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The Content of Blood Chemokine Fractalkine in Patients with Type 2 Diabetes and Diabetic Macular Edema Depending on The Type of Glucose Lowering Therapy

Mykhailo Kyryliuk, DMSci and Sviatoslav Suk, MD, PhD

Relevance. Diabetic macular edema (DME) remains one of the most widespread diabetic complications. Complications associated with DME include microglial activation, dysfunction of neurons, their dystrophy and apoptosis. One of the important modern chemokines involved in the functioning of the eye neurovascular unit is fractalkine (CX3CL1). The current literature has demonstrated a positive and significant relationship between fraktalkine aqueous humor levels and central macular thickness after intravitreal injection of aflibercept in patients with DME [Rodolfo Mastropasqua et al., 2018]. Goal. To evaluate the content of blood plasmachemokine fractalkine in patients with type 2 diabetes (T2D) and DME depending on the type of glucose lowering therapy (GLT). Material and methods. This study was conducted in 82 patients (male and female) with T2D and DME. The average age of patients was 65.25 ± 10.85 years (±SD), the average duration of diabetes was 14. 0 ± 7. 05 years(±SD), the average level of HbA1c was 8.40 ± 1.58% (±SD). The inclusion criteria in this open study were voluntary informed consent, age 18 years old and more, the presence of DME according to the classification of American Academy of Ophthalmology (2014) and non-proliferative diabetic retinopathy (DR) according to the

simplified version of the ETDRS. Exclusion criteria were others endocrine diseases, acute infectious diseases, cancer, decompensation of comorbid pathology, mental disorders, proteinuria, T1D, were vitreo-retinal interface diseases, damage of the optic nerve, inflammatory eye diseases, glaucoma and mature cataracts, retinal vascular diseases. Plasma fractalkine concentration was determined by «RayBio®Human Fractalkine ELISA Kit Protocol» (USA). All patients enrolled in this study were diagnosed assessing DR using color fundus photography, fluorescein angiography, spectral optical coherence tomography and were evaluated with a comprehensive ophthalmologic examination. 43 patients received oral glucose lowering drugs (OGLD), 39– metformin plus insulin. Statistical analysis of the results of the current study included one-way ANOVA analysis. **Results:** A study of content of blood plasma fractalkine showed its dependence from the type of GLT. So comparison of mean values of blood plasma fractalkine in patients with DME revealed the following differences: OGLD 1,81±0,09ng/ml [95%CI 1.67 - 1,94ng/ml], insulin therapy 2,11±0,08ng/ml [95%CI 1,98-2,23 ng/ml] (p=0,02). **Discussion:** An increase in the concentration of fractalkine in blood plasma for a certain time can serve as an indicator of an active nonspecific inflammatory process in the neuroglia, the presence of edema and a harbinger of the death of ganglion cells and vision loss. That is why fractalkine, apparently, has a promising prognostic potential for its use in evaluating the effectiveness of treatment of DME and T2D in patients receiving various types of GLT. **Conclusion:** In patients undergoing insulin therapy, the content of fractalkine in blood plasma is statistically significantly (p = 0. 02) higher than in patients receiving OGLD.

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