МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
ВИЩИЙ ДЕРЖАВНИЙ НАВЧАЛЬНИЙ ЗАКЛАД УКРАЇНИ
«БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»

М А Т Е Р І А Л И

101 – ї
підсумкової наукової конференції
професорсько-викладацького персоналу
Вищого державного навчального закладу України
«БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»
10, 12, 17 лютого 2020 року

Чернівці – 2020

УДК 001:378.12(477.85)
ББК 72:74.58
М 34

Матеріали 101 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м. Чернівці, 10, 12, 17 лютого 2020 р.) – Чернівці: Медуніверситет, 2020. – 488 с. іл.

ББК 72:74.58

У збірнику представлені матеріали 101 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м.Чернівці, 10, 12, 17 лютого 2020 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

ISBN 978-966-697-843-4

or inflammation and regulate inflammation itself via a complex network of interactions. However, excessive inflammatory cytokine production can lead to tissue damage, hemodynamic changes, organ failure, and ultimately death. Cytokines which activate and promote the inflammatory process (pro-inflammatory) are interleukin 1 (IL1), interleukin 2 (IL2), TNFα and others. Cytokines which inhibit the inflammatory process (anti-inflammatory) are interleukin 10 (IL10), interleukin 1ra (IL1ra), vascular endothelial growth factor (VEGF) and others.

Compelling evidence now exists that inflammation is a major factor in ischemia/reperfusion injury in the kidney. Kidney inflammation contributes to progressive renal injury, which may lead to glomerulonephritis, end-stage renal disease, or acute or chronic kidney disease (CKD) Approximately 10–12% of the population suffers from CKD, and some 50% of elderly patients show signs of kidney dysfunction, which is associated with high morbidity and mortality. Kidney inflammation is most commonly induced by infection, ischemia/reperfusion, in situ immune complex formation/deposition, or complement pathway dysregulation. Renal tubular epithelial cells are likely important promoters of kidney inflammation, secreting a variety of inflammatory cytokines in response to both immune and non-immune factors, and leukocyte infiltration depends on the local presence of these cytokines. Stimuli that can induce kidney injury activate transcription factors (NF-κB or MAPK). These stimuli include cytokines, growth factors, DAMPs, and PAMPs, and metabolic (high glucose, advanced glycosylation end products) and immune mediators.

CKD may be a valid model to illustrate the cytokine network hypothesis. Pro-inflammatory cytokines are counterbalanced at several levels. For example, the secretion of interleukin (IL)-1β is linked to the secretion of the IL-1 receptor antagonist (IL-1RA), which binds the cytokine and prevents its actions. The same mechanism applies to tumor necrosis factor (TNF-α), which is counterbalanced by soluble TNF receptors.

So, a better understanding of how to regulate cytokine pathways would allow for more accurate identification of agent-mediated inflammation and the treatment of kidney inflammatory and noninflammatory diseases. Dysregulation of pro-inflammatory and anti-inflammatory cytokine networks may proceed in parallel and the overall degree of cytokine network disruption may be an important prognostic indicator.

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THE NEGATIVE IMPACT OF XENOBIOTICS ON ION-REGULATING RENAL FUNCTION IN DIFFERENT GROUPS OF ANIMALS

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Prolonged exposure of xenobiotics on human body leads to the formation of chronic diseases, which most often arise on the basis of hereditary predisposition. During long-term admission of xenobiotics, which are not subjected to metabolic changes in the body, it is observed their accumulation (in kidneys, bones, liver), that can cause the occurrence of chronic accumulation diseases. The nephrotoxicity of aluminum salts is one of the components of the universal regenerative-plastic deficiency syndrome, which develops in ecologically damaged regions. Despite the prevalence of aluminum compounds, the question of the effect of aluminum salts on ion-regulating renal function in immature rats.

In experiments on 24 immature rats weighing 0.06-0.10 kg it was investigated the functional state of kidneys, in particular, the ion-regulating function against the background of aluminum salts introduction relative to the control group of animals.

The assessment of the ion-regulating renal function in intact immature rats against the background of aluminum salts introduction, showed that the concentration of sodium ions in the urine increased ($p<0.01$). The excretion of sodium ions tended to increase. The filtration fraction of sodium ions in the conditions of administering aluminum salts in immature rats was characterized by a downward trend compared to the control. The trend toward the growth was recorded for the excretion of sodium ions, standardized by the glomerular filtrate speed. The clearance of water free

of sodium ions tended to reduce in the conditions of administering aluminum salts in immature rats. The relative reabsorption of sodium ions tended to decrease. The clearance of sodium was growing. The clearance index of sodium ions increased reliably ($p<0,01$). The concentration of sodium ions in blood plasma did not change significantly. The distal reabsorption of sodium ions tended to reduce due to the administration of aluminum salts in immature rats. The proximal reabsorption of sodium ions tended to decrease. The distal and proximal reabsorption of sodium ions standardized by the glomerular filtrate speed, did not change significantly.

An analysis of the values of the ion regulating renal function in intact mature rats against the background of aluminum salts introduction, showed that the concentration of sodium ions in urine increased ($p<0,001$). The excretion of sodium ions was growing. The filtration fraction of sodium ions in the conditions of administering aluminum salts in immature rats was characterized by a downward trend compared to the control. The trend toward the growth was recorded for the excretion of sodium ions, standardized by the glomerular filtrate speed. ($p<0,02$). The clearance free of sodium water increased. The relative reabsorption of sodium ions was characterized by a downward trend compared to the control. The clearance index of sodium ions increased reliably ($p<0,05$). The concentration index of sodium ions probably increased ($p<0,001$). The concentration of sodium ions in blood plasma did not change significantly in group comparison. The distal reabsorption of sodium ions under the condition of aluminum salts introduction in mature rats was characterized by a downward trend compared to the control. Proximal reabsorption was tended to inhibition in group comparison. The distal and proximal reabsorption of sodium ions standardized by the glomerular filtrate speed, did not change significantly.

Thus, the difference between the indicators of the ion-regulating renal function in different age groups of animals, is caused by insufficient maturity of nephron tubules, juxtaglomerular apparatus, regulatory mechanisms in immature animals.

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VARIATIONS OF CYTOMETRIC INDICES OF SUPRAOPTIC NUCLEI OF HYPOTHALAMUS UNDER LIGHT DEPRIVATION

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The biological timer's exceptional mechanism is used by organisms at different phases and stages of development. Due to the periodic rhythmic cycles the adaptation to the environment and its rhythms, namely, day-night alternation, seasonal change occurs. The brain structures (hypothalamus, pituitary, pineal glands) and their hormones are of critical importance for the realization of various temporal processes as well as the stress response. However, the supraoptic hypothalamic nuclei and their response to desynchronization factors remain poorly studied and understood.

The study was aimed to elucidation the cytometric indices of the supraoptic nuclei of the hypothalamus of white rats under the changed photoperiod.

Experimental animals (mature non-linear male white rats) were divided into two series, sampling biomaterial at 2 a.m. and 2 p.m. on every 7^{th} day of the experiment. The timing of the experiment was due to the different functional activity of the pineal gland and the production of the main chrono biotic, melatonin, in the specified time periods. The collected material was fixed with neutral buffered 10% formalin solution, dehydrated, poured into paraffin, and subsequently after deparaffinization histological sections 5 μm thick were stained with hematoxylin and eosin. Cytometry was performed on digital copies of the image in a GIMP 2.8 computer environment.

In animals of the control group, statistical discrepancies between 2 a.m. and 2 p.m. were noted only for indicators of neurocyte nucleus volume and optic staining density of the hypothalamic supraoptic nuclei. In particular, at 2 a.m. the average nucleus volume was higher than at 2 p.m. (207 ± 1.3 and 201 ± 1.4, $p = 0.010$), and the optical staining density of the neurocyte nucleus was on average lower at 2 a.m. compared to daily index (0.258 ± 0.0012 and $0.264 \pm$