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FIBRINOLYTIC ACTIVITY OF URINE IN CASE OF EXPERIMENTAL DIABETES MELLITUS

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Abstract:

Introduction: Destabilisation of hemocoagulation and fibrinolysis, along with other factors, promotes the progression of renal dysfunction, thus influencing metabolic processes in the body, which are significantly disturbed in case of diabetes mellitus (DM). At the same time, the functional condition of the kidneys considerably affects the blood content of coagulation and fibrinolytic systems' components. The fact of interdependence of mentioned processes gives the reason for their further investigation in order to substantiate the methods of their early diagnosis in patients with DM. Considering that, the objective of this study was to establish the character of fibrinolytic activity of urine in alloxan-induced diabetic rats.

Materials and methods: The experiments were carried out on 20 matured nonlinear male rats, weighing 0,1-0,18 kg, under the standard conditions of vivarium. For the experimental modeling of DM 10 animals were administered alloxan intraperitoneally in a diabetogenic dose of 160 mg/kg; 10 animals served as control group. 10 days after the beginning of pathology formation blood samples were taken from tail vein of rats for measurement of glucose concentration; urine was collected during 12 hours for further study of fibrinolytic activity. Total, enzymatic and non-enzymatic fibrinolytic activity (TFA, EFA and NEFA respectively) was determined in the urine of experimental rats.

Results: As the results of investigation showed, TFA in the urine of alloxan-induced diabetic rats was reliably lowered (3,4 times, $P < 0,001$), the intensity of enzymatic fibrinolysis was 3,3 times lower as compared with that of controls ($P < 0,001$), whereas non-enzymatic fibrinolysis was found to be reduced by 3,6 times ($P < 0,001$). The structure of TFA of the urine of alloxan-induced diabetic rats wasn't significantly changed since its reduction was partaken by both – enzymatic and non-enzymatic fibrinolysis, contributing 53,3% and 46,7% respectively to the total fibrinolysis of urine.

Conclusion: Thus, the obtained findings are indicative of the significant reduction of fibrinolytic activity of urine – enzymatic and non-enzymatic as well, demonstrating insufficient function of local fibrinolysis regarding clearance of renal tubules from fibrin clots, which cause the reduction of renal flow, disturb nephron functioning and promote the progression of diabetic renal dysfunction.

Keywords: alloxan-induced diabetes, fibrinolytic activity of urine, fibrinolysis, renal dysfunction

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