A case of successful laser coagulation in pediatric ophthalmology: a patient with the optic disc pit complicated by serous neuroepithelial detachment

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Introduction. Optic disk pit has been considered as coloboma located, as a rule, near temporal part of the optic disc. Central serous retinal detachment develops in 50 % of patients. The purpose of the present study was to show practically the possibility to use laser coagulation as an entire method for treatment of optic disc pit complicated by serous neuroepithelial detachment in children.

Material and Methods. A patient, 4 y/o, with Jensen’s retinochoroiditis juxtапapillaris, optic disc pit and serous neuroepithelial detachment was followed up. The patient was performed 532 nm laser, optical coherent tomography, visiometry, biomicroscopy, ophthalmoscopy and immunology research.

Results. Visual acuity increased from 0.08 to 0.5 after treatment. Neuroepithelial attachment was achieved with residual detachment up to 40 µm.

Conclusions. This case demonstrates that laser coagulation of the retina can be used as a separate and minimally invasive method of treatment for patients with optic disk pits complicated by serous neuroepithelial detachment in pediatric ophthalmology.

Treatment The initial stage is observation every three months with relation to spontaneous resolution of neuroepithelial detachment occurred in 25 % of cases. If dynamics is absent, afterwards, laser coagulation of the retina can be performed if vision acuity reduces progressively; at that, coagulators are applied along the temporal margin of the disc. The efficacy of such treatment is 23-35 % [3]. If laser coagulation is not effective, gas tamponade vitrectomy and endolaser coagulation are performed. The operation is effective in 50-70 % of cases [3, 5].

The purpose of the present study is to show practically the possibility to use laser coagulation as an entire method for treatment of optic disc pit complicated by serous neuroepithelial detachment in children.

In november 2013, a 4 year old patient P. was taken by her parents to the district ophthalmologists with complaints of yellow-green discharge, both eye redness for 3 days. On ocular examination, the patient had vis OD=0.7; OS=0.5. The patient was diagnosed acute conjunctivitis of both eyes and prescribed antibiotics instillation with her 4-day follow-up visit. On ocular reexamination, the visual acuities were OD = 0.7; OS = 0.2. Cycloplegia examination revealed the absence of OS macular reflex (grayish color in the macular area). Congenital abnormality of eye fundus in both eyes was diagnosed. The patient was referred to consultation in Kiev children clinic hospital.

There, on ocular examination, the patient was diagnosed optic disc pit (ODP) in both eyes. On the eye fundus: OD, the optic disc was pale-pink with sharp margins and cyst formation at 11 o’clock; OS, whitish sites of damage were noted in the macular area.

Optical coherent tomography was performed and the treatment prescribed was 1.0 ml of betamethasone parabulbarly OS No3, 1 injection per day. After corticosteroids treatment, insignificant decrease in height of neuroepithelial detachment was noted;
however, uncorrected visual acuity was OS=0.008-0.1. The patient was referred to SI “Filatov institute of Eye Diseases and Tissue Therapy of the NAMS of Ukraine” in Odessa.

Condition on admission was vis OD=1.0; OS=0.2=sph-1.0dcyl-0.5dax30°=0.3. In both eyes, the conjunctiva was pale-pink, smooth, and transparent; the cornea was transparent, brilliant and mirror-like. The content of the anterior chamber was transparent; the pupil was round and 2-4 mm in diameter, mobile; the lens was transparent. The optic disc in both eyes was pale-pink with sharp margins and had optic disc pits and peripapillary chorioretinal scarring with pigmentation. Vessels were of a normal caliber. The patient had parquet fundus of the eye. Macular reflex was clear in the right eye and pathological in the left eye; neuroepithelial detachment was revealed at the macula area. Figure 1 of left eye fundus demonstrates optic disk pit with sharp margins at the temporal part between 5 and 6 o’clock. OCT revealed neuroepithelial detachment with a height of 625 mkm (Fig.1).

The patient was diagnosed Jensen’s retinochoroiditis juxtapapillaris in remission with chorioretinal scarring, optic disc pits in both eyes, and serous neuroepithelial detachment in the left eye. The patient was referred to single-discipline specialists to rule out tuberculosis.

The results of the investigation are given below.

**Immunology**

QuantiFERON – TBTtest (for diagnosing latent Mycobacterium tuberculosis infection) – 0.20 IU/ml - negative

Ig G Mycobacteriumtuberculosis (enzyme immunooassay (EIA), blood serum) – 2.6 l Eg/ml – negative

EIA (autoimmune disease) - antibodies to double-stranded DNA / Ab – 18.59 l Eg/ml – negative

Circulating immune complex (CIC) (blood serum) C1q / CIC C1q – 1.75 µm/ml - negative

(CIC) (blood serum) C3d / CICC3d- 0.80 µm/ml - negative

Ig E (blood serum) 23.20 IU/ml - negative

**Bio/immunochemistry**

Toxoplasma gondii, HSV 1,2, PCRHCV – negative

**Instrumental tests**

Multispiral computed tomography of lungs and mediastinum revealed no signs of focal infiltration. очаговой инфилтрации объективных изменений

Ultrasound investigation (US) of abdominal cavity organs revealed gallbladder volvulus at gallbladder neck. US for thyroid gland revealed no pathological changes.

**Treatment**

On August 12, 2015, restrictive laser coagulation was performed in the left eye (laser, 532 nm; 39 laser exposures; power, 110 mW; exposure dose, 150 mc; diameter, 200 µm). Anti-inflammatory and antioxidant treatment was performed postoperatively. Visual acuity on discharge was OD=1.0; OS=0.2=sph -1.0 D = 0.3.

On reexamination on December, 12, 2015, uncorrected visual acuity was OD=1.0; OS=0.3. The right eye was stable and the left eye had no inflammation.

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*Figure 1. 1a: image of left eye fundus, an arrow points optic disc pit; 1b: OCT of the left eye (on admission)*

*Figure. OCT of the left eye (1 month after treatment)*
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signs, serous neuroepithelial detachment reduced. To rule out unilateral retinitis pigmentosa, dark adaptation test (OD = 2.85 with a filter; OS = 1.4 without a filter) was performed and followed by grating-like laser coagulation of the retina in the left eye (laser, 532 nm; 87 laser exposures; power, 80 mW; exposure dose, 140 mc; duration скважности — 200 мс; diameter, 200 µm). Anti-inflammatory and antioxidant treatment was performed postoperatively.

On her 1 month follow-up visit, the patient had vis OD=1.0; OS=0.5. OCT revealed residual serous neuroepithelial detachment at macular area (Fig. 2). On reexaminations within 2 months, visual acuity was 0.5 in the left eye.

Discussion

Hsu C. L et al has reported on the successful laser surgery in an aged patient with congenital optic disc pits in both eyes [5, 7, 11]. Similar outcomes have been achieved by Cywiński A. Et al in 9 patients performing combined treatment as central posterior vitrectomy with removal of posterior hyaloid membrane, laser coagulation and gas tamponade of the vitreous cavity. [4, 8, 10].

Conclusion

Restrictive or grating-like laser coagulation of the retina in pediatric ophthalmology can be used as a separate and minimally invasive method of treatment for patients with optic disk pits complicated by serous neuroepithelial detachment.

References