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3. Околокулак, Е. С. Памяти Натальи Георгиевны Назимовой / Е. С. Околокулак, И. М. Величко // Весенние анатомические чтения : материалы научной конференции, посвященной памяти доцента Н.Г. Назимовой, Гродно, 30 мая 2014 г. / Гродн. гос. мед. ун-т ; отв. ред. Е. С. Околокулак. – Гродно, 2014. – С. 3-5.

4. Пашенко, Т. П. Экспериментальная оценка некоторых способов пластики общих сонных артерий : автореф. дис. ... канд. мед. наук : 14.00.02 / Т. П. Пашенко ; Минский гос. мед. ин-т. – Минск, 1969. – 20 с.

5. Околокулак, Е. С. Кафедра анатомии человека ГрГМУ: этапы развития, научные направления, перспективы / Е. С. Околокулак // Актуальные вопросы морфологии : сборник трудов Международной научно-практической конференции, посвященной 50-летию кафедры анатомии человека ГрГМУ / Гродн. гос. мед. ун-т ; под ред. Е. С. Околокулака. – Гродно, 2008. – С. 3-6.

MORPHOLOGICAL VARIATIONS IN THE ORIGIN AND BRANCHING OF THE OPHTHALMIC ARTERY: A CLINICAL PERSPECTIVE

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Introduction. The ophthalmic artery (OA) typically originates from the first branch of the internal carotid artery (ICA) [1, с. 65], passes through the optic canal and goes to the medial wall of the orbit, where it gives off branches [2, с. 585]. Variations in the origin of OA are based on the patterns of its development [3, с. 2]. In embryogenesis, the blood supply to the eye is provided by three arteries: the dorsal OA, which arises from the ICA inside the cavernous sinus and enters the orbit through the superior orbital fissure; the ventral OA, which starts in the cranial cavity and enters the orbit through the optic canal; and the middle meningeal artery (MMA), which enters the orbit through the superior orbital fissure or the separate Hyrtl's canal. The neurosurgical procedures relating to the ophthalmic artery (OA) are quite difficult and can result in dangerous complications, such as blindness. Knowledge of the variations in the origin of the OA defines the approach needed for super-selective catheterization and intra-arterial chemotherapy in retinoblastoma, as well as for endovascular aneurysm surgery and intra-arterial fibrinolysis in central retinal artery (CRA) occlusion [4, с. 495].

Purpose of the study. To analyze variations in the origin of the ophthalmic artery and their clinical significance.

Material and methods. Analysis of anatomical and embryological data regarding OA development and variations.

Results of the study. The different origins of the OA include:

1. the middle meningeal artery in the case of a persistent dorsal OA;
2. the anterior cerebral artery in the case of the persistence of the ventral OA and its aberrant course above the optic nerve (ON);
3. the middle cerebral artery, the posterior communicating artery and the basilar artery in the case of agenesis or hypoplasia of the ICA;
4. doubling of the OA due to the preservation of both the ventral and dorsal primitive OAs – this is a rare variation.

In 83.6% of cases, OA arises from the ICA above the dura mater and has an intradural course, in 6.6% of cases it lies just above the dura mater, and in 10% of cases it arises below the dura mater and continues completely or partially extradurally. OA starts from the superomedial wall of the ICA in 40% of cases, from its anteromedial wall – in 51%, from the medial wall – in 6%, and from the superior wall in only 3% of cases. In a few cases (<3%), OA passes through a bone canal separate from the ON. The CRA is the terminal branch of the OA and it is of critical importance for vision ; its occlusion leads to a sudden loss of vision. The cilio-retinal artery, which originates from the posterior ciliary arteries in 6–32% of people, is an anatomically favorable variation that provides anastomosis with the CRA to avoid retinal necrosis. Doubling of the CRA can be found rarely (<2%).

Conclusion. The duality of the OA – intracranial and extracranial parts – its small size, its proximity to many significant anatomical structures, especially the ON, make the OA a site of anatomical and surgical risk. Knowledge of the origin of the OA is very crucial and helpful in defining the surgical strategy.

LITERATURE

1. Hayreh, S. S. The Ophthalmic Artery: I. Origin and Intra-Cranial and Intra-Canalicular Course / S. S. Hayreh, R. Dass // British Journal of Ophthalmology. – 1962. – Vol. 46, № 2. – P. 65–98.
2. Toma, N. Anatomy of the Ophthalmic Artery: Embryological Consideration / N. Toma // Neurologia Medico-Chirurgica. – 2016. – Vol. 56, № 10. – P. 585–591.
3. Anatomy of the Ophthalmic Artery: A Review concerning Its Modern Surgical and Clinical Applications / A. Michalinos, S. Zogana, E. Kotsiomitis [et al.] // Anatomy Research International. – 2015. – Vol. 2015. – P. 591961.
4. First Branch of Ophthalmic Artery and Its Clinical Importance / Ö. Gayretli, A. Kale, O. Coşkun [et al.] // Journal of Istanbul Faculty of Medicine. – 2021. – Vol. 84, № 4. – P. 495–501.