Deferred hypotonic syndrome after glaucoma filtering surgery and taking of phosphodiesterase inhibitors (PDE5)

Tatiana Iureva¹,², Svetlana Zhukova¹, Andrey Shchuko¹
¹Irkutsk Branch of S. Fyodorov Eye Microsurgery Federal State Autonomous Institution,
²Irkutsk State Medical Academy of continuing education Irkutsk, Russian Federation
The authors have no financial interest

Purpose. To reveal the mechanisms of hypotonic syndrome formation after taking of PDE5 inhibitors (Viagra) in patients with glaucoma in the long term period after filtering surgery with OCT-angio and to develop a set of treatment measures.

Materials and methods. 6 males were examined with UBM and OCT angiography; aged 64.5 +/- 11.2, OAG in an advanced stage, a history - trabeculectomy.

Results. IOP after glaucoma surgery was 16.2 +/- 1.7 mm Hg. without additional hypotensive therapy; visual acuity was 0.44 +/- 0.32. The average period between the operation and hypotonic syndrome was 4.8 +/- 1, 6 years. After multiple taking PDE5 of inhibitors the visual acuity decreased up to 0.01 +/- 0.12, IOP - 6.3 +/- 1.8 mm Hg.
According to UBM data - flat ciliochorioidal detachment, according to OCT data - retinal folds, cystic macular edema up to 410+/-44,16 mkm. According to OCTA data – on choriocapillaries level - local hyporeflective zones, slowing of blood flow, in a layer of Sattler and Haller - expansion of the caliber of vessel wall, interstitial edema

**Treatment included:**

the introduction of hydroxypropyl methylcellulose 2% (Ocucoat) into anterior chamber through corneal centesis 3-6 times to moderate ophthalmohypertension,

subconjunctival injections of a solution of 10% NaCl - 0.3ml,

instillations of mydriatics and glucocorticoids during 1-3 months.
• After 1-6 months in 70% of cases – microimpulse laser therapy and barrage of the optic disk and macular area,

• in 50% - cataract phacoemulsification. Follow-up period was 6-18 months.
After treatment in all cases, IOP increased to 14 +/- 1.06 mm Hg, visual acuity - to 0.4 +/- 0.24. Cystic edema was compensated or significantly decreased.

**Conclusion.** Taking of PDE5 inhibitors causes choroidal ischaemia, hypotension, reduction of natural hydraulic vascular resistance which leads to higher permeability of choriocapillaries walls and disruption of barrier and pump function of retinal pigment epithelium and formation of retinal edema and cystoid macular edema. Restoration of IOP and resorption of edema is possible during the complex treatment with obligatory injection of viscoprotector in anterior chamber.