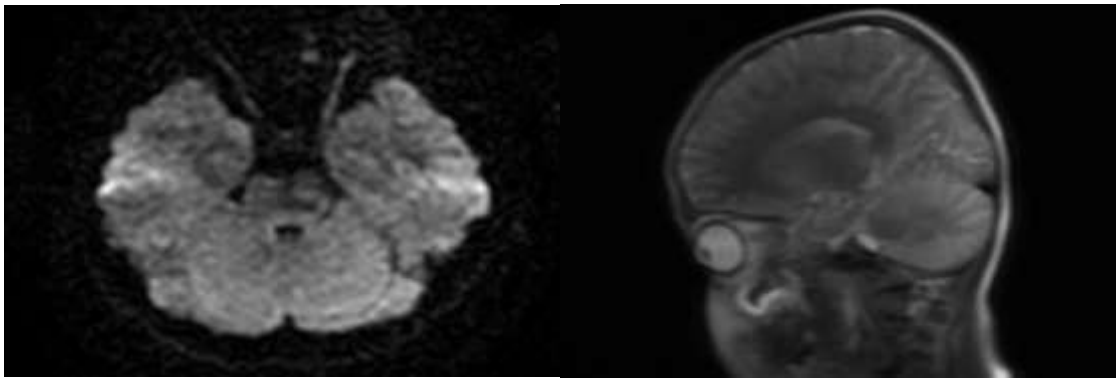
Early diagnosis of optohiasmal arachnoiditis mainly depends on the ophthalmologist, because he is the first to contact patients about vision loss, and not only modern diagnostics, but also the correctness of treatment depends on his knowledge and skills [1,5].

Of particular interest to ophthalmologists and neurosurgeons is the modern method of magnetic resonance tractography (MR tractography), which allows non-invasively visualizing the white matter pathways throughout the brain, in particular, to study the state of the visual tract[4,1]. The method is based on determining the degree of anisotropy and the direction of diffusion of water molecules from diffuse tensor MRI images (DTI), which is used as a marker of the orientation of the conducting paths of white matter. The use of MR tractography in optohiasmal arachnoiditis provides information about the violation of the structure of the conducting fibers of the visual tract [3,5,6]. Despite the variety of works devoted to MR tractography, the literature does not sufficiently cover the issues of visual pathway visualization in patients with optochiasmal arachnoiditis [2]. Below is a clinical case of MR tractography and effective treatment of a patient with optochiasmal arachnoiditis. Patient M born in

2014, went to the neurosurgical department of the multidisciplinary clinic of Samara State Medical University with complaints of very low vision in both eyes, headaches, and dizziness. From the medical history, it became known that the patient noticed a decrease in vision 10 days before he was admitted to the clinic. From the words of my parents, the sick cause of my illness was considered to be the flu. The disease started with headaches, and then the patient noticed a decrease in visual acuity in both eyes. Priortomy admission to the neurosurgical department of the multidisciplinary clinic of Samara oState Medical University. Upon admission to the neurosurgical department, visual acuity visus AV=-0.02-0. 03 does not correct. It was not possible to measure the field of view. There was a violation of color perception, and stasis of the discs of both optic nerves was noted in the fundus of both eyes. With the retina showing no visible changes. After conducting clinical and diagnostic examinations, a diagnosis was made: Optochiasmal arachnoiditis. In order to visualize the orientation and integrity of the pathways, the patient has been in 2-march of 2023 MRI of the brain with MR tractography on March 02, 2023.



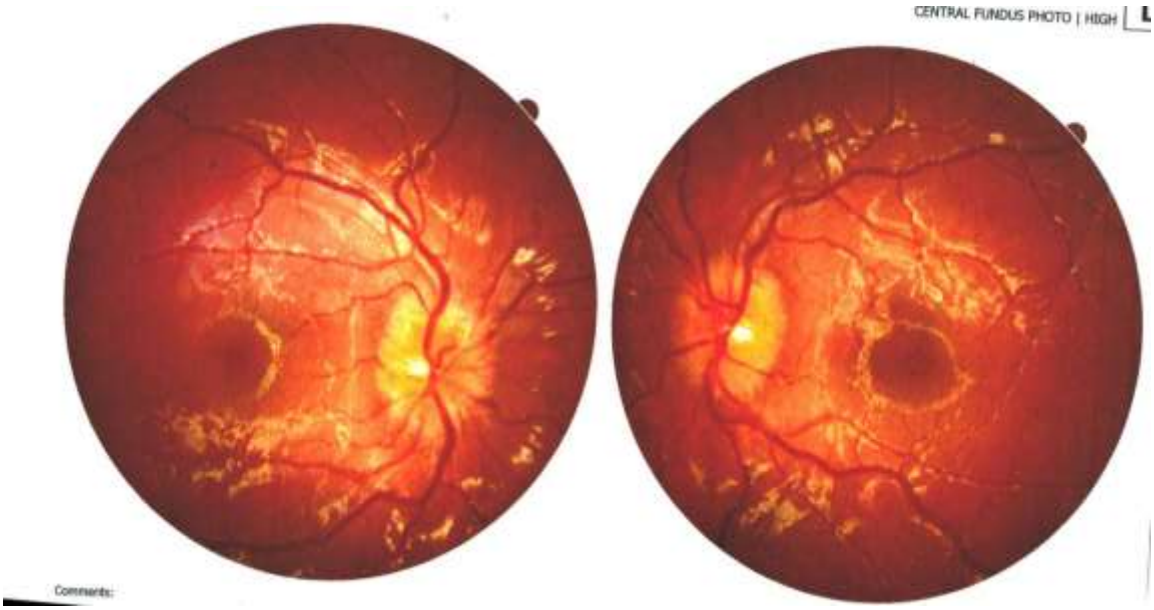
Picture 1. Mr-tractography of the optic nerves.



Picture 2. Brain MRI.

MR tractography of the visual tract on a 3D tractographic map showed before treatment increasing degree of myelinesation changes in the number and direction of optic nerve tracts.

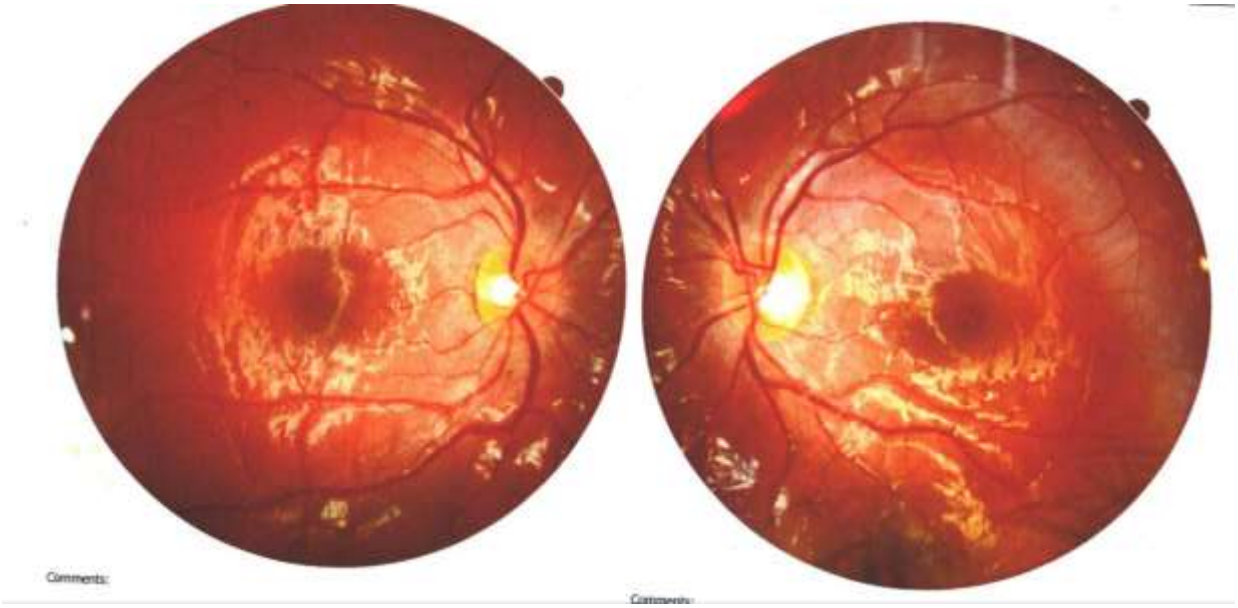
Retinophotography of the fundus dated 03.02.2023 revealed bilateral stasis of the optic nerve discs.



Picture 3. Retinophoto: Congestion of the optic discs on both fundus

In the neurosurgical department, the patient received anti-inflammatory and decongestant treatment, nootropics, B vitamins, and drugs that improve the transmission of nerve impulses.

On February 07 and 10 2023 pneumozonocysternotherapy with endolumbal administration of nootropics was performed. Repeated retinography of the fundus from 14.02.2023 showed no signs of optic nerve congestion. After repeated ophthalmological examination, there was an improvement in visual acuity visus AV=0.2-0.3 and retinal vascular angiospasm on the fundus, as well as a restoration of color perception.



Picture 4. Retinophoto: There is no stagnation of the optic discs in both funduses, there is angiospasm of the retinal vessels

Conclusions:

With the help of pneumozonocysternotherapy with endolumbal nootropics, as well as a course of conservative therapy, we managed to eliminate the stagnation of optic nerve discs with subsequent improvement of visual acuity and restoration of color perception.

It is expedient and promising to conduct MR-tractography of the visual tract to assess the degree of damage to the visual pathways and dynamically monitor the patientoduring treatment.

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