CORRECTION WITH QUINOLINE-2-CARBOXYLIC ACID DERIVATIVES OF WATER-ELECTROLYTE IMBALANCE METABOLISM IN EXPERIMENTALLY HYPERTENSIVE RATS

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Introduction. Arterial hypertension is accompanied by severe metabolic disorders of water-electrolyte metabolism. Creatinine and urea are early and most informative markers of disorder of renal functional status in patients with arterial hypertension, and their level characterizes nitrogen-releasing state of renal function.

Aim. Aim of research is to study biochemical mechanisms of water-electrolyte imbalance metabolic disorders in experimental hypertensive rats and prospects for their correction with hynokarb, new quinoline-2-carboxylic acid derivative.

Materials and methods. Studies were conducted in rats of both sexes. Throughout the experiment, animals were kept in a vivarium at 20-25 °C, humidity not more than 50%, natural light mode "day-night", in standard plastic cages on a standard diet. Effect of hynokarb on a renovascular system state was examined during 7-day administration in rats, by determining level of creatinine, urea and total protein in blood. Comparator drugs were Hydrochlorothiazide granules, which contain 25 mg of hydrochlorothiazide and Berlipril granules, which contain 5 mg of enalapril maleate. Hynokarb and hydrochlorothiazide dose of 10 mg/kg (as active substance) is maximally effective diuretic dose, as has been found in earlier experiments.

Results and discussion. Intragastric administration of hynokarb had no statistically significant effect on creatinine, urea and total protein content. The change direction of total protein and creatinine in blood of experimentally hypertensive rats had positive nature as a result of the tendency to renew these indicators to the level of physiological norm in healthy normotensive rats. As for changes of the level of urea in blood downward, this trend should be considered as positive in terms of activation of nitrogen-releasing renal function. In the same animals, hydrochlorothiazide caused no significant changes in creatinine, urea and total protein content in the blood compared with untreated control. In experimental rats, intragastric administration of enalapril caused a tendency to increase the content of creatinine, urea and a statistically significant increase in total protein content in the blood.

Conclusions. Experimentally hypertensive rats developed disorders of fluid and electrolyte homeostasis, which was reflected in increasing of serum creatinine and total protein levels. Indicators of urea in experimentally hypertensive rats did not change. Mechanisms for implementation of antihypertensive response of hynokarb are based on activation of nitrogen-releasing renal function.