UDC 617.735-007.281

PROLIFERATIVE DIABETIC RETINOPATHY COMPLICATED CATARACT IN CHILDREN: EVALUATION OF TREATMENT EFFECTIVENESS

Odilova G.R.
Bukhara State Medical Institute

ABSTRACT

Diabetic retinopathy (DR) in children is one of the most severe complications of diabetes mellitus and takes the first place among the causes of blindness in people of working age. The aim of the study was to study the effectiveness of surgical treatment of proliferative diabetic retinopathy (PDR) in children in combination with cataracts. Under observation were 43 sick children with type 2 diabetes mellitus with traction retinal detachment and cataract, which were divided into two groups depending on the tactics of treatment. Preliminary results of the study showed equal effectiveness of combined surgical treatment of PDR and cataract in sick children of the first group and delayed removal of complicated cataract after endovitreal treatment of PDR in sick children of the second group. The development of neovascularization of the iris in the late postoperative period was observed in both groups: in 8 sick children of the first and 7 sick children of the second group, which indicates the need for further research into the progression of diabetic retinopathy (DR), to determine the relationship between the development of complications and the timing of cataract removal.

Keywords: *vitrectomy, diabetic retinopathy, cataract, angiography, neovascularization.*

АННОТАЦИЯ

Диабетическая ретинопатия (ДР) у детей является одним из наиболее тяжелых осложнений сахарного диабета и занимает первое место среди причин слепоты у лиц трудоспособного возраста. Цель исследования — изучить эффективность хирургического лечения пролиферативной диабетической ретинопатии (ПДР) у детей в сочетании с катарактой. Под наблюдением находились 43 больных детей с сахарным диабетом 2 типа с тракционной отслойкой сетчатки и катарактой, которые были разделены на две группы в зависимости от тактики лечения. Предварительные результаты исследования показали одинаковую эффективность комбинированного хирургического лечения ПДР и катаракты у больных детей первой группы и

отсроченного удаления осложненной катаракты после эндовитреального лечения ПДР у больных детей второй группы. Развитие неоваскуляризации радужки в отдаленном послеоперационном периоде наблюдалось в обеих группах: у 8 больных детей первой и 7 больных детей второй группы, что свидетельствует о необходимости дальнейшего изучения течения диабетической ретинопатии (ДР). , определить взаимосвязь между развитием осложнений и сроками удаления катаракты.

Ключевые слова: *витрэктомия, диабетическая ретинопатия, катаракта, ангиография, неоваскуляризация.*

INTRODUCTION

According to the WHO, by 2014 the number of people suffering from diabetes mellitus (DM) among children has increased to 422 million people. At the same time, diabetes mellitus, namely the micro- and macrovascular changes that develop with it, are considered one of the main causes of the development of blindness, renal failure, heart attacks and strokes [3,11].

Diabetic retinopathy (DR) in children is one of the most severe complications of diabetes mellitus and ranks first among the causes of blindness in people of this age [2]. In children with diabetes experience of more than 10 years, DR is diagnosed in 100% of cases (10). It has been established that the main links in the pathogenesis of the development of DR are microstructural changes and disorders of redox processes in the retina [4,6,7, 9], which leads to impaired microcirculation and, as a result, to tissue hypoxia.

Traditionally, it is customary to use the classification of DR in children described by E. Kohner et al. in 1985, in which it was proposed to distinguish three stages in the development of retinopathy: non-proliferative, pre-proliferative and proliferative. On the basis of this classification, many authors have proposed various options for structuring AR. In our opinion, the most successful is the "surgical" classification proposed by R. Kroll, in which changes in the fundus of the eye in proliferative diabetic retinopathy (PDR) in children are described from the point of view of the development of proliferative vitreoretinopathy.

According to this classification, stage A corresponds to vascular changes and proliferative changes around the optic disc (OD) and in the posterior layers of the vitreous body (ST); stage B is characterized by traction retinal detachment due to reduction of the posterior cortical layers of the ST (it has two substages: Bt - the spread of retinal detachment from the nasal part of the optic disc and Bt - with the spread of retinal detachment from the temporal side without involving the macular

zone); stage C is characterized by macular detachment and, according to the number of retinal quadrants involved in the process, substages are distinguished from C1 to C4 [5, 8].

Reduced vision in sick children with diabetes mellitus, in addition to progressive DR, is due to the formation of lens opacities. In the older age group of patients, two types of cataracts can be distinguished: true diabetic, which developed as a result of unsatisfactory compensation of carbohydrate metabolism, and senile, formed against the background of diabetes mellitus [1,12].

The aim of the study was to evaluate the effectiveness of endovitreal surgical treatment of proliferative diabetic retinopathy in children with silicone tamponade in combination with cataract surgery.

MATERIAL AND METHODS

Under supervision there were 43 sick children with PDR complicated by cataract, aged from 12 to 18 years. All sick children had type 2 diabetes in the compensation stage. The experience of SD varied from 3 to 10 years. All patients underwent a set of standard ophthalmological examinations, including ultrasonic B-scanning. Visual acuity before surgery was assessed in the range from "incorrect light projection" to 0.3. Intraocular pressure (IOP) was compensated in all cases and amounted to 16±7 mm Hg. Art. All sick children were diagnosed with traction retinal detachment and complicated cataract. The degree of PDR progression was determined by the results of indirect ophthalmoscopy, B-scan and according to the classification proposed by R. Kroll. The degree of progression corresponded to stages B and C. The degree of lens opacity was classified according to L. Buratto, cases with cataracts of 2-3 degrees were selected for the study. Sick children were divided into two groups depending on the tactics of surgical treatment. The first group included 21 children who underwent simultaneous cataract removal with implantation of an intraocular lens (IOL) and endovitreal intervention for PDR with silicone oil tamponade at the first stage. After 3.5 ± 0.5 months, the second stage of treatment was carried out, which consisted in the removal of silicone oil with tamponade of the vitreal cavity with air.The second group included 22 sick children, in whom the first stage of treatment included endovitreal intervention, which ended with silicone tamponade; IOL with the replacement of silicone oil with air. The clouded lens was removed by ultrasonic phacoemulsification, soft hydrophilic IOLs were implanted. Endovitreal intervention was a three-port (25-27G) vitrectomy with maximum preservation of the anterior hyaloid membrane and anterior cortical layers of the vitreous body with the removal of epiretinal membranes and ligaments, as well as

endolaser coagulation of the retina, tamponade of the vitreal cavity with silicone oil. In all cases, silicone oil with a viscosity of 5700 cSt was used. An additional intraoperative diagnostic method for patients in both groups before surgery at each stage of treatment was fluorescein angiography of the iris. The presence of neovascularization and its prevalence were assessed. For this, a contrast agent was injected intravenously on the operating table. The process of visualization of the vascular network was observed through a microscope with a filter.

RESULTS AND DISCUSSION

In the early postoperative period, 10 sick children of the first group and 9 sick children of the second group were diagnosed with moderate ophthalmohypertension compensated by antihypertensive drugs. In one case, corneal edema and descemetitis occurred in the first group and were stopped within three days with topical application of glucocorticosteroids. A month after the first stage of treatment in both groups, there was a significant increase in visual functions. The maximum corrected visual acuity ranged from 0.05 to 0.5. By the time of the second stage of treatment, 16 patients of the second group had a persistent decrease in visual functions to 0.03-0.05 and pronounced clouding of the lens due to the effect of silicone oil on the lens tissue.On the 7-10th day after the second stage of surgical treatment in sick children of both groups, complete resorption of air was noted.3 months after the completion of surgical treatment, stabilization of visual functions was observed in all cases, the maximum corrected visual acuity was determined in the range from 0.05 to 0.3. The level of IOP in all sick children was within the normal range and amounted to 17±5 mm Hg. Art. At long-term follow-up (8 months after the second stage of treatment), biomicroscopy revealed signs of neovascularization of the iris in 8 patients of the first group: eversion of the pigmented edge of the pupil with growth of the capillary vascular network along the circumference with the transition of vessels to the anterior surface of the iris . Similar signs of neovascularization in the second group were observed in 7 patients.

CONCLUSION

Preliminary results of the study showed equal effectiveness of combined surgical treatment of PDR and cataract (first group) and delayed removal of complicated cataract after endovitreal treatment of PDR (second group). In sick children of both groups, the development of neovascularization of the iris was noted in the late postoperative period, which indicates the need for further research into the progression of DR and the mechanisms for the development of complications in the

postoperative period, as well as the development of an optimal algorithm and determining the timing of safe and effective surgical treatment of PDR and cataracts.

REFERENCES

1. Балашевич, Л.И. Катаракта у больных диабетом. Классификация и частота [Электронный ресурс] // Российская офтальмология онлайн. 2013; 10. URL: http://www.eyepress.ru/articlc.aspx71 1496 (дата обращения: 20.01.2013).-С.13-16. (на Руси).
2. Diabetic retinopathy: problems and solutions /T. Botabekova [et al] // Russian ophthalmology of children. 2015; (4).-P. (in Russ.).
3. Global report on diabetes. [Electronic resource] / WHO. 2016. URL: http://www.who.inl/diabetes/global-rcport/en/ (circulation date January, 6, 2018).-P.20-25. (in Russ).
4. Дедов, И. Сахами диабет: остриц и хронические осложнения / И. И. Дедов, М. В. Шестакова - М.: Мцдицмскоц неформальное агентство. 2011.-С.480-486.
5. Казайкин, В.Н. Диабетическая ретинопатия: клиника, диагностика и заболевания / В.Н. Казайкин. - М ООО «НПЦ Макинформ». 2016,-П. 9-12.
6. Studies of rat and human retinas predict a role for the polyol pathway in human diabetic retinopathy / Z. Daghcr [et al] // Diabetes. 2004; 53(9).-P. 2404-2411. (in English).
7. Pericytes and the pathogenesis of diabetic retinopathy / H.P.Hammes [et al.] // Diabetes. 2002, 51(10).-P. 3107-12. (in English).
8. Kroll, P. Pathogenesis and Classification of Proliferative Diabetic Vitreoretinopathy / P. Kroll, E.B. Rodrigues, S Hoerlc // Ophthalmologica. 2007; (221).-P. 78-94. (in English),
9. Odilova G.R., Huddiyeva H.. Periferik retinal ko`z yirtilishi diagnostikasida optik kogerent tomografiyasi//in Volume1.Issue 8 of Oriental Renaissance: Innovative.educational.natural and social sciences in September 2021.-P.21-23.
10. Odilova G.R., Huddiyeva H. Optical coherent tomography in the diagnosis of peripheral retinal tears// Vol.2 No.5 (2021): CAJMNS https//doi.ord/10.47494/cajmns.v2i5.287 .September 2021.-P.45-47.
11. Narzullaev N.U.Assessment of the Diagnosis and Treatment of Allergic Rhinitis in School-Age Children // Annals of the Romanian Society for Cell Biology 2021.-P.6193-6197.
12. Narzullaev N.U. Clinical and immunological study of the effect of different types of therapy on the course of allergic rhinitis in children with hymenolepiasis // Annals of the Romanian Society for Cell Biology 2021.-P.1900-1908.