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Ceramide as a mark of severity and activity of diabetes mellitus type 2 and nonalcoholic fatty liver disease

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Introduction: Sphingolipids are biological active components of all cell membrane. They play a great role in cell interconnections and take part in such process as a proliferation, maturation and cell apoptosis. Ceramide deserve special attention, because they could be precursors of apoptosis and lead to development of diabetes mellitus type 2 (DM type 2) and nonalcoholic fatty liver disease (NAFLD).

Objectives: The objective of this study is to investigate dependence between ceramide levels in plasma, level of insulin and HOMA (homeostatic model assessment) indices in patients with DM type 2 and activity of AST (aspartate transaminase), ALT (alanine transaminase) in patients with NAFLD.

Materials & Methods: We performed researches in three groups. The total number of patients was 60 (n=60). Two of them consisted of patients with DM type 2 and NAFLD (n=20, n=20 respectively) and the third one was healthy persons. The level of insulin, HOMA indices and activity of AST and ALT were assessed by using common biochemical blood analyses. Plasma ceramides (C14:0, C16:0, C18:0, C18:1, C20:0, C24:0 and C24:1) were quantified using electrospray ionization tandem mass spectrometry after separation with HPLC.

Results: As result of researches, we got data that show high levels of ceramide in the first and second group comparing with healthy persons. This result is tightly correlated with the high level of insulin, HOMA indices and activity of AST and ALT in patients with DM type 2 and NAFLD respectively.

Conclusions: During our researches, we found out dependence between high ceramide levels with severity of DM type 2 and activity rate of NAFLD. So, further investigation of ceramide is needed for taking them as parameters for prognosis DM type 2 severity or as development NAFLD complications such as nonalcoholic steatohepatitis.

Biography

Leonid Pavlovskiy, Doctor graduated from National Medical University. She is currently working in Gastroenterology Department in one of the central hospital. She also works as an Assistant of Internal Medicine Department of National Medical University.

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