Development of ocular hypertension in the eyes with proliferative diabetic retinopathy after vitreoretinal interference

Abstract: The factors of risk of occurrence of ocular hypertension in the eyes with proliferative diabetic retinopathy after vitreo-retinal surgical interference were studied.

The factors of risk of the increase of intraocular pressure in the eyes with PDR, including during post-operation period, were: the absence of panretinal laser coagulation of retina at earlier stages of PDR and tamponade of vitreous cavity with silicon oil. The application of silicon oil was significantly associated with the absence of pre-operation laser coagulation of retina with diabetic nephropathy, decompensation of carbohydrate metabolism and complicated course of operation and post-operation period.

Keywords: proliferative diabetic retinopathy, ocular hypertension, silicon oil.

One of the PDR complications is the increase of intraocular pressure, which is related to the iris neovascularisation (neovascular glaucoma) and development of vitreoretinal hemorrhages (ghost-cell glaucoma). After vitreo-retinal surgical interference, there is also a risk of ocular hypertension; tamponade of vitreous cavity is an additional factor of pathogenesis [1, 954–60].

The aim of the research was the study of factors of risk of occurrence of ocular hypertension in the eyes with proliferative diabetic retinopathy after vitreoretinal surgical interference.

Materials and methods of research. The research included 160 patients (200 eyes) with diabetes complicated with grade IV diabetic retinopathy (proliferative diabetic retinopathy — PDR) admitted for surgical treatment at the clinic of eye microsurgery LLC «KuzTibServis» (Tashkent) and Eye center in Samarkand. All patients were divided into two clinical groups depending on the preceding laser coagulation: the PLC+ group included 116 eyes, on which laser photocoagulation was performed at grade III and early IV of PDR; the group PLC- included 84 eyes without preceding laser coagulation. The indications for operative treatment were: intravitreal hemorrhages that did not resolve within 3–6 months.

The examination included the determination of the sharpness of vision, IOP, conditions of anterior chamber, lens, posterior chamber and retina.

Results of the research and discussion. In the present research, in the PLC-group, 18 patients (21.43%) had increased IOP.
(over 20 mm of mercury) against 12 patients (10.34%) in the group PLC+ (the differences between the groups according to the frequency-based division of the patients with ocular hypertension chi-square = 4.64, p<0.05). Herewith, absolute mean values of IOP between the groups differed significantly: p<0.001 (Table 1).

Table 1. – The dynamics of IOP in the eyes with PDR after vitreo-retinal interference depending on the preceding laser coagulation of retina

<table>
<thead>
<tr>
<th>Time</th>
<th>PLC+ (n=58)</th>
<th>PLC– (n=42)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before operation</td>
<td>15,59±0,30</td>
<td>19,52±0,79***</td>
</tr>
<tr>
<td>1 month</td>
<td>16,28±0,31^^^</td>
<td>20,83±0,77^^^^^^^</td>
</tr>
<tr>
<td>6 month</td>
<td>15,31±0,22</td>
<td>17,17±0,44^^^^^^</td>
</tr>
<tr>
<td>12 month</td>
<td>15,24±0,19</td>
<td>16,74±0,45^^^^^^</td>
</tr>
</tbody>
</table>

Remarks: significance of differences with initial data: ^^ – p<0.01, *** p<0.001; significance of differences between groups: ** p<0.01, *** p<0.001.

After vitreo-retinal surgery, the level of IOP in both groups increased significantly (p<0.001 compared to the initial data in both patient groups) by the 1st month. Subsequently, IOP in both groups significantly reduced reaching the initial values in the group PLC+ and going below the initial value in the PLC– group. However, during the entire period of observation, IOP in the PLC– group remained significantly higher than in the PLC+ group (p<0.001 at 1 and 6 month and p<0.01 at 12 month of observation).

The dynamics of IOP in the PLC–, but not in the PLC+, affected the dynamics of frequency division of eyes depending on the presence of ocular hypertension (p<0.001): the share of normotensive eyes increased by the end of observation.

Frequency division of eyes in the groups PLC+ and PLC– according to the presence of ocular hypertension. It was established that both, initially and by the 1st month after vitreo-retinal interference, the share of eyes with increased IOP was significantly higher in the group PLC– than in the group PLC+. By the 6th and 12th month, frequency comparison of the groups PLC+ and PLC– after operation became insignificant.

Taking into account between the groups according to IOP, we set forth the hypothesis about the contribution of tamponade of vitreous body with silicon oil in the development of ocular hypertension in the eyes with PDR after vitrectomy. In order to check this hypothesis, we conducted the analysis of dependence of research signs on the application of silicon oil in the course of operation (Table 2). It was established that in the group of patients who required tamponade with silicon oil diabetic nephropathy occurred more often (p<0.01), including at the stage of renal disease (p<0.05), and decompensation of carbohydrate metabolism was observed (p<0.01). However, the groups didn’t differ according to the level of glycaemia and uremia. According to the frequency of AH, including hypertensive crises, as well as level of arterial pressure, groups SO+ and SO- were compared.

Among the indications for vitreo-retinal interference, combined detachment of retina was not noted in the group SO-, whereas in the group SO+, it was observed in 8 cases (p<0.01). The frequency of occurrence of other indications for vitreo-retinal interference did not differ in the groups.

As it was expected, the application of silicon oil was associated with complicated course of PDR: in this group of eyes, intra-operative hemorrhages occurred more often (p<0.001), and in post-operation period repeated interferences were required more often (p<0.01 for lavage and re-vitrectomy). Also, the use of silicon oil is related to longer time required for operation (p<0.05).

The analysis of functional condition of eyes depending on the use of silicon oil showed that in the group SO+ both, initially and during the entire period of observation, the sharpness of vision was significantly lower than in the group SO– (p<0.001 for all time points), and the level of IOP was higher (p<0.001 for all time points).

Since the mechanism of development of ocular hypertension in the eyes with PDR after vitreo-retinal interference can be related to both, the effect of silicon oil and neovascularisation of iris, we divided the patients inside the groups depending on the use of silicon oil in the process of operation (Table 4). Maximal level of IOP throughout the observation, IOP after 1 month after the removal of silicon oil and sharpness of vision against the background of maximal increase of IOP and after the removal of the oil was assessed.

Is it shown in the table, in both research groups, the eyes that had undergone tamponade of vitreous cavity with silicon oil had a significantly higher level of IOP than the eyes, which silicon oil had not been used for (p<0.001 in the group PLC- and p<0.05 in the group PLC+). However, assessing the eyes of the groups PLC+ and PLC– inside the sub-groups SO+ and SO–, it is seen that inside the sub-group SO+, in the eyes, which PLC was conducted on preliminarily, the level of IOP was significantly lower than in the eyes of the group PLC- (p<0.001). It indirectly certifies about the contribution of neovascularisation in the pathogenesis of ocular hypertension in the eyes after vitreo-retinal interference with regard to proliferative diabetic retinopathy [2, 169–76; 3, 189–95].

Table 2. – Effect of silicon oil on the level of IOP and sharpness of vision in the eyes with PDR after vitreo-retinal interference depending on the preceding PLC

<table>
<thead>
<tr>
<th>IOP parameter</th>
<th>PLC–/SO– (n=20)</th>
<th>PLC–/SO+ (n=64)</th>
<th>PLC+/SO– (n=86)</th>
<th>PLC+/SO+ (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max IOP, mm mercury</td>
<td>16,87±0,75</td>
<td>26,53±1,36^^^^^</td>
<td>15,74±0,42</td>
<td>18,64±0,85^^^^^</td>
</tr>
<tr>
<td>Frequency of ocular hypertension</td>
<td>2 (10%)</td>
<td>28 (43.75%)#$^$</td>
<td>4 (6.5%)</td>
<td>8 (26.87%)</td>
</tr>
<tr>
<td>Sharpness of vision during the period of max IOP</td>
<td>0,046±0,002</td>
<td>0,025±0,003$$$</td>
<td>0,078±0,002**</td>
<td>0,062±0,001$$$</td>
</tr>
<tr>
<td>IOP after 1 month after the removal of SO</td>
<td>18,22±0,97&amp;&amp;&amp;</td>
<td>17,96±0,47&amp;&amp;&amp;</td>
<td>17,96±0,67</td>
<td></td>
</tr>
<tr>
<td>Sharpness of vision after 1 month after the removal of SO</td>
<td>0,036±0,003&amp;&amp;&amp;</td>
<td>0,068±0,002***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: significance of difference inside the group SO+ and SO– between the groups PLC– and PLC+; $, significance of difference inside the group PLC+ and PLC– between the groups SO– and SO+; $, significance of difference with indications before the removal of SO; &. One sign – p<0.05, two signs – p<0.01, three signs – p<0.001.

Sharpness of vision was significantly lower in the eyes, which tamponade of vitreous body with SO was used on (p<0.001 for the group PLC– and p>0.05 for the group PLC+), which can be related to both, the effect of ocular hypertension and effect of SO.
Division of the patients depending on the use of SO showed, in both groups, significantly big visual function in the eyes, which LC was preliminarily used on (p<0.01, for the group SO- and p<0.001 for the group SO+), which is apparently related to the initial high visual function before operation and better structural-functional pre-operation state of the eyes.

The removal of silicon oil contributed to the reduction of IOP level (in the group PLC- p<0.001, in the group PLC+ — insignificant) and increase of the sharpness of vision (in the group PLC- p<0.01, in the group PLC+ — insignificant) compared to the results fixed at the level of maximal IOP.

Thus, the present research demonstrated that in the group PLC- after vitrecto-retinal surgery, there was a big frequency and expressiveness of ocular hypertension, which was coupled with the reduction of visual function. This phenomenon is not completely explained by tamponade of vitreous body, because, even after randomization of groups depending on the use of SO, the differences in IOP level were preserved. The use of silicon oil was significantly associated with diabetic nephropathy, decompensation of carbohydrate metabolism and complicated course of operation and post-operation period.

References:

Lipartia Mary Givievna,
The doctor of the Tashkent City Oncology Center,
Republic of Uzbekistan
E-mail: evovision@bk.ru

Morbidity of children with non-hodgkin lymphoma from them in Uzbekistan

Abstract: Knowledge of basic epidemiological factors and the prevalence of reasons in will allow general practitioners, pediatricians, pediatric surgeons, otolaryngologists and other professionals of various parts of the pediatric network to regularly-purposeful work of the Management Board to increase the level of timely diagnosis and oncologic alertness, especially childhood.

Keywords: Children, non-Hodgkin's lymphoma, the incidence.

Additional malignancies worldwide in children with non-Hodgkin's lymphomas up 5–7% in adolescents over 15 years — 10%. The prevalence of NHL in children and adolescents up to 18 years in Europe and North America is 0.6–1.5 cases per 100,000, in Uzbekistan this figure, according to current statistics, locat-ditsya in the same range. The peak incidence between the ages of 5–10 years, children under 3 years old rarely get sick.

Despite the fact that pediatric oncology is one of their young directions in oncology, to date, it has been substantial progress. Known co-temporal methods of treatment allow to cure more than 50% of children suffering from malignant tumors, and in non-Hodgkin lymphoma in the presence of timely diagnosis and conducting the specialized help cure occurs in 80% of patients.

Improving methods of prevention, early detection of non-Hodgkin lymphomas promotes adequate treatment, thereby leading to the achievement of satisfactory results and lower mortality rates in children. For a full understanding the current situation it is necessary to have reliable data statistics NHL, as well as their changes over time, which can be carried out epidemiological analysis and monitoring of all disease entities encountered in the pediatric population.

Over the past 30–40 years in the dynamics of the incidence of non-Hodgkin's lymphomas in children on the rise of a number of diseases. This may be due to the development of the diagnosis and the influence on the developing child’s body to various external and internal factors (physical, chemical and biological, and others.) [1; 2; 3].

The internal factors, first of all, should include genetic factors. To date, there is no clearly defined endogenous and exogenous risk factors that affect the mother and child, who were studied depending on the location, in this connection, this research is relevant and necessary [2; 3; 4].

The study of the prevalence of social aspects, possible causes and factors in the development of childhood diseases, including cancer is quite important-nym in planning work onkopediatricschesky service.

Objective: analysis of key statistical indicators Non-Hodgkin Lymphoma in the dynamics of the child population in the Republic of Uzbekistan.

Uzbekistan — a country with great human potential. At the end of 2015 was more than the population of Uzbekistan — 30 million people, of which 63.1% — in rural areas, 36.9% — urban population. The age structure of the population belongs to a progressive type: the number of children — 28.8%; adolescents up to 15 years — 6.7%, significantly higher than the number of persons over 65 years old.

Against the background of high fertility and population growth, the imbalance in the age structure of the complex social and environmental situation in particular, Aral-ray of the crisis in the country in the mid 80-ies of the last century began to unfold “demographic crisis".

Morbidity of children with non-hodgkin lymphoma from them in Uzbekistan

References: