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МАТЕРІАЛИ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ МОЛОДИХ ВЧЕНИХ ЗА УЧАСТЮ МІЖНАРОДНИХ СПЕЦІАЛІСТІВ ПРИСВЯЧЕНОЇ ДНЮ НАУКИ

«ДОСЯГНЕННЯ ПРОФІЛАКТИЧНОЇ МЕДИЦИНИ ЯК ОСНОВА ЗБЕРЕЖЕННЯ ЗДОРОВ`Я І БЛАГОПОЛУЧЧЯ»

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PATHOGENETIC ROLE OF NITROTYROSINE IN DEVELOPMENT DIABETIC MYOPATHY IN CHILDREN.

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Objective: to study the content of nitrotirozine in blood serum of children with diabetes and reveal the role of nitrotirozine in diabetic myopathy development.

Materials and methods of investigation: one examined 70 children with diabetes mellitus (DM), aged from 11 to 17 years old. There were 3 groups of children according to the duration of the disease. The 1st group included 15 children with the duration of disease up to 1 year, the 2nd group included patients with the duration from 1 to 5 years, the 3rd was formed of patients with the duration of diabetes over 5 years. 20 relatively healthy children formed the group of control. One evaluated the skeletal muscular index (SMI) and wrist strength index (WSI), performed the manual muscle Lovette test and balance exercises and estimated the amount of nitrotirozine in blood serum using the method of enzyme-linked immunosorbent assay (ELISA).

Results of investigation: it was revealed that there was an obvious muscle mass loss with the increasing of the duration of diabetes in examined patients; that was proved by the lower values of SMI in patients from 3rd group compared to the patients from the 1st group and group of control (77,91±1,29%, 82,42±1,11% and 82,97±1,16%, correlately , $p<0,05$). It was also noticed the worsening of muscular functional capability, which revealed in decreasing of WSI, MMT and balance disorders. The most outstanding damages were revealed in children with the duration of diabetes over 5 years. All the mentioned effects on muscular system were accompanied by different changes on nitrotirozine blood content. There was a 7 times decrease of nitrotirozine amount in patients from the 1st and 2nd group compared to those from the group of control (28,5±1,71 nmol/L and 39,78±4,5 nmol/L, correlately $p<0,05$),), which can be caused by its increased degradation in terms of endothelial dysfunction. At the same time there was an obvious increasing of nitrotirozine amount in blood serum of patients from the 3rd group compared to the group of control ((39,78±4,5 nmol/L and 28,5±1,71 nmol/L, correlately, $p<0,05$),), which proof the presence of nitrotirozine stress in conditions of prolonged duration of diabetes. There was a negative correlation revealed between the amount of nitrotirozine and SMI ($r=-0,46$, $p>0,05$), and WSI ($r=-0,46$, $p>0,05$).

Conclusions. Diabetic myopathy in children with diabetes is constantly developing and manifests in muscle mass loss and skeletal musculoskeletal disorders. All revealed changes are correlated with nitrotirozine stress. That makes us to think about the nitrotirozine stress as about the marker of diabetic myopathy developing.