COMPUTER CONTROL OF OPHTHALMOLOGY ELECTROCOAGULATION

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Eye diseases, including those associated with the risk of total vision loss, have a steady trend of growth worldwide [1]. Detachment of the retina occupies an important place among such reasons. All surgical procedures designed to restore the anatomical integrity of a detached retina are characterized by the risk of side effects (bleeding, repeated detachment, cataract progression, etc.). The choice of the method of surgical treatment always takes into account the effectiveness of vision restoration and possible side effects, both of the pathological condition itself and of iatrogens.

The authors of many studies compare different methods of surgical retinal repair, with and without removal of the vitreous body, using cryo-, laser- and electrocoagulation, but cannot provide a final convincing recommendation regarding the best method of treatment. Most of them emphasize the need for further improvement of methods and tools for vitreoretinal surgical interventions [2; 3]. Instruments, materials for tamponade, prevention of bacterial complications, etc. also affect the result of surgical interventions.

In compliance with all the requirements of bioethics, an experimental study was conducted on laboratory animals to restore the anatomical integrity of the detached retina. A special monopolar electrode of the original design with a diameter of 25 G was inserted into the eye of the rabbit through the suprachoroidal access (*Fig.*), which is connected to a high-frequency electric generator. Influence parameters 10–16 V [10–12 V, 12–14 V, 14–16 V], 66 kHz, 0.1 A) [4] are controlled by the computer program of the electric generator. As a result of electrocoagulation of the layers of the retina, a strong chorioretinal tissue connection was obtained. At the same time, minimal tissue damage was recorded at an exposure voltage of 10–12 V. The used electrocoagulation method is promising for detached retina, which does not require removal of the vitreous body and tamponade of the eye and facilitates recovery of patients.

Fig. Working electrode for ophthalmic monopolar electrocoagulation with high-frequency current

References:

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