



of sodium ions ($RFNa^+$) was calculated by the formula: $RFNa^+ = C_{cr} \cdot PNa^+ - V \times UNa^-$. Proximal and distal reabsorption of sodium ions was also investigated (T^pNa^+ ; T^dNa^+). The calculations were carried out according to the formulae: $T^pNa^+ = (C_{cr} - V) \times PNa^+$; $T^dNa^+ = (PNa^+ - UNa^-) \times V$. The condition of glomerular-tubular and tubular-tubular balance was assessed by conducting the correlation analysis between the processes of glomerular filtration, absolute, proximal, distal reabsorption of sodium ions and relative water reabsorption.

According to the conditions of the development of nephrolithiasis with concrement of 0.6-1.0 cm in size under low sodium diet the mechanisms of glomerular-tubular and tubular-tubular balance with the presence of positive correlation of glomerular filtration with absolute, proximal reabsorption of sodium ions and relative reabsorption of water in each examined group are being kept.

The dysfunction of glomerular-tubular and tubular-tubular balance increases in the following sequence: the upper third part of ureter with the tendency of correlational relationship strengthening of relative water reabsorption from the glomerular filtration, absolute, proximal reabsorption of sodium; the middle calyx with the formation of two new negative correlation dependencies of diuresis, distal reabsorption of sodium with the relative reabsorption of water; the upper calyx with the creation of eight new negative correlation dependencies in the structure of glomerular-tubular and tubular-tubular balance.

Semenenko S.B.

THE PECULIARITIES OF CHRONORHYTHMICAL ALTERATIONS OF ION REGULATING RENAL FUNCTION AGAINST BLOCKADE OF NITROGEN MONOXIDE SYNTHESIS UNDER CONDITIONS OF PINEAL GLAND HYPERFUNCTION

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Kidney sare responsible for the production of hormones and substances which are of a similar structure. They play an important role in redistribution of fluids in the body, vascular tone and intensity of the electrolyte excretion. The hormone of the pineal gland (PG) melatonin takes an important part in providing chronoorganisation of physiological functions.

That's why the objective of our work was to find out the particularities of chronorhythmical reconstruction of ion regulating function of the kidneys under above mentioned conditions.

The experiments were carried out on 72 mature nonlinear male rats with the body weight of 0,15-0,18 kg. The animals were kept in the vivarium under the constant temperature and humidity of air and were fed on as usual. The control group was composed of animals (n=36) which were kept under normal light conditions (12.00L:12.00D) for a week. The group of examination consisted of animals (n=36) which were kept in a permanent darkness (00L:24.00D) for a week. On the eighth day the animals were given 5% water test with warm running water at a room temperature. Then the parameters of ion regulating function of the kidneys under conditions of forced diuresis were examined. The experiments were carried out with a 4-hour interval per day. The results were processed "Kosynor-analysis" statistical method and by the methods of variation statistics.

As far as control animals are concerned their ion regulating function of the kidneys is subordinated to accurate circadian organization.

Under conditions of PG hyperfunction and additional blockade of nitrogen monoxide (NO) synthesis a considerable increase of natriuresis occurs. The daily rhythm of sodium ions excretion was of a sinusoidal character. Absolute reabsorption of the cation decreased in all periods of day, and an average level of this index was reliably lower as compared to those in the control group. An average level of a distal transport of sodium ions under conditions of circadian oscillations as compared to the control group decreased reliably. The phase structure of rhythm was similar to the chronograms of control rats.

Therefore, hyperfunction of PG against blockade of NO synthesis resulted in circadian alterations of renal transport of sodium ions.

Tymofiychuk I.R.

THE CHANGES OF HISTOLOGICAL PROTEO- AND FIBRINOLYTIC ACTIVITY AND THE LEVEL OF NITROGEN MONOXIDE METABOLITES IN RATS OF DIFFERENT AGE UNDER CONDITIONS OF EXPERIMENTAL DIABETES

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Aging is a significant factor modifying neurochemical status of the brain. Oxidative stress, which is the reason for brain tissue degeneration with age, can initiate the modification of tissue proteo- and fibrinolytic activity. It can result in alterations in homeostasis on the cellular and tissue levels as well as in the whole human organism stipulating the reasonability of studying the reactions of proteo- and fibrinolytic cerebral systems in rats of different ages.

The objective of our investigation was to carry out the analysis of dependence of proteo- and fibrinolytic activity of tissues on nitrogen monoxide synthesis in rats of different ages against the conditions of experimental diabetes mellitus.