CERAMIDE AS A MARKER OF SEVERITY AND ACTIVITY OF DIABETES MELLITUS TYPE 2 AND NONALCOHOLIC FATTY LIVER DISEASE.

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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). The aim of the research was to investigate dependence between ceramide levels in plasma, level of insulin and HOMA indices in patients with DM type 2 and activity of AST, ALT in patients with NAFLD.

Materials and Methods. The study was performed in three groups. The total number of patients was 60. Two of groups consisted of patients with DM type 2 and NAFLD (n=20, n=20 respectively) and the third one included 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 correlate with the high level of insulin, HOMA indices and activity of AST and ALT in patients with DM type 2 and NAFLD respectively.

Conclusion. 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.

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FEATURES OF DISTRIBUTION OF VICIA SATIVA AGGLUTININ (VSA) RECEPTORS IN THE INTERCELLULAR MATRIX OF THE MENISCI OF RAT KNEE JOINT AFTER INTRAFETAL INJECTION OF ANTIGENS

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The results of previous investigations at the Department of Human Anatomy of Zaporizhzhia State Medical University have shown that for the modeling of the syndrome of undifferentiated connective tissue dysplasia in rats it is possible to use the intrauterine antigenic effect that leads to changes in the rates of morphogenesis of fetal organs and tissues [3]. Lectins are informative molecular probes that can detect glycoconjugates in cells and tissues. Lectins and their receptors provide intercellular, cell-matrix interactions, participate in the regulation of proliferation, differentiation and apoptosis of cells [1, 2]. Aim of the work was to establish the features of distribution of Vicia sativa agglutinin (VSA) receptors in the intercellular matrix of the menisci of rat knee joint after intrafetal injection of antigens.

Material and Methods. Menisci of knee joints were studied in 160 white laboratory rats from the 1st to the 90th days of life. Group I – 60 intact rats. Group II – 60 experimental rats – the offspring of female rats, which on the 18th day of the dated pregnancy underwent the injection of purified staphylococcal toxoid (1:10, 0.05 ml) according to the method of professor N.A. Voloshyn (1981). 40 rats of group III after injection of saline solution served as control. When working with animals we were guided by «European Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes» (Strasbourg, 18.03.86) and Law of Ukraine «On the protection of animals against cruel treatment» (№ 3447-IV). Receptors for Vicia sativa agglutinin in the histological sections were detected using standardized sets of VSA-HRP (RPC «Lectinotest»). The imaging was carried out in the diaminobenzidine-hydrogen peroxide system. The intensity of the deposition of benzidine label was assessed semi-quantitatively.

Results. On the 1st day after birth the intensity of VSA receptors distribution in the intercellular matrix of both inner (+/++) and outer (+) zones is low. The visceral part of the joint capsule covering the menisci in all groups of animals is stained in yellow-brown (++) color and is not changed during three months of observation in the group of animals after intrafetal injection of antigens.

On the 5th day in all groups of rats, the intensity of the benzidine label deposition in the inner zone decreases to the level of outer one (+). This level of a-D-mannose residues in the intact and control groups persists until the end of the first month inclusive in the inner zone and up to the 14th day in the outer one. In the group of antigen-injected rats, in contrast to the control ones, there is a temporary increase in the number of VSA receptors in the outer zone on the 7th day of observation. On the 21st day after birth, the level of VSA receptors in the inner zone of the menisci of experimental rats increases (++), followed by a decrease to the previous level on the 30th day (+). In the outer zone of the menisci of rats of all groups the content of a-D-mannose residues increases (++), which remains until the end of the first month inclusive.

Subsequently, starting from the 45th day, the decrease in the intensity of the benzidine label deposition (0/+ in both zones of the menisci of rats in all the studied groups is determined until the end of the third month of perinatal life.