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EARLY MORPHOMETRIC CHANGES IN THE MACULAR ZONE RETINES IN PATIENTS WITH DIABETES WITHOUT CLINICAL MANIFESTATIONS OF DIABETIC RETINOPATHY

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ABSTRACT

A clinical and morphometric study of the thickness and volume of the retina was carried out, the state of the retinal cut in type 2 diabetes mellitus per 50 patients without diabetic retinopathy. The criteria for inclusion in the study were: 1. MCVA > 0.8 with refractive errors no more than ± 3.0 diopters. No history ophthalmic operations, pathology of the retina and optic nerve (AMD, epiretinal membrane, glaucoma, etc.). Scanned the macular zone (5 mm) according to the E MM5 protocol. This tomograph allows for segmentation and calculate the thickness of the inner (ganglion cell complex) and outer retina (layers between the pigment epithelium and the inner plexiform layer). We estimated the total thickness, the thickness of the inner and outer layers of the retina in foveal (corresponds to a diameter of 1 mm from the fovea), paraffin (3 mm from foveola) and peripheral (5 mm from foveola) zones.

Keywords: *diabetes mellitus, OST, fovea, diabetic retinopathy.*

АННОТАЦИЯ

Проведено клинико-морфометрическое исследование толщины и объема сетчатки, состояния ретинального среза при сахарном диабете 2 типа на 50 больных без диабетической ретинопатии. Критерии включения в исследование: 1. MCVA > 0,8 с аномалиями рефракции не более ± 3,0 дптр. В анамнезе нет офтальмологических операций, патологии сетчатки и зрительного нерва (ВМД, эпиретинальная мембрана, глаукома и др.). Сканировали макулярную зону (5 мм) по протоколу E MM5. Этот томограф позволяет сегментировать и рассчитать толщину внутренней (ганглиозный клеточный комплекс) и наружной сетчатки (слоев между пигментным эпителием и внутренним плексиформным слоем). Оценивали общую толщину, толщину внутреннего и наружного слоев сетчатки в фовеальной (соответствует диаметру 1 мм от фовеа), парафиновой (3 мм от фовеолы) и периферической (5 мм от фовеолы) зонах.

Ключевые слова: *сахарный диабет, ОЗТ, фовеа, диабетическая ретинопатия.*

INTRODUCTION

Relevance one of the inevitable complications diabetes mellitus (DM) is diabetic retinopathy, while, the leading cause of fatal blindness is diabetic macular edema (DMO) [1, 2, 8]. The reasons for the late detectability of the disease are: difficulty ophthalmoscopic visualization of the initial manifestations and lack of accessible and objective criteria for high risk of DMO. WITH introduction of a diagnostic method optical coherence tomography (OCT) fundus structures it became possible identifying the smallest changes macular area [7]. Significant him advantage over ophthalmoscopy is the detection of minimal retinal thickening (less than 10 microns), while time as ophthalmoscopically minimal noticeable increase in retinal thickness is at least 200 microns. In spite of the availability and simplicity of OCT remain studied morphometric OCT parameters of the state of the macular area (MO) during the manifestation of DME.

DISCUSSION AND RESULTS

Retinal neurodegenerative changes are the earliest and most persistent manifestation of hyperglycemia [Dijk H.W. van, 2012], which, unlike microvascular changes, ophthalmoscopically do not appear. available literature few controversial messages about the information content of the application optical coherence tomography (OCT) in patients with diabetes mellitus (DM) without clinical manifestations of diabetic retinopathy (DR) [Barber A., 1998; Biallosterski C., 2002; Sugimoto M., 2005;Asefzadeh B., 2008; Kevin W., 2009;Oshitari T., 2009]. Research objective: Morphological assessment of the macula in patients with type 2 diabetes without DR and determination of the relationship of its possible changes with the duration of the disease. Material and methods The study involved 2 groups: main and control. Main group included 34 patients (34 eyes) with type 2 diabetes without DR, aged 36 to 75 years (average age - 49.89 ± 6.65), with durationdiseases from 5 days (newly diagnosed SD) up to 22 years (average duration disease was 9 years). Control group - 16 healthy age test subjects from 40 to 62 years old (average age - 51.6 ± 8.2). By age, it was revealed significant difference in mean values between groups (p = 0.05). Fig. 2. It was found that in the main group, regardless of age, reliably the thickness of the outer layers of the retina decreases in all explored zones: fovea, para- and perifovea (p = 0.0001, p 0.006, p = 0.03 respectively), and in fovea, in addition to external layers, the total thickness decreases (p = 0.001) and

internal fovea thickness (p = 0.02). General the thickness of the parafoveal zone is also decreases regardless of the age factor (p = 0.05). Regarding the identified changes in the perifoveal zone, then they may be due to the difference in average age in compared groups. So, the distribution the number of subjects in groups by indicator the total thickness of the wax zone and thickness of the outer layers of the retina the paraffin zone show that the total retinal thickness of the paraffin zone less than 300 microns and the thickness of the outer layers retina of the parafoveal zone less than 170 μm is found only in the main group. This suggests that these indicators are specific and you can say that the thinning of the layers of the retina the above zones are specific pathologicalchanges in type 2 diabetes.

Fig. 3. When conducting correlation analysis the following results were obtained: negative correlation between age patients with diabetes without DR and total thickness retinal peripheral zone (r = -0.44, p = 0.01), the thickness of the inner layers of the retina para- and peripheral zones (r = -0.37, p = 0.03 and r = -0.47, p = 0.005, respectively); the duration of the LED and the total thickness, the thickness of the inner layers of the retina para- (r = -0.37, p = 0.03 and r = -0.4, p = 0.02 respectively) and peripheral (r = -0.36, p = 0.04 and r = -0.44, p = 0.009, respectively) zones.

CONCLUSION

Thus, in patients with type 2 diabetes without clinical symptoms of DR revealed reduction in the thickness of the common retina and its outer layers. The latter is certain decreases in the foveal, para- and perifoveal zones and does not correlate with age and duration of diabetes. In difference from outer layers, thickness inner layers of peri- and parafoveal areas of the retina does not differ significantly from control group (except foveal zones), but is inversely correlated with age and duration of diabetes. OCT method allows you to detect early changes outer and inner layers of the macula patients with type 2 diabetes without clinical manifestation of DR.

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