**Ludmila V. Kogoleva, Elena N. Demchenko**

Helmholtz Moscow Research Institute of Eye Diseases, Moscow, Russian Federation

# Clinical Manifestations and Outcomes of Retinal Hemorrhages in Infants: A Case Series

**Corresponding author:**
*Ludmila V. Kogoleva*, MD, PhD, Senior Researcher of the Department of Eye Pathology in Children of the Helmholtz MRI of ED
**Address:** 14/19, Sadovaya-Chernogryazskaya Str., Moscow 105062, **phone**: +7 (495) 625-92-33, **e-mail**: Kogoleva@mail.ru
**Article received:** Nov 29, 2017; **submitted to publication**: Apr 26, 2018

***Background.*** *Retinal hemorrhages in infants are frequent pathologies, but their causes, clinical forms and functional outcomes are poorly studied. The study of hemorrhage localization in the eye structure, time frames of their resolution, and the long-term effects that may affect the development of vision is of particular interest.* ***Objective.*** *Our aim was to analyze clinical forms, time frames of resolution and long-term clinical and functional outcomes of retinal hemorrhages in infants.* ***Methods.*** *All children with retinal hemorrhages, who applied to a premature baby room in the MRI of ED n.a. Helmholtz at the age from 3 weeks to 3 months for 5 years (2011–2015), were examined using indirect ophthalmoscopy. In case of extensive lesions, the process dynamics was controlled by a pediatric digital retinal imaging system. Long-term clinical and functional outcomes of retinal hemorrhages were studied using ultrasound examination and spectral optical coherence tomography.* ***Results.*** *Fundus hemorrhages were revealed in 108 (5.9%) of 1,825 infants on 142 eyes (34 children had bilateral hemorrhages). Hemorrhages were more frequent in children delivered vaginally (79 children, 73.2%), were unilateral (74 children, 63.5%), pre-retinal (108 eyes, 76.1%), of central localization (119 eyes, 83.8%). The time frames of hemorrhage resolution in 53 children (49.1%) were more than one month. Long-term outcomes of retinal hemorrhages were studied in 22 children (33 eyes) at the age of 2–5 years. Residual changes in the structure of the neuroepithelium and vitreoretinal interface with a decrement in visual acuity were noted in 7 children (9 eyes).* ***Conclusion.*** *Retinal hemorrhages of newborns are characterized by clinical polymorphism, different time frames of resolution and outcomes, which requires a case follow-up.*
***Key words****: retinal hemorrhages, newborns, partial hemophthalmus, epiretinal fibrosis, retinal cyst.*
(***For citation***: Kogoleva Ludmila V., Demchenko Elena N. Clinical Manifestations and Outcomes of Retinal Hemorrhages in Infants: A Case Series. *Voprosy sovremennoi pediatrii — Current Pediatrics.* 2018; 17 (2): 133–137. doi: 10.15690/vsp.v17i2.1879)

## Results

**Fig. 1.** Hemorrhagic retinal cyst.

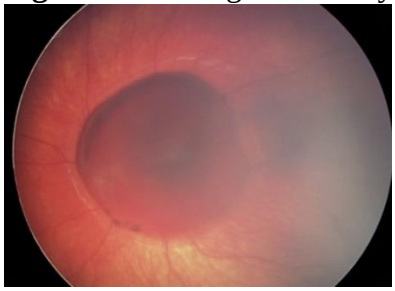
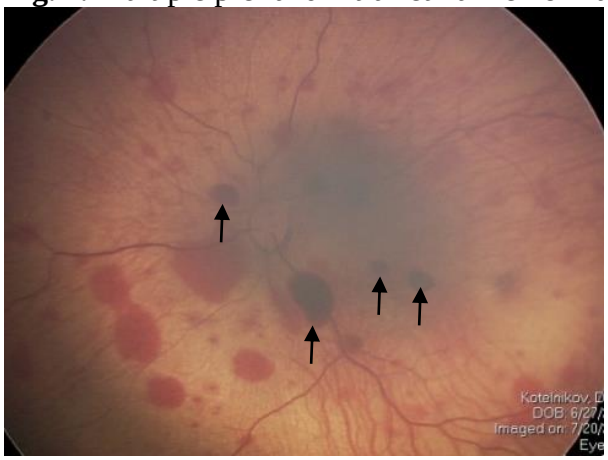


**Fig. 2.** Multiple pre- and intra-retinal hemorrhages



*Note.* The arrows indicate pre-retinal hemorrhages.

## Limitations of the Study

Our study was not a screening one. A group of children with hemorrhages was formed from the number of patients who applied to the institute at different ages, which could affect the detection frequency of clinical forms of hemorrhages. A group of children with long-term outcomes was also formed by appealability, and the incidence of initial forms of hemorrhages in it was different from that of the general group. For this reason, the detection frequency of refractive errors and disorders in the structure of the vitreous humor and vitreoretinal interface in this group may not be applicable to the group as a whole.

We carried out the photorecording of fundus changes with a retinal camera only in complicated and controversial cases, and not in all patients, as some researchers usually do in order to exclude the discrepancy of the existing pathology [2]. However, all of our data obtained with a head binocular ophthalmoscope was verified by another investigator. Indirect binocular ophthalmoscopy is an alternative diagnostic technique used to diagnose fundus changes along with a retinal camera examination [16–18]. In addition, it must be considered that photorecording with a retinal camera is a contact technique and more traumatic for a little child, requiring anesthesia care in some cases.

**Financing Source**

Not specified.

**Conflict of Interests**

Not declared.