

Clinical case

Optic Neuritis as Manifestation of Local Viral Encephalitis (Clinical Observation)

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Abstract: In the practice of an ophthalmologist and neurologist, the identification of relationship between optic neuritis and inflammation of the brain tissue is accompanied by significant diagnostic difficulties. In this regard, the role of interdisciplinary consultations is valuable, as an ophthalmologist knows the methods of ophthalmological diagnostics, which allow for topical diagnosis of the brain damage level, but for a neurologist, these methods are inaccessible. A clinical case of herpetic optoencephalitis (descending optic neuritis against the background of local encephalitis) in a teenager with a favorable outcome after conservative treatment is considered in the given paper. Conclusion: It is important to remember that during the optoencephalitis formation, its ophthalmic manifestations can remain not only the manifestation of this focal neurological pathology for a long time, but also require the timely appointment of appropriate routes of administration, doses and duration of etiotropic drugs use, therefore, the utmost diagnostic alertness regarding viral encephalitis (opticoencephalitis) is important at the slightest suspicion of a descending origin of the identified eye tissues inflammation.

Keywords: optic neuritis, viral encephalitis, diagnosis, treatment.

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1. Introduction

It is known that the incidence of encephalitis in the world is about 7-9 cases per 100,000 population and about 80% of encephalitis of infectious etiology is viral, among which the herpes simplex virus (HSV) is the most common [1].

There are also quite numerous descriptions in the literature of an increased risk of SARS-CoV-2 coinfection with neurotropic viruses such as Herpes Viridae [2], reactivation of herpes infection in immunocompromised patients after COVID-19, for example, in the form of retrobulbar neuritis, optoencephalitis, meningo-encephalitis. In 45-75% of cases, optic neuritis is accompanied by pathology of the central nervous system of varying severity.

Thus, it is obvious that the relevance of early diagnosis of these ophthalmic and neurological diseases in the current epidemiological situation will only increase.

A clinical case of herpetic optoencephalitis (descending optic neuritis against the background of local encephalitis) in a teenager with a favorable outcome after conservative treatment is considered in the given paper.

2. Purpose

Purpose to draw attention to the difficulties of diagnosing local optoencephalitis.

3. Methods

Methods of standard laboratory (general clinical blood and urine tests; methods of molecular genetic, serological blood tests) and ophthalmological (visometry, manual kinetic perimetry, color vision examination using polychromatic tables, biomicroscopy, ophthalmoscopy, tonometry) diagnostics were used.

4. Description of the Clinical Observation



Patient X (14 years old) was hospitalized in an ophthalmological clinic with a preliminary diagnosis of ‘OU – Optic neuritis. Atrophy of the optic nerve’.

On examination within the framework of a medical consultation, he complained of a progressive deterioration in vision in both eyes (‘blurred bright spot in the center’).

Visus OD=0.02 was not corrected;

Visus OS=0.01 was not corrected.

By the decision of the medical council, the diagnosis was made: ‘OU – Subacute descending optic neuritis with retinal arteritis (protracted course). Complete central, homonymous right-sided (lower quadrant) hemichromatopsia. Convergence paresis. Exacerbation of chronic viral conjunctivitis of herpetic etiology (Fig.1).



Figure 1. Medium-sized herpetic vesicles (indicated by an arrow) in the region of the lower transitional fold of the conjunctiva, identified by biomicroscopy of patient X.

Suspicion of reactivation of a herpes infection with damage to the central fibers of the optic pathway (Graziolo’s bundle, occipital cortex)’ (Fig.2).

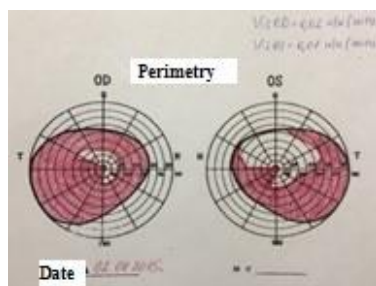


Figure 2. The result of kinetic manual perimetry of patient X using a red object (at the time of diagnosis).

The treatment included the systemic administration of antiviral, anti-inflammatory, decongestant drugs, nootropics, antioxidants and vitamins recommended by the council, against which visual acuity began to increase already on the third day. Improved vision made it possible to identify a new, previously undiagnosed and extremely important neurological symptom – dyslexia (according to the patient, reading the text was extremely difficult: ‘I read like a first grader, spell it; it is difficult to combine letters into words’). At the same time, there was a complete regression of pathological changes in the visual field (Fig.3).

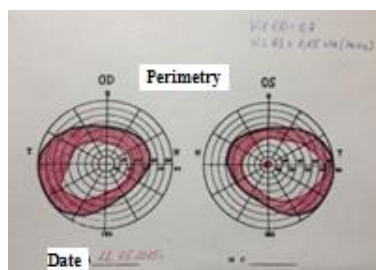


Figure 3. The result of kinetic manual perimetry of patient X using a red object (after 6 weeks of treatment).

At discharge, the visual acuity of patient X was:



Visus OD=1.0;

Visus OS=1.0.

All functions of the visual analyzer of this patient X, described in the paper, were fully restored. However, their complete recovery required a long-term multi-stage therapy using not only local, but also systemic routes of administration of antiviral, anti-inflammatory, decongestant, vitamin and antioxidant drugs.

5. Discussion

It is known that among all the etiological factors of optic neuritis, HSV dominates [3]. In this regard, an ophthalmologist should remember that the central nervous system (CNS) lesion area is primarily determined by this virus spreading pathways (hematogenous, lymphogenous, perineural): with hematogenous and lymphogenous pathways of damage, which is more common in young children and newborns, the development of diffuse lesions of brain structures is typical (with damage to the vascular endothelium, the development of thrombosis, ischemic disorders and hemorrhages in the central nervous system – the formation of a common variant of CNS damage occurs); with perineural pathway, more typical for adults and older children, the virus spreads along the axons of the cranial and spinal nerves (with damage to the CNS cells located in close proximity to the infected cells – a limited variant of CNS damage is formed).

6. Conclusions

The described clinical case demonstrates the manifestations variety of local encephalitis, which can occur not only in the presence, but also in the absence of cerebral, meningeal, general infectious symptoms. Thus, ophthalmic manifestations can remain the only manifestation of focal brain inflammation for a long time, so an ophthalmologist should be aware of the likelihood of a descending origin of the observed inflammatory changes in the eye tissues.

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