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Конференція внесена до Реєстру заходів безперервного професійного розвитку, які проводитимуться у 2023 році №5500074

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Results. During the ultrasound of the thyroid gland, in our opinion, insufficient attention is paid to such a sonographic feature as the presence of extracapsular invasion of the thyroid gland tumor, that is, when we see the spread of the tumor process outside the thyroid gland capsule. In the world literature, there is a small number of publications where attention is paid to this sonographic feature, when planning the scope of surgical interventions and its connection with the occurrence of recurrence of thyroid cancer in the postoperative period (when performing organ-preserving operations, or when refraining from performing lateral lymphodesections, since there were no sonographic data on damage to the lateral or central lymphatic collectors of the neck).

It was noted that in the recent period, among the specialists of ultrasound research of the thyroid gland, there is a desire to develop quantitative parameters and sonographic characteristics of the thyroid gland in order to minimize subjectivity in the field of ultrasound diagnostics as much as possible, because it is known that ultrasound remains a method that depends on the experience of the operator and the level of equipment on which the study is performed.

We investigated the emerging trends in the world in order to characterize extracapsular thyroid tumor invasion quantitatively in predicting the development of recurrence of differentiated forms of thyroid cancer in the postoperative period.

Chinese scientists are developing a method for evaluating extracapsular invasion of differentiated thyroid tumors based on the ratio of the vertical diameter of the tumor itself (V) and the distance the tumor has protruded beyond the thyroid capsule (L). If this indicator is more than 0.2, this is the greatest risk of tumor metastasis, therefore, according to the researchers, it is necessary to include in the program of radical treatment of thyroid cancer, lateral lymph node dissection, even in cases where sonographically no signs of damage to the jugulo-carotid lymph nodes of the neck are detected.

Another method proposed by Asian scientists is the calculation of the percentage of tumor contact with the thyroid gland capsule using the existing function on the ultrasound device for measuring the perimeter: no contact, < 25% contact with the capsule, 2-50% contact; >50% contact of the tumor with the capsule of the thyroid gland - also, lateral lymph node dissection of the neck is indicated, in the absence of obvious signs of damage to the lymph nodes, because the risk of metastasis is very high.

These techniques are relevant when the tumor is located closer to the front surface of the lobes of the thyroid gland. Invasion can be in the muscles of the front surface of the neck, subcutaneous fat tissue, blood vessels. The amount of surgical intervention depends on it.

In the case when a malignant tumor of the thyroid gland is located closer to the back surface of the organ, there is a danger of its germination in the trachea. This can change the scope of the planned surgical intervention radically. Japanese scientists have proposed, in the case when the tumor is located closer to the trachea, or closely adjacent to it, to measure the angle formed between the trachea and the tumor adjacent to it. It was found that if this angle was less than 90, there was less risk of tumor invasion into the trachea, respectively, if this angle was greater than 90, there was a high risk of invasion of a malignant thyroid tumor into the trachea.

Conclusion. Undoubtedly, these methods require more detailed study and refinement, however, the results obtained from their use, already today, allow to improve the results of surgical treatment of differentiated forms of thyroid cancer, by quantifying the risk of its recurrence in the postoperative period.

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PECULIARITIES OF LAMINA CRIBROSA THICKNESS IN PATIENTS WITH PROLIFERATIVE DIABETIC RETINOPATHY AFTER VITRECTOMY WITH SILICON OIL TAMPONADE AND RETROLAMINAR MIGRATION OF SILICON OIL

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Introduction. For ~40 years, silicone oil (SiO) is accepted as an effective treatment used as an intraocular tamponade in the pars plana vitrectomy, especially in cases of complicated retinal

detachments. Retrolaminar SiO migration is a benign complication of intraocular SiO injections, occurring when the SiO diffuses posteriorly into the structures of visual pathway (optic nerve, optic chiasm, optic tract, lateral cerebral ventricles). The mechanism is still under debate, but it has been suggested elevated intraocular pressure, macrophages or optic nerve head anatomical predispositions as potential explanations. Recent studies suggest that SiO may infiltrate or diffuse directly into the retinal layers and then into the optic nerve by infiltrating along the retinal nerve fibers through the lamina cribrosa (LC). found on plasminogen.

The aim of the study was to analyze the peculiarities of LC thickness in patients with proliferative diabetic retinopathy after vitrectomy with SiO tamponade and retrolaminar migration of intraocular SiO.

Material and methods. This retrospective, observational study included 31 patients with proliferative diabetic retinopathy after vitrectomy with SiO tamponade who underwent unenhanced head computed tomography (CT) for various clinical indications between April 2017 and January 2022. All images were visually evaluated for subretinal and retrolaminar migration of intraocular SiO involving the anterior visual pathway (optic nerve, optic chiasm, and optic tract) and the ventricular system. Lamina cribrosa thickness was measured with spectral domain optical coherent tomography (SD OCT) using LC_Thickness_programm.m and main_low_noise_filters_programm.m, based on the adaptive compensation algorithm for eliminating a high-level noise in the deep layers of optic nerve and improving the visualization of the posterior border of the lamina cribrosa, as well as for processing B-scan with a set of 3 digital filters: Butterworth Low-pass Filter inverion image, Wavelet Low-pass Filter Analysis Daubechies original and inversion image. The area of lamina cribrosa scleral canal was measured with SD OCT using the LC_cut_position_programm.m for choosing the depth of measurement and LC_diameter_calculation_programm.m. Using the OCT Explorer 4.0.0 software we exported XY projection for the next noise reduction and LC detection procedure. All next OCT images adjusting were done in Matlab (MatWorks) platform. Based on "Speckle Noise Reduction in Ultrasound Images" algorithm developed by Meshram A. (2013) and "Adaptive Compensation of the over-amplified area" developed by Mari J. M. et al. (2013) our new type of noise reduction algorithm was developed.

Results. In our patients with proliferative DR the average LC thickness was 697±35 µm (589 to 768 µm), that was 1,9 times higher than in healthy people (p<0,001). We detected subretinal and retrolaminar silicone oil migration in 8 of the 31 patients (25,8%), noting silicone oil at the optic nerve head ($n = 2$), retrolaminar optic nerve ($n = 3$), optic chiasm ($n = 2$), optic tract ($n = 1$), and in the lateral ventricles ($n = 2$). Two patients had migration to 2 locations each (1 patient – in retrolaminar optic nerve and optic chiasm, 1 patient – in retrolaminar optic nerve and lateral ventricle). We compared the LC thickness of patients without and with subretinal and retrolaminar silicone oil migration. It was established that LC thickness of patients with subretinal and retrolaminar SiO migration was significantly less (589 to 658 µm) than in patients without SiO migration (673 to 768 µm). It should be noted that the number of cases positive for migration was small, limiting the statistical power and accuracy of the prevalence.

Conclusion. Direct correlation between scleral lamina cribrosa thickness and retrolaminar migration of intraocular SiO in patients with proliferative diabetic retinopathy after vitrectomy with SiO tamponade was revealed. We suggest that lamina cribrosa remodeling in diabetes mellitus, namely its thickening, may be one among protective mechanisms for retrolaminar silicone oil migration.