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Регрессия гибридной формы ретинопатии недоношенных после лазерной терапии

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Regression of Hybrid ROP after laser treatment

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РЕФЕРАТ

В нашем госпитале после 19 лет безуспешных попыток и 17 неудачных беременностей на 28 неделе путем кесарева сечения родился недоношенный ребенок мужского пола, вес при рождении 1150 г. Мать ребенка страдала от диабета и заболеваний щитовидной железы.

У ребенка был диагностирован респираторный дистресс-синдром, и он получал непрерывное лечение гипербарической оксигенацией (CPAP) более 30 дней.

Ребенок перенес операцию по лечению некротического энтероколита и перфорации кишечника под общим наркозом.

Комплексное обследование глаз выявило гибридную форму ретинопатии недоношенных, которая была успешно вылечена с помощью лазерной фотокоагуляции в качестве монотерапии.

Ключевые слова: *ретинопатия недоношенных, гибридная форма РПН, лазерная фотокоагуляция, недоношенный ребенок.* ■

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ABSTRACT

A premature male infant was born at 28 weeks' gestation with a birth weight of 1,150 g after 19 years and 17 unsuccessful pregnancies with cesarean section in our hospital.

The mother of the child suffered from diabetes and thyroid disease. Baby was diagnosed with respiratory distress syndrome and received continuous positive airway pressure (CPAP) treatment more than 30 days.

The child underwent surgery for the treatment of necrotizing enterocolitis and intestinal perforation under general an esthesia.

A comprehensive eye examination revealed hybrid form of retinopathy of prematurity that was successfully treated with laser photocoagulation as monotherapy.

Key words: *retinopathy of prematurity, hybrid ROP, laser photocoagulation, preterm baby.* ■

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INTRODUCTION

Aggressive posterior retinopathy of prematurity (AP-ROP) is a severe and rare form of ROP which is characterized by fast progression to an advanced stage with flat neovascularization in zone 1 or zone 2 [1].

Some eyes with ROP may have abnormal neovascularisation resembling both APROP and classical staged ROP. It is difficult to characterise these eyes according to the international classification of ROP [1].

The presence of plus disease should serve as guide to treatment [2].

Hybrid pattern of retinopathy of prematurity (ROP) demonstrating both ridge tissue (simulating staged ROP) and flat neovascularisation (simulating aggressive posterior retinopathy of prematurity (APROP) in the same eye [3, 4].

The Early Treatment for Retinopathy of Prematurity (ETROP) study 1 demonstrated the effectiveness of laser treatment for the control of retinopathy of prematurity (ROP) [2].

Case report. A male infant was born by case are an section at 28 weeks of gestation with a birth weight of 1150 g. His Apgar score was 1 at 1 minute and 6 at 5 minutes.

The infant had been admitted to a neonatal intensive care unit (NICU) due to multiple risk factors.

Respiratory support with mechanical ventilation was recorded, and sur-

factant was inserted with the endotraxeal tube, indicating severe respiratory failure after birth.

From the second day of life, indicators of infectious markers were above normal.

He was diagnosed early neonatal sepsis, intrauterine pneumonia, severe respiratory distress syndrome, necrotizing enterocolitis (NEC), pulmonary interstitial emphysema, intestinal perforation.

The child underwent surgery for the treatment of NEC and intestinal perforation under general anesthesia.

The first ophthalmic examination was performed at a corrected gestational age of 31 weeks on June18, 2019. At the first screening examination, we observed only mild plus in zone 1 and the same time demarcation line stage 2 in posterior zone 2 in both eyes. The posterior segment was evaluated using the binocular indirect ophthalmoscope and documenting fund us changes in ROP using mobile phone.

The patient had bilateral similar APROP changes in zone 1 with plus disease [2]. The presence of a ridge with new vessels elsewhere (NVE) that had bled in the both eyes qualified this as «hybrid» zone 1 disease *(Fig. 1, 2)* [3].

At a corrected gestational age of 34 weeks, ROP zone 1-2, stage 2-3 was found in both eyes.

Because the ROP had gradually progressed to stage 3, and tortuosity and vasodilation in zone 1 progressed is similar APROP.

We performed laser photocoagulation at a corrected gestational age of 35 weeks. The patient underwent LP the same day.

Parents were exhaustively counseled and consent obtained for LP. Informed consent was obtained from the family by a written letter, which was performed in accordance with the tenets of the Declaration of Helsinki after sufficient explanation and discussion.

Laser photocoagulation was used for the both eyes with VITRA 2 Monospot 532 nm green laser Retinal Photocoagulation from Quantel Medical and Laser indirect ophthalmoscope (Keeler Vantage Plus) also used HEINE A.R. 20 D Aspheric Ophthalmoscopy Lens 50 mm dia.

The conditions of the photocoagulation are: irradiation time, 0.2 seconds; laser power, 120-200 mW; spot size, 200 μm; and a distance of 1–1.5 spots apart. The number of spots is about 3,600-4500 for each eye with these photocoagulation conditions.

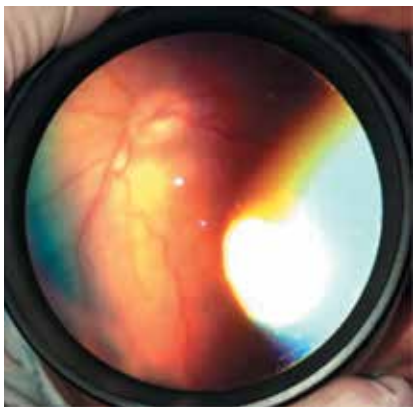

Fig. 1. Moderate plus disease

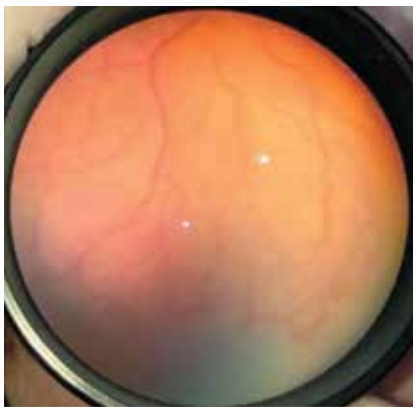

Fig. 2. 13/07/2019. Increased dilatation and tortuosity. Intensive shunt vessels

Before laser treatment the pupils were dilated with 1 drop of cyclopentolate 0.5%, tropicamide 0.4%, and phenylephrine hydrochloride 2.5% instilled into both eyes twice, 15 minutes apart. Laser treatment was done under topical anesthesia (proparacaine hydrochloride 0.5%) after separating the lids with a speculum.

Scleral depression was used for visualization of the periphery using a 20-diopter lens. Laser parameters were titrated to achieve pale white burns in a confluent pattern (less than half burn width apart) to the avascular retina right up to the oraserrate *(Fig. 3)*.

Laser surgery was performed in the intensive care unit under the direct supervision of a neonatologist.

Post treatment all eyes received betamethasone 0.1% and tobramycin 0.3% eye drops, four times a day for 1 weeks.

Fundus photos showing confluent grayish white laser burns going up to the ridge. Laser burns going up to the ridge.

No ocular complications such as corneal edema, hyphema, iris burns or vitreous hemorrhage were noted during the procedure in any of the eyes. Conjunctival chemosis causing difficulty in laser application was seen in both eyes. Systemic complications during the procedure included repeated desaturation/apnea, and vomiting.

Two weeks after laser photocoagulation, flbrovascular proliferation began to regress with scarring of the laser photocoagulation spots *(Fig. 4)*.

Fig. 3. Visualization of the periphery

Reduction of dilatation and sinuosity of the retinal vessels began to be observed only 7 weeks after laser treatment.

DISCUSSION

Treatable ROP was classified as either type 1 ROP, hybrid ROP [3]. Type 1 ROP was defined as per the ETROP study and included one of the following: (1) Zone I, any stage ROP with plus disease (2) Zone I, stage 3 ROP with or without plus disease (3) Zone II, stage 2 or 3 ROP with plus disease [1, 2]. APROP was defined as per the international classification of retinopathy of prematurity (ICROP) revisited classification as plus disease, flat neovascularization in zone 1 or posterior zone 2, intra-retinal shunting, hemorrhages and no clear demarcation between vascular and avascular retina. Hybrid ROP was classified as per the study by Sanghi et al. [3] in eyes with presence of ridge tissue (characteristic of Type I ROP) along with flat neovascularіza-

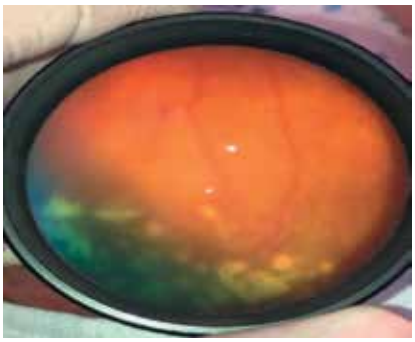

Fig. 4. 1 month after laser treatment – 14/08/2019

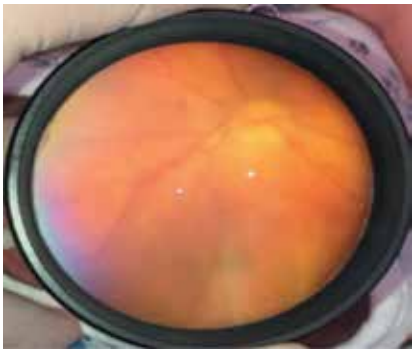

Fig. 5. Reduction of dilatation and sinuosity of the retinal vessels

tion (characteristic of APROP) or matt-like proliferation in vascularized retina along with features of APROP in the same eye [4].

Various types of lasers are used in the treatment of ROP, specifically, 532 nm frequency-doubled Nd-YAG green laser [8], PASCAL pattern scan laser [9], diod laser [10].

Ideally it would be wonderful to have general anesthesia for all ROP treatments [5, 9]. However difficulties with such a protocol include non-availability of expert neonatal anesthesiologists, difficulty in administering anesthesia frequently, and anesthesia-related morbidity and mortality in view of frequent problems such as anemia, sepsis, pneumonia, chronic lung insufficiency, hyperbilirubinemia, and so on. Moreover, our experience indicates that topical anesthesia suffices and allows the laser to be administered without any difficulty even in AP-ROP eyes.

CONCLUSION

We reported a case of hybrid-ROP that was successfully treated with laser photocoagulation. Unfortunately, we could not obtain longer-term outcomes for this patient, but we suppose that laser for ROP is beneflcial because the long-term prognosis of laser photocoagulation in ROP is generally pretty fair if the neovascularization regresses. Despite the short follow-up period, we conflrmed the regression of neovascularization after laser photocoagulation, so that laser photocoagulation could be thought of as one treatment option for combined form ROP.

A larger randomized clinical study is required to verify the extent, and the long-term safety and efflcacy of this treatment in hybrid ROP.

REFERENCES

1. International Committee for the Classification of Retinopathy of Prematurity. The International Classification of Retinopathy of Prematurity revisited. Arch Ophthalmol. 2005;123:991-9.

2. Early Treatment for Retinopathy of Prematurity Cooperative Group. Revised indications for the treatment of retinopathy of prematurity: results of the early treatment for retinopathy of prematurity randomized trial. Arch Ophthalmol. 2003;121: 1684-94.

3. Sanghi G, Dogra MR, Dogra M, Katoch D, Gupta A. A hybrid form of retinopathy of prematurity. Br J Ophthalmol. 2012;96:519-22.

4. Agarwal K. , Jalali S. Classification of retinopathy of prematurity: from then till now. Community Eye Health. 2018;31(101): 4-7.

5. Jalali S, Azad R, Trehan HS, Dogra MR, Gopal L, Narendran V. Technical aspects of laser treatment for acute retinopathy of prematurity under topical anesthesia. Indian J Ophthalmol. 2010;58:509-15.

6. Jiang J., Strauss R., Luo X., Nie C., Wang Y., Zhang J., Zhang Z. Anaesthesia modalities during laser photocoagulation for retinopathy of prematurity: a retrospective, longitudinal study. J Ophthalmol. 2015. 18:584.

7. Lira RPC, Calheiros ABM, Barbosa MM, Oliveira CV, Viana SLS, et al. Efficacy and safety of green laser photocoagulation for threshold retinopathy of prematurity Arq Bras Oftalmol. 2008;71(1):49-51

8. Singh SR, Katoch D, Handa S, Kaur S, Moharana B, Dogra M, Dogra MR. Safety and efficacy of 532 nm frequency-doubled Nd-YAG green laser photocoagulation for treatment of retinopathy of prematurity. Indian Journal of Ophthalmology. 2019; 67(6): 860-865.

9. Ota S., Nozaki M., Hirahara S., Hattori T., Yoshida M., Ogura Y. A case of retinopathy of prematurity treated by pattern scan laser photocoagulation. Clin. Ophthalmol. 2014; 8: 1409–1412.

10. Nicoară SD. Indirect Diode Laser in the Treatment of Retinopathy of Prematurity Submitted: April 4th 2018 Reviewed: June 28th 2018.Published: November 5th 2018DOI: 10.5772/intechopen.79828

11. Jalali S, Kesarwani S, Hussain A. Outcomes of a protocol-based management for zone 1 retinopathy of prematurity: the Indian Twin Cities ROP Screening Program report number 2. Am J Ophthalmol. 2011; 151: 719–24.

12. Chhabra K, Kaur P, Singh K, Aggarwal A, Chalia D. Outcome of solid-state 532 nm green laser in high-risk retinopathy of prematurity at a tertiary care centre in India. Int Ophthalmol. 2018;38:287-91.