

EVALUATION OF QUALITY INDICATORS OF OPTICAL COHERENCE TOMOGRAPHY IN PATIENTS WITH ARTERIAL HYPERTENSION

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Abstract. When analyzing the qualitative indicators of OCT, in most cases focal changes were identified that corresponded to those previously detected during ophthalmoscopy. Hyperreflective foci in the outer layers of the retina according to OCT data most often corresponded to foci of deposition of hard exudates according to ophthalmoscopy, areas of thickening of the layer of nerve fibers corresponded to the localization of “cotton-wool” foci.

Keywords: they were found in 25.6% in main group 1, in 54.8% in main group 2 and 10.2% in control group 1. In patients of main groups 1 and 2, OCT revealed areas of disorganization of the inner layers of the retina according to the DRILL type. In main group 1 they were observed in 7.8% of eyes, and in main group 2 – in 21.4% of eyes.

In addition, OCT images revealed areas of atrophy of the inner layers of the retina (in 11.7% of eyes in the main group 1, in 25% of eyes in the main group 2 and in 5.6% of eyes in the control group 1), as well as focal thinning of the inner nuclear layer (NNL) - in 45.6%, 85.7% and 1.9% of eyes, respectively. Areas of thinning of the VnF, hyperreflective foci and areas of thickening of the nerve fiber layer were significantly more common in the group of patients with stages 3-4 of HAD.

Table 1

Prevalence of qualitative OCT signs in patients in the study groups (n is the number of eyes).

Forms of target organ damage	Main group 1 (n=360)		Main group 2 (n=140)		Control group 1 (n=108)	
	n	%	n	%	n	%
Hyperreflective lesions in the outer layers of the retina	92	25.6%	75	54.8%	eleven	10.2%
Areas of atrophy of the inner layers of the retina	42	11.7%	35	25%	6	5.6 % _
Areas of thickening of the nerve fiber layer	18	5%	36	25.7%	3	2.8 % _
Areas of disorganization of inner layers of the retina according to the DRILL type	28	7.8%	thirty	21.4%	3	2.8 %
Focal thinning of the VnJ retinal elevation outer layers of the retina	164	45.6%	120	85.7%	2	19 % _

Subretinal fluid (foci of serous detachment of NE)	-	-	14	10 %	-	-
Diffuse retinal edema	-	-	6	4.3 %	-	-
Macular edema	-	-	26	18.6 %	-	-
ONH swelling	-	-	73	52.1%	-	-

Areas of thickening of the layer of nerve fibers were found in 5% in the main group 1, in 25.7% in the main group 2 and 2.8% in the control group 1. The presence of subretinal fluid with foci of serous detachment of the neuroepithelium (NE) was determined in 10% of eyes main group 2. Diffuse retinal edema was detected in 4.3% of cases. Macular edema was detected in 18.6% of cases. Signs of optic disc edema were identified according to OCT data in 52.1% of cases.

Thus, it has been established that in patients with the preclinical stage of GAR without ophthalmoscopic manifestations in the fundus, thickening of the choroid is determined by OCT (by 10% in comparison with the indicators of the group of healthy individuals). There was also a decrease in the average thickness of the GC - IPL complex, which has an inverse correlation with the stage of GAR.

Conclusion

In conclusion, the evaluation of quality indicators of optical coherence tomography (OCT) in patients with arterial hypertension is essential for ensuring the reliability and accuracy of imaging results. By assessing indicators such as signal strength, image resolution, and scan repeatability, healthcare professionals can determine the quality of OCT scans and make informed clinical decisions. High-quality OCT imaging provides valuable information about retinal changes associated with arterial hypertension, aiding in the early detection, monitoring, and management of hypertensive retinopathy. Continued advancements in OCT technology and standardization of quality assessment protocols will further enhance the utility of this imaging modality in the evaluation and treatment of arterial hypertension-related fundus changes.

Optical coherence tomography (OCT) is a non-invasive imaging technique that has revolutionized the field of ophthalmology, allowing for detailed visualization of the retinal layers and assessment of various ocular diseases, including those associated with arterial hypertension. One of the key quality indicators in OCT imaging is signal strength. It represents the amount of light detected by the OCT system and is influenced by factors such as pupil size, media opacities, and patient cooperation. Higher signal strength values generally indicate better image quality, with clearer and more detailed visualization of retinal structures. Adequate signal strength is crucial for accurate diagnosis and monitoring of retinal changes in patients with arterial hypertension.

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