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Changes in excretory function of rat kidneys under conditions of salt loading on the background of mercury chloride nephropathy

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Human and animal kidneys can within wide range and with high selectiveness choose intensity of water excretion and ions, providing stability of liquid structure of internal medium. Decrease of reabsorbed intensity, penetrability of canalicular wall for water or intensification of glomerular water filtration and diluted substances result into increase of urine excretion. Water and salt loading were carried out 2 hours before euthanasia, intragastrically through a metal tube. 2 hours after loading the animals were decapitated under the light ether anesthesia. Mercury chloride intoxication of animals was conducted subcutaneously by aqueous solution of mercury chloride (II) at a dose of 5 mg per kg body weight.

Since extracellular sodium concentration is an important parameter of the constant internal medium, the effect of hypersodium loading on the state of regulation of sodium homeostasis system, on kidney function in rats with mercury dichloride nephropathy has been studied. Thus, rat indices of urine output were not substantially changed within 3% and 0,75% of salt loading as compared with control. However glomerular filtration rate became doubled at 3% salt loading and from 0,75- to 76% as compared with control. At given 3% salt loading on the background of mercury chloride intoxication, concentration of creatinine in the blood plasma increased by 98%, in urine- 4,58 times according to the indices of control group, while at 0,75% sodium chloride loading under the same poisoning conditions: in the blood plasma- twice, in urine- three times. Salt loading (3%) against the background of mercury dichloride nephropathy leads to glomerular filtration abnormality and tubular reabsorption, accompanied by an increase in comparison with the control of the concentration index of endogenous creatinine (on average 2 times), glomerular filtration rate (2 times), the concentration of protein urine (6.2 times); the concentration of potassium in the urine (5.5 times), rate of excretion of potassium (5.3 times), excretion of sodium (4.6 times). Titrating acid excretion and ammonia during mercury dichloride nephropathy is increasing on average by half.

Therefore, water loading leads to increased urine output growth as a result of GFR. Increased concentrations and excretion of sodium was primarily the result of a decrease in its tubular reabsorption. While at the same time, following the creatinine excretion and changes in the calculation of glomerular filtration in animals injected by NaCl, glomerular filtration increased simultaneously with increasing sodium filtration charge.

Thus, the received data indicate the typical course of renal pathology in animals after modeling mercury chloride nephropathy with marked oliguria appearing in loading test, characterized by a decrease of urine output and insignificant increase in GFR, increase creatinine concentration and protein in urine. Such changes characterize the ability of the kidneys to the water loading output.

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Dynamics of change in volume of renal calyces of mature and elderly people in different age groups

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On the basis of the linear morphometric characteristics of 175 human kidneys we studied volumes of renal calyces in age aspect, which is the morphological basis for percutaneous renal puncture and extracorporeal lithotripsy as well as for evaluation the degree of morphological changes in hydronephrosis that meets the requirements of modern urology.

Age-specific analysis of the material indicates a decrease in the total volume of renal cups with

Chernozub A.A., Titova A.V.	
Complex Method of Determining and Assessment of the Level of Physical Activity in the Conditions of Different Muscle Tension.....	169
Gerasymenko N. D., Dehtiar N.I., Stasiuk A.A.	
Lipids, Inflammation and Pathology: the Role of the Peroxisome Proliferator-Activated Receptors.....	170
Gonchar M.O., Ishchenko T.B., Koval V.A.	
Difficulties in diagnostics of congenital leukemias in neonates.....	171
Gryhorova A.O., Kozytska O.I.	
Complex treatment paradontium: rehabilitation of patient.....	172
Kadykova O., Olawole Olawole Martins	
The interaction between left ventricular remodeling with different phenotypes of GLN27GLU Polymorphism in β_2 -adrenoreceptor gene in patients with coronary heart disease and obesity.....	173
Khmara T.V., Stryzhakovska L.O.	
Prenatal morphogenesis of the prostatic utricle.....	173
Oleshko T., Obukhova O., Harbuzova V.	
Association of LYS198ASN polymorphisms of endothelin-1 gene with ischemic atherothrombotic stroke.....	174
Ovcharenko L.K., Tsyganenko I.V.	
The effectiveness of the drug in clinical practice "Steatel" in patients with coronary artery disease.....	175
Padalitsa M.A.	
Regularities of renal calyces morphometry in childhood, adolescence and early adulthood.....	176
Ryabokon E., Zhdanova N.	
Detection of effectiveness of drugs for temporary obturation in the treatment of chronic apical periodontitis based....	176
Senatorova G.S., Logvinova O.L.	
Prognosis pure outcomes of Bronchopulmonary dysplasia in children.....	177
Shklyar A.S., Barchan A.S., Khomchenko M.A., Pchelnikova O.Yu., Omarova O.N.	
Human body weight. anthropometric estimate at the stages of postnatal ontogenesis: osseous component.....	178
Shklar A.S., Danylchenko S.I.	
Coordinate anatomy of kidney in ontogenesis: organometric characteristics at young age.....	179
Storchylo O.V.	
The milk thistle fruits as a way of correcting and preventing the effects of irradiation parents two generations of their offspring.....	180
Sukhomlyn T.A., Netyukhaylo L.G.	
Correction of changes lactate/pyruvate ratio by lipin in lungs at burn disease.....	181
Velyka A.Ya.	
Changes in excretory function of rat kidneys under conditions of salt loading on the background of mercury chloride nephropathy.....	182
Yevtushenko I.Y.	
Dynamics of change in volume of renal calyces of mature and elderly people in different age groups.....	182