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CLASSIFICATION OF TYPES OF PRIMARY GLAUCOMA BASED ON HIGH-FREQUENCY IMMERSION ULTRASOUND BIOMICROSCOPY DATA

Rustambekova Shakhnoza Shoiskandar kizi , Ikromov Otabek Azizovich ,

Ikromov Azizbek Fozilovich

Department of Ophthalmology

Andijan State Medical Institute Andijan, Uzbekistan

Abstract: Ultrasound biomicroscopy is the most informative and easily applied diagnostic method for diagnosing and determining surgical treatment options for each individual patient. Ultrasound biomicroscopy allows for real-time, micrometer-level visualization of the main structures of the iridociliary zone—the iris, ciliary body, posterior chamber, lens, and zonule fibers involved in the formation of intraocular blocks—and identifies specific changes in their topographic relationships depending on the leading component of the angle block.

Key words: Ultrasound biomicroscopy, primary angle - closure glaucoma , diagnostics, treatment .

Relevance. Today, the method of medical imaging, High-frequency immersion ultrasound biomicroscopy **(** HIUBM) is an objective and most informative method for examining the anterior segment and intraocular fluid (IHF) outflow tracts in primary glaucoma. The formation of IHF outflow tracts is prolonged, which is a prerequisite for monitoring the state of IHF outflow tracts in various forms of primary glaucoma [3].

As clinical observations show, assessing the adequacy of the formed outflow pathways of the intraocular fluid in primary angle-closure glaucoma (PACG), especially after fistulizing antiglaucoma interventions, is of important, but complex, significance for ophthalmologists [6].

In the currently known classifications based on biomicroscopic examination, the key role belongs to the isolated characteristics of the anterior segment of the eyeball in glaucoma. use V clinical practice The Moorfields Bleb Grading System [1,6], Indiana Bleb Appearance Grading Scale [8], and Wiersburg Bleb Classification [7,9] are recommended . Despite elements of standardization, these assessment systems are not without subjectivity and lack clear criteria for separating normal and abnormal conditions. None of the proposed schemes provides for a comprehensive, one-stage analysis of the internal fistula, the intrascleral portion of the eye drainage system, and the filtration lining after surgical treatment.

Purpose of the study is to develop classification ultrabiomicroscopic differential diagnostic criteria for the normal and pathological state of the eyeball in the different types of PZUG.

Materials and methods. 250 patients were observed. All patients were diagnosed with primary glaucoma. Of these, 102 patients (40.8%) had primary OAG, 148 (59.2%) had closed-angle glaucoma. Among patients with PACG with pupillary block, 103 patients (183 eyes) had PACG with creeping iris, 16 patients (32 eyes) with flat iris, 18 patients (36 eyes) with flat iris, and 11 patients (22 eyes) with

iridocrystalline lens block. In all cases, the glaucomatous process was drug-resistant. The age of the patients ranged from 48 to 69 years (mean 61.09). The stages of the glaucomatous process were distributed as follows: 1 (initial) – 49 patients (average age 57.6), II (advanced) – 65 patients (average 59.7), III (advanced) – 24 patients (average 62.3), IV (terminal) – 10 patients (average 64.8).

All studies and manipulations were carried out in accordance with the World Medical Association Declaration of Helsinki on ethical principles for medical research involving human subjects.

Results and discussion. Based on the results of the conducted UBM studies, we propose to conduct a comparative analysis and determine the most significant indicators of UBM studies for different types of PZUG.

Based on this, we propose the following UBM classification scheme:

By the depth of the anterior chamber, in mm: deep – more than 3.1 mm;

average depth from 2.5 mm to 3.0 mm (typical for OUG);

flickering – from 1.6 mm to 2.2 mm (characteristic for ZUG with a flat iris and a “creeping” variety);

very small – from 0.9 mm to 1.5 mm (characteristic of ZUG with pupillary block); absent – 0.5 mm and less (characteristic of ZUG with iridocrystalline block).

By the width of the UPC, in degrees: from 12.0 and more – wide (OUG);

from 8.0 to 12.0 – narrow (ZUG with a flat iris and “creeping” variety);

from 5.9 to 7.9 – very narrow (characteristic of ZUG with pupillary block);

less than 5.8 – the anterior chamber is closed (characteristic of the iris-crystalline lens block).

By the position of the ciliary body:

Anterior position - the distance "trabecula - ciliary body" is less than 0.49.

Average position - distance "trabecula-ciliary body" from 0.63 to 0.69;

Posterior position - distance "trabecula - ciliary body" 0.70 or more;

By shape and depth of the rear chamber:

deep triangular – from 0.58 and more (characteristic of ZUG with pupillary block);

triangular medium - from 0.50 to 0.58 (characteristic of OAG); triangular small - from 0.34 to 0.49 (characteristic of ZUG with a flat iris);

arcuate very small - 0.30 and less (characteristic of "creeping" glaucoma).

According to the degree of structural damage to the anterior segment (iris atrophy) and the iris thickness of the iris:

I – characterized by thinning of the iris (from 0.32 to 0.35), a decrease in the distance “trabecula-iris” (from 0.12 to 0.16), anterior position of the ciliary body, tight adherence of the iris to the lens (distance “iris-lens” from 0.25 to 0.31).

II is characterized by thinning of the iris (from 0.28 to 0.31), a decrease in the trabecula-iris distance (from 0.08 to 0.11), anterior position of the ciliary body, tight adhesion of the iris to the lens (iris-lens distance from 0.19 to 0.24), partial destruction of the pigment border of the pupil, and increased pigmentation of the trabecular zone in the open part of the anterior chamber of the eye.

III damage is characterized by thinning of the iris (from 0.18 to 0.29), a decrease in the trabecula-iris distance (from 0.03 to 0.07), anterior position of the ciliary body, uneven tight fit of the iris to the lens by segments (the iris-lens distance from 0.13 to 0.18), the absence of a pigment border, the appearance of pronounced focal atrophy of the iris, shallow or very shallow depth of the anterior chamber and the lack of access to the anterior chamber.

Conclusion . Thus, our proposed classification of UBM studies for primary glaucoma may be useful for the early diagnosis of PACG and determining treatment strategies. It is particularly important when choosing a surgical method for antiglaucoma surgery.

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