

Ethnic aspects of lipid peroxidation process flow in patients with type 1 diabetes mellitus

Marina A. Darenskaya, Lyudmila A. Grebenkina, Svetlana V. Gnusina, Sergey I. Kolesnikov, Lyubov I. Kolesnikova

Scientific Centre for Family Health and Human Reproduction Problems, Irkutsk State University, Moscow State University Lomonosov M.V., Moscow Region State University; Russian Federation
Department of Pathophysiology

Background and Aims

Numerous researches show that data on an ethnic origin can give additional information for the personified approach in treatment of different diseases. The aim of this study was to evaluate lipid peroxidation process flow in Mongoloid and Caucasian patients with type 1 diabetes mellitus (T1DM).

Method

Biochemical parameters in 147 persons (healthy and with T1DM) both Mongoloids (ethnic group is Buryats) and Caucasians (ethnic group is Russians) living in the modern city Ulan-Ude (East-Siberia) were assessed. The diagnosis of T1DM was confirmed in all patients based on clinical and laboratory investigations, severe comorbidities and severe diabetic complications were excluded. Spectrophotometric and fluorometric methods for the study of components of the lipid peroxidation (LPO) were used.

Results

Our study has shown higher concentration of diene conjugates (DC) (by 1.35 times; $p < 0.01$) in Mongoloid patients as well as higher levels of diene conjugates (by 2.4 times; $p < 0.001$) and ketodienes (KD) (by 2.71 times; $p < 0.05$) in Caucasian patients in compare with the corresponding control groups. The study of total radical trapping antioxidant level (TRAP) in patients with T1DM, an increase (by 1.54 times; $p < 0.001$) in this indicator in Mongoloid patients in compare with the control group was shown.

In Caucasian patients with T1DM, statistically significant differences from the control group included reduced GSH values (by 1.16 times; $p < 0.05$) and increased GSSG level (1.26 times; $p < 0.001$). Comparison of LPO values in Caucasian and Mongoloid patients showed decreased DC (by 1.56 times; $p < 0.001$), KD (by 1.86 times; $p < 0.05$) values, increased TRAP (by 1.44 times; $p < 0.001$) and decreased α -tocopherol levels (1.22-times; $p < 0.01$) in Mongoloid patients with T1DM in compare with the same values in Caucasian patients with T1DM. Integral coefficient of oxidative stress in Mongoloid patients was 1.35, in Caucasian patients was 2.32 ($p < 0.05$).

Conclusion

So, our results indicate increased LPO processes in groups of patients with diabetes mellitus and intensity of LPO processes depend on ethnicity. Noted changes in LPO–AOD system in Mongoloid patients with T1DM were less intensive than in Caucasian patients, that allows make a recommendation on highly individualized approach to the complex therapy.

Intensity of oxidative stress in mongoloid and caucasian patients with type 1 diabetes mellitus / Kolesnikova L.I., Vlasov B.Y., Kolesnikov S.I., Darenskaya M.A., Grebenkina L.A., Semenova N.V., Vanteeva O.A. // Bulletin of Experimental Biology and Medicine. 2016. Vol.161, № 6. P. 767-769.

LIPID STATUS AND PREDISPOSING GENES IN PATIENTS WITH DIABETES MELLITUS TYPE 1 FROM VARIOUS ETHNIC GROUPS

Kolesnikova L.I., Kolesnikov S.I., Darenskaya M.A., Grebenkina L.A., Semenova N.V., Osipova E.V., Gnusina S.V., Bardymova T.A.

Bulletin of Experimental Biology and Medicine. 2015. T. 160. № 2. C. 278-280.